

Megan Williams, aged 31 years, presents for a general check-up. She and her partner are hoping to conceive within the next year. She has no known medical conditions and takes no regular medications. She eats a vegetarian diet, exercises regularly, and does not smoke or drink alcohol. She feels well.

Megan has no prior pregnancies. Her menstrual cycles are regular. She has never used hormonal contraception. She stopped taking over-the-counter omega-3 supplements six months ago, which she had been taking for several years.

She reports being told in her late teens that she had “borderline cholesterol”, but was reassured and not followed up. She has never had her cholesterol formally re-checked.

Family history includes her father having a heart attack at age 47 and her paternal aunt undergoing a coronary artery bypass in her early 50s. Her father is reportedly on “strong cholesterol medications” but Megan is unsure of the details.

Examination:

- BMI 21.5 kg/m²
- BP 124/76 mmHg
- HR 76 bpm regular
- No corneal arcus or tendon xanthomata
- Cardiovascular and thyroid examination: normal

You arrange baseline tests.

Test	Result	Normal Range
Total cholesterol	8.7 mmol/L	<5.5 mmol/L
LDL cholesterol	6.1 mmol/L	<3.5 mmol/L
HDL cholesterol	1.2 mmol/L	>1.0 mmol/L
Triglycerides	1.1 mmol/L	<2.0 mmol/L
Fasting glucose	4.7 mmol/L	3.9–5.5 mmol/L
TSH	2.3 mIU/L	0.4–4.0 mIU/L
ALT	27 U/L	<45 U/L
Creatinine	68 µmol/L	45–90 µmol/L
eGFR	>90 mL/min	>90 mL/min

What is the MOST appropriate next step in her management? Select four (4) from the following list:

- A. Atorvastatin 40 mg daily
- B. Repeat fasting lipid panel and include lipoprotein(a)
- C. Cascade testing for first-degree relatives
- D. Coronary artery calcium score
- E. Refer to cardiologist for risk stratification
- F. Ezetimibe 10 mg daily
- G. Genetic testing for FH
- H. Dietary counselling with accredited dietitian
- I. Delay conception until lipid-lowering is optimised
- J. Document provisional diagnosis of FH in My Health Record
- K. Referral to a lipid specialist
- L. Rosuvastatin 10 mg daily
- M. Routine review in six months without pharmacological intervention
- N. Start fish oil supplements
- O. Initiate bile acid sequestrant
- P. Advise pregnancy should proceed and lipids rechecked postpartum

Rationale

Megan Williams, aged 31 years, presents for a general check-up. She and her partner are hoping to conceive within the next year. She has no known medical conditions and takes no regular medications. She eats a vegetarian diet, exercises regularly, and does not smoke or drink alcohol. She feels well.

Megan has no prior pregnancies. Her menstrual cycles are regular. She has never used hormonal contraception. She stopped taking over-the-counter omega-3 supplements six months ago, which she had been taking for several years.

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- P. Advise pregnancy should proceed and lipids rechecked postpartum

Problem Representation

31-year-old woman planning pregnancy found to have severe hypercholesterolaemia and strong family history of premature cardiovascular disease → probable familial hypercholesterolaemia requiring urgent risk stratification and pre-conception lipid management.

Symptoms

- **Asymptomatic presentation** – severe LDL 6.1 mmol/L found incidentally; FH often silent until premature ASCVD (atherosclerotic cardiovascular disease), so absence of chest pain or exertional dyspnoea does **not** imply low risk.
- **Feels well / regular menses / no systemic symptoms** – argues against secondary dyslipidaemia from hypothyroidism, nephrotic syndrome or diabetes, but biochemical confirmation (normal TSH, glucose, renal profile) is still essential.
- **Prior “borderline cholesterol” in teens, never re-checked** – long-standing elevation supports a hereditary rather than acquired cause and flags missed earlier intervention opportunity.

Signs

- **LDL 6.1 mmol/L, TC 8.7 mmol/L** – LDL \geq 5 mmol/L alone meets Australian diagnostic criteria for probable FH; magnitude of elevation mandates specialist assessment and family screening.
- **Normal BMI 21.5 kg/m² & normotensive (124/76 mmHg)** – removes obesity-metabolic syndrome as major contributors; underscores primary (genetic) aetiology.
- **No tendon xanthomata / corneal arcus** – their absence does not exclude FH; prevalence of xanthomata falls in women and at younger ages.

- **HDL 1.2 mmol/L, triglycerides 1.1 mmol/L** – preserved HDL and normal TG typical of monogenic LDL-receptor defects rather than mixed dyslipidaemia.
- **Normal fasting glucose, TSH, LFTs, renal function** – secondary causes essentially excluded, supporting primary hypercholesterolaemia diagnosis.

Context

- **31F actively planning pregnancy within 12 months** – statins, ezetimibe and most lipid-lowering agents are Category D/C; pre-conception counselling and potential delay of conception required if pharmacotherapy is initiated.
- **Strong family history of premature ASCVD (father MI 47 y, aunt CABG early 50 s)** – first-degree relative with event <55 y yields 2 major FH points; drives need for cascade testing and early intervention.
- **Vegetarian, non-smoker, physically active** – favourable lifestyle reduces modifiable risk but does not offset genetically driven LDL; dietary optimisation (plant sterols, soluble fibre) still warranted.
- **Ceased omega-3 supplements six months ago** – minimal impact on LDL, but restarting fish-oil would not achieve required ≥50 % LDL reduction; emphasises need for specialist-guided pharmacotherapy +/- PCSK9 if pregnancy is deferred.
- **Potential pregnancy contraindicates immediate high-intensity statin** – Australian and RACGP guidance: discontinue statins ≥3 months before conception; bile-acid sequestrants category A but limited LDL-lowering; hence referral and shared care critical.

Question

- **Action:** most appropriate next steps
- **Qualifier:** 31-year-old woman actively planning pregnancy, LDL 6.1 mmol/L, strong premature CVD family history.

Option	Rationale
A. Atorvastatin 40 mg daily	Incorrect – Women of child-bearing age should avoid statins for at least three months before conception and during pregnancy. Starting a Category D statin now would breach this FH guidance and expose a woman actively planning pregnancy to teratogenic risk.
B. Repeat fasting lipid panel and include lipoprotein(a)	Correct – Lp(a) should be measured; results >100 nmol/L denote increased ASCVD risk. Confirm phenotypic LDL on two fasting samples. A repeat panel with Lp(a) fulfils both requirements before life-long labelling and informs risk.
C. Cascade testing for first-degree relatives	Correct – Cascade screening must be done when LDL ≥ 5 mmol/L with premature ASCVD family history. Early identification in relatives halves future event rates.
D. Coronary artery calcium score	Incorrect – RACGP review notes calcium scoring best re-classifies <i>intermediate-risk</i> patients and its value in low-risk young women is unproven; radiation cost and incidental findings are additional drawbacks. Megan (31 y, asymptomatic) is already high-risk on phenotype alone, so CAC will not change management.
E. Refer to cardiologist for risk stratification	Acceptable but less prioritised – All patients with suspected FH should be referred to or discussed with a specialist with expertise in lipidology. A cardiologist may be involved later for overt CVD; first-line referral is to a lipid specialist (Option K).

<p>F. Ezetimibe 10 mg daily</p>  PassRACGP	<p>Incorrect – Pregnancy Category B3 with limited safety data. Use only as an adjunct after statins; as monotherapy, it lowers LDL ≈18 % – inadequate for probable FH and still contraindicated pre-conception.</p>
<p>G. Genetic testing for FH</p>	<p>Acceptable but less prioritised – Genetic confirmation aids family tracing and prognosis but is arranged through specialised centres after clinical diagnosis. Valuable, but not essential before dietetic input and specialist referral.</p>
<p>H. Dietary counselling with accredited dietitian</p>	<p>Correct – Non-pharmacological therapy is mandated in all dyslipidaemia. Advise referral for diet low in saturated fat, enriched with plant sterols and soluble fibre; can achieve 10–15 % LDL reduction; guideline-mandated, pregnancy-safe, and immediately actionable.</p>
<p>I. Delay conception until lipid-lowering is optimised</p>	<p>Acceptable but less prioritised – Reasonable discussion point, yet decision must be individualised with specialist; not an immediate “next step” until risks, options and patient preference clarified.</p>
<p>J. Document provisional diagnosis of FH in My Health Record</p>	<p>Acceptable but less prioritised – Accurate coding supports continuity of care, however documentation alone does not alter risk or treatment today; higher-impact actions (repeat testing, referral, cascade screening, diet) take precedence.</p>
<p>K. Referral to a lipid specialist</p>	<p>Correct – All patients with suspected FH should be referred to a specialist with expertise in lipidology for further assessment. Essential to plan potent therapy (high-intensity statin ± PCSK9 when pregnancy is deferred) and coordinate pre-conception advice.</p>
<p>L. Rosuvastatin 10 mg daily</p>	<p>Incorrect – Same pregnancy category D issue as atorvastatin; lower potency dose unlikely to achieve ≥50 % LDL reduction required in FH and still contraindicated pre-conception.</p>
<p>M. Routine review in six months without pharmacological intervention</p>	<p>Incorrect – Defers action despite very high LDL and strong family history; LDL ≥ 5 mmol/L indicates a <i>treat immediately / refer</i> level.</p>
<p>N. Start fish-oil supplements</p>  PassRACGP	<p>Incorrect – Omega-3 lowers triglycerides, not LDL; Previously ceased supplement had no effect; not evidence-based for this goal.</p>  PassRACGP  PassRACGP  PassRACGP
<p>O. Initiate bile-acid sequestrant</p>	<p>Incorrect – Cholestyramine is Pregnancy Category B2 and lowers LDL ≈15–20 %; useful when statins are absolutely contraindicated, but monotherapy is insufficient for LDL 6.1 mmol/L and poorly tolerated..</p>
<p>P. Advise pregnancy should proceed and lipids rechecked postpartum</p>	<p>Incorrect – Rechecking postpartum ignores 12-month pre-pregnancy window to mitigate lifelong ASCVD risk. Aggressive LDL lowering before/during childbearing years reduces maternal event risk; passive monitoring alone is substandard.</p>

Case Learning Points

- **LDL ≥ 5 mmol/L = automatic “very-high risk”** – In FH, absolute-risk calculators are bypassed; immediate action is mandated
- **Aim for ≥ 50 % LDL reduction or LDL < 2.6 mmol/L** – This numeric target guides therapy escalation and defines treatment success
- **Always add lipoprotein(a) when FH is likely** – Elevated Lp(a) upgrades risk classification and prompts earlier combination therapy
- **Cascade screening halves coronary events in relatives** – Early lipid checks for first-degree kin is a core intervention, not an optional extra
- **Statins/Ezetimibe off the table from planning to weaning** – Category D/C agents must be stopped ≥ 3 months pre-conception; consult a lipid specialist for alternative
- **Dietitian-led plant sterol & soluble-fibre diet is pregnancy-safe** – Expect a 10–15 % LDL drop and synergistic effect once pharmacotherapy resume

References:

- [Familial hypercholesterolaemia: A guide for general practice](#)
- [Integrated Guidance for Enhancing the Care of Familial Hypercholesterolaemia in Australia](#)
- [Coronary artery calcium in primary prevention](#)
- [APO-Ezetimibe - NPS MedicineWise](#)



KFP Case 2: Luke Donovan



Luke Donovan, aged 64 years, presents to the rural general practice clinic with sudden-onset severe right foot pain that started four hours ago. He describes the pain as intense, "like his foot is dying", and says he cannot move his toes properly. There has been no trauma or injury. Luke lives on a cattle station over two hours from the nearest tertiary hospital.

He is an ex-smoker and drinks alcohol socially.

Past medical history



- Hypertension
- Type 2 diabetes mellitus
- Paroxysmal atrial fibrillation



Medications

- Telmisartan 40 mg orally daily
- Metformin modified-release 1000 mg orally daily
- Apixaban 5 mg orally twice daily

On examination:

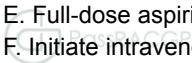


- Looks pale, anxious and mildly diaphoretic; mucous membranes dry
- BP 102/64 mmHg
- HR 108 bpm irregularly irregular
- RR 18
- SpO₂ 96% on room air
- Temp 36.8°C
- Right foot: pale, cold to touch, reduced capillary refill (>4 seconds)
- Dorsalis pedis and posterior tibial pulses absent on the right, present on the left
- Sensory deficit over toes; active movement of toes reduced
- Cardiovascular examination otherwise normal

No investigations are available at the clinic. You arrange urgent retrieval to the nearest tertiary hospital with vascular surgery services.

What immediate management actions are appropriate while awaiting transfer? Select four (4) from the list below.

- Administer oxygen 2 L/min via nasal prongs
- Administer a loading dose of intravenous unfractionated heparin
- Apply warm packs to the right foot
- Elevate the right foot on a pillow
- Full-dose aspirin 300 mg orally
- Initiate intravenous broad-spectrum antibiotics
- Keep patient nil by mouth (NPO)
- Immobilise the right leg and minimise movement



- I. Start therapeutic enoxaparin 1 mg/kg subcutaneously
- J. Request urgent portable Doppler ultrasound if available
- K. Start intravenous fluids at 500 mL/hour normal saline
- L. Tight compression bandaging of the right foot and calf



Rationale

Luke Donovan, aged 64 years, presents to the rural general practice clinic with sudden-onset severe right foot pain that started four hours ago. He describes the pain as intense, "like his foot is dying", and says he cannot move his toes properly. There has been no trauma or injury. Luke lives on a cattle station over two hours from the nearest tertiary hospital.

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Problem Representation

64-year-old man with acute, four-hour history of painful, pulseless, cold right foot, mild hypotension and early motor–sensory loss on a background of AF and diabetes, consistent with Rutherford IIb acute limb ischaemia requiring UFH, fluid resuscitation and urgent transfer for revascularisation.

Symptoms

- Sudden-onset severe right-foot pain (4h)** – hyper-acute presentation is classic for embolic/acute arterial occlusion; limb salvage window is under 6h
- Pain “like his foot is dying”** – disproportionate pain is one of the 6 P’s; indicates threatened tissue viability.
 - 6 ‘Ps of acute ischaemia’: pain, pallor, pulselessness, perishingly cold, paraesthesia and paralysis.
- Unable to move toes** – early motor deficit (Rutherford IIb) → urgent revascularisation required
 - I: viable limb, no immediate threat
 - IIa: sensory loss only, salvageable if promptly treated
 - III: irreversible ischaemia, major tissue loss likely
- No history of trauma** – reduces likelihood of fracture, compartment syndrome or crush injury.
- Lives >2h from tertiary care** – anticipated delay increases urgency for pre-hospital anticoagulation and stabilisation.

Signs

- Pale, cold foot, capillary refill > 4s** – objective evidence of critical arterial insufficiency.
 - Normal refill is <2s; >3 s suggests poor perfusion
- Absent dorsalis pedis & posterior tibial pulses (right)** – confirms arterial occlusion distal to popliteal bifurcation.
- Sensory loss over toes & reduced active movement** – sensory + motor involvement indicates advanced ischaemia; limb at immediate risk.
- BP 102/64 mmHg, HR 108 irregular** – mild hypovolaemia; atrial fibrillation increases embolic load; explains abrupt vascular event.
- SpO₂ 96 % on room air** – systemic oxygenation adequate; routine O₂ not mandatory.
- No trauma, no wound, CVS otherwise normal** – supports primary vascular aetiology rather than soft-tissue or systemic sepsis.

Context

- Cardiovascular risk profile (age 64, ex-smoker, T2DM, HTN)** – poor collateral circulation, higher amputation risk.
- AF on apixaban** – paroxysmal atrial fibrillation despite DOAC suggests ongoing embolic risk; weight-based IV unfractionated heparin remains indicated pre-operatively.
- Mild hypovolaemia + rural setting** – fluid resuscitation improves perfusion during 2h retrieval

- **Rural, no imaging capabilities, > 2hr transfer** – with no Doppler/CT angiography on-site and prolonged retrieval, immediate limb-salvage measures (IV heparin, fluid resuscitation, limb immobilisation, NBM) are critical.
- **No contraindications to heparin or IV fluids** – normal vitals & no active bleeding → safe to anticoagulate.
- **Diabetes with possible neuropathy** – sensory impairment may mask worsening ischaemia—frequent neurovascular checks are essential during transfer.

Question

- **Action:** immediate management actions
- **Qualifier:** for a 64-year-old man in a remote clinic with acute non-traumatic right-foot ischaemia (absent pulses, sensory & motor loss).
- Exclude options that delay transfer or exacerbate ischaemia.

Option	Rationale
A. Administer oxygen 2 L/min via nasal prongs	Acceptable but less prioritised - Supplemental O ₂ is only required if SpO ₂ < 94% or the patient is haemodynamically unstable. Luke is saturating 96% on room air, so routine O ₂ offers no additional benefit and does not alter limb perfusion
B. Administer a loading dose of IV unfractionated heparin	Correct - Immediate systemic anticoagulation halts thrombus propagation and buys time until vascular surgery. ETG states to consider anticoagulant therapy with low-molecular-weight heparin or unfractionated heparin after vascular specialist consultation for acute limb ischaemia.” A weight-based IV bolus (eg 80 units/kg) is standard; pre-existing apixaban is not a contraindication. The advice is to prioritise UFH because it can be switched off rapidly if surgery proceeds.
C. Apply warm packs to the right foot	Incorrect - Heat increases metabolic demand, risks superficial burns in an insensate limb and may worsen reperfusion injury.
D. Elevate the right foot on a pillow	Incorrect - Elevation reduces arterial hydrostatic pressure and can further compromise perfusion. Best practice is to keep the limb dependent and immobile until revascularisation.
E. Full-dose aspirin 300 mg orally	Incorrect - Dual antithrombotic therapy (apixaban + aspirin) before surgical assessment adds bleeding risk with no proven limb-salvage benefit in acute limb ischaemia. Current ETG guidance recommends anticoagulation alone while awaiting definitive care.
F. Initiate intravenous broad-spectrum antibiotics	Incorrect - No evidence of infection. Empiric antibiotics are reserved for suspected sepsis, wet gangrene or contaminated wounds, none of which are present.
G. Keep patient nil by mouth (NPO)	Correct - Keeping the patient NBM in anticipation of further intervention. This ensures the retrieval / vascular team can proceed directly to anaesthesia or CT angiography
H. Immobilise the right leg and minimise movement	Correct - Protect the limb by using pressure relief . Immobilisation limits shear stress and metabolic demand while awaiting retrieval. Moving an ischaemic limb increases pain, lactate production and risk of thrombus propagation.

I. Enoxaparin 1 mg/kg SC	Acceptable but less prioritised - UFH is first-line. LMWH is an alternative only after specialist advice. Using UFH is preferred over enoxaparin because it can be reversed quickly in theatre and is easier to titrate.
J. Request urgent portable Doppler ultrasound if available	Acceptable but less prioritised - Bedside Doppler is mentioned under Step 3 of emergency care for focused assessment but not in the immediate treatment list; it must not delay anticoagulation or transfer, so it is lower priority for the four actions required.
K. Start IV fluids at 500 mL/h normal saline	Correct - Luke is hypotensive, tachycardic, and clinically dry, indicating hypovolaemia. NSW-ECI management steps list correction of dehydration with IV fluids; a modest crystalloid infusion supports cardiac output, improves distal perfusion pressure and mitigates reperfusion-induced rhabdomyolysis without precipitating fluid overload.
L. Tight compression bandaging of the right foot and calf	Incorrect - Compression further impedes arterial inflow and is specifically contraindicated in threatened or ischaemic limbs. ETG warns against compression devices in critical ischaemia.

Case Learning Points

- **Assess Rutherford grade first** – Distinguish IIa (sensory loss only) from IIb (sensory + motor loss) to define your “time-to-knife” target
- **Immediate UFH bolus** – 80 U/kg IV bolus even if the patient is on a DOAC; UFH is fully reversible before surgery
- **Declare nil-by-mouth as soon as transfer is decided** - Prevents anaesthetic delay and aspiration risk during retrieval
- **Limb down, gently padded, no compression** - Dependent position preserves pressure head; avoid elevation, heat, or tight dressings
- **Start crystalloid if dry or hypotensive** - 250–500 mL NS bolus maintains perfusion and limits reperfusion rhabdo
- **Do not chase bedside Doppler or labs first** - Imaging must not delay anticoagulation or transport; hand-over need only basic obs and ECG.
- **Watch for escalating pain despite heparin** - Rising analgesic requirements signal worsening ischaemia; alert surgery without delay.
- **Investigate the embolic source later** - An irregularly irregular pulse + acute limb pain → likely AF embolus; plan echo and rhythm review once the limb is secured.

References

[Acute limb ischaemia | Emergency Care Institute](#)

[Peripheral artery disease - Acute limb ischaemia](#)



KFP Case 3: Billy Kirrawong



PassRACGP



Billy Kirrawong, aged 10 years, is an Aboriginal boy brought in by his grandmother to your rural general practice. She is concerned about his puffy face and dark-coloured urine over the past few days..

He lives in a remote community with his extended family. There are nine people living in a three-bedroom house. Billy has not seen a doctor in the past six months but attends school regularly and has been well until this week. He takes no medications and has no allergies. Childhood immunisations are up to date.

On examination, Billy appears alert but subdued.



- Temperature: 36.8 °C
- HR: 76 /min regular
- BP: 152/90 mmHg
- RR: 18 /min
- O₂ saturation: 98 % on room air
- Mild periorbital oedema
- Normal heart sounds; lungs clear
- Abdomen soft, no tenderness or organomegaly



You arrange a urinalysis, which shows:



- Blood: 3+
- Protein: 1+
- Nitrites: Negative
- Glucose: Negative
- Leucocytes: Negative
- Specific gravity: 1.020



What additional aspects of history would MOST support the provisional diagnosis? Select four (4) from the following list.

- A. History of sore throat 2–3 weeks ago
- B. Recent facial rash
- C. Recent skin sores or boils
- D. Recent contact with pets or livestock
- E. Family history of kidney disease
- F. Headache on waking
- G. Frothy urine for several weeks
- H. Recent swelling of legs and feet
- I. History of frequent UTIs
- J. Poor appetite over the past few days
- K. Fatigue or decreased energy
- L. Unexplained weight loss
- M. Facial swelling worse in the morning
- N. Use of traditional bush medicine
- O. Rash on lower limbs
- P. Itchy skin without rash



Rationale



Billy Kirrawong, aged 10 years, is an Aboriginal boy brought in by his grandmother to your rural general practice. She is concerned about his puffy face and dark-coloured urine over the past few days..

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Problem Representation

10-year-old Aboriginal boy with new periorbital oedema, tea-coloured haematuria and hypertension after likely streptococcal exposure. Clinical picture consistent with acute post-streptococcal glomerulonephritis.

Symptoms

- **Dark-coloured urine** – macroscopic haematuria is the classic first clue to an acute nephritic process such as post-streptococcal glomerulonephritis (PSGN).
- **Puffy face / mild periorbital oedema** – periorbital swelling is a hallmark of nephritic fluid retention; its new onset in a child strongly suggests acute glomerular disease.
 - Nephrotic syndrome gives generalised oedema plus heavy proteinuria ($>3+$). Billy's mild 1+ protein makes nephrotic processes unlikely. Allergy-related angio-oedema is non-pitting, transient, and often pruritic
- **No dysuria, flank pain or fever** – absence of lower UTI symptoms or pyelonephritic features helps shift focus away from infection of the urinary tract itself and towards a glomerular source of blood/protein.
- **Subdued affect** – may reflect early hypertensive or uraemic symptoms, supporting a systemic renal process rather than a local skin/ENT issue alone.

Signs

- **BP 152/90 mmHg** – above 95th centile for a 10-year-old boy; new-onset hypertension frequently accompanies PSGN due to sodium and water retention.
- **Blood 3+, Protein 1+; nitrites/leucocytes negative** – the “blood-plus-protein, sterile dipstick” pattern is typical of glomerulonephritis and helps rule out bacterial UTI
- **Mild periorbital oedema on examination** – confirms fluid retention but no pulmonary crackles/oedema; safe to stabilise locally while arranging specialist review if community resources allow
- **Normal chest auscultation / O₂sat 98 %** – absence of pulmonary crackles reduces concern for acute pulmonary oedema, guiding urgency of management.
- **Afebrile, HR 76 regular** – lack of systemic inflammatory signs steers differential away from acute infections such as pyelonephritis or sepsis.

Context

- **10M Aboriginal from a remote, overcrowded household** – high prevalence of group A streptococcal (GAS) skin sores and pharyngitis in such settings markedly increases risk of PSGN
- **Limited prior healthcare access** – delayed presentation can allow strep infections to progress untreated, strengthening the provisional link between recent skin/throat infection and renal manifestations.
- **No regular medications or allergies** – removes iatrogenic nephrotoxin and drug-induced haematuria from the immediate differential, sharpening focus on post-infectious causes.
- **Cultural considerations** – involvement of grandmother as primary carer and possible traditional bush medicine use (although not yet reported) need respectful exploration to optimise adherence and follow-up.

Question

- **Action:** additional aspects of history
- **Qualifier:** to support the provisional diagnosis of acute post-streptococcal glomerulonephritis in Billy Kirrawong
- Consider contributors and complications; avoid duplicating findings already provided in the stem.

Option	Rationale
A. History of sore throat 2–3 weeks ago	Correct. PSGN typically occurs 7–10 days after a streptococcal throat infection. A sore throat 2–3 weeks before Billy's haematuria will fall within this expected time frame, which will strongly support APSGN as the diagnosis.
B. Recent facial rash	Incorrect. This isn't listed as a prodromal or diagnostic feature; the core clinical criteria are facial/peripheral oedema, macroscopic haematuria and hypertension. A facial rash therefore steers toward alternative diagnoses (e.g. SLE, parvovirus)
C. Recent skin sores or boils	Correct. GAS impetigo is the predominant precipitant of APSGN in northern/remote Aboriginal communities. Asking about skin sores directly targets this recognised aetiology and therefore strongly supports the diagnosis.
D. Recent contact with pets or livestock	Incorrect. APSGN is triggered by human GAS infections; zoonotic exposure is not cited in Australian guidance, so this history adds no weight.
E. Family history of kidney disease	Incorrect. Suggests hereditary nephropathies (Alport, polycystic kidney) which follow different clinical courses (chronic, microscopic haematuria); does not reinforce an acute, post-infectious process.
F. Headache on waking	Correct. Morning headache in a child with new hypertension raises concern for hypertensive encephalopathy, an early complication quoted in APSGN clinical features lists. Its presence would align with the nephritic picture and supports the working diagnosis.
G. Frothy urine for several weeks	Incorrect. Persistent foamy urine suggests heavy proteinuria typical of nephrotic syndromes (minimal-change, FSGS). APSGN usually produces only mild-to-moderate proteinuria of abrupt onset; chronic froth therefore undermines , rather than supports, the provisional diagnosis.
H. Recent swelling of legs and feet	Correct. Clinical criteria require facial oedema and / or peripheral oedema. Lower-limb swelling would be new, additive information since the stem only mentions periorbital oedema, further strengthening the nephritic fluid-overload picture.
I. History of frequent UTIs	Incorrect. No link to recurrent UTIs; sterile dipstick plus absence of LUTS already make infection unlikely.
J. Poor appetite over the past few days	Incorrect. Non-specific constitutional symptom; not cited among diagnostic pointers
K. Fatigue or decreased energy	Incorrect. Equally non-specific; adds no discriminatory value per guidelines
L. Unexplained weight loss	Incorrect. Weight loss suggests chronic disease; APSGN is an acute event
M. Facial swelling worse in the morning	Acceptable but less prioritised. Although facial oedema is a criterion, the stem already documents periorbital swelling; repeating it adds little new discriminatory power, so it is lower yield than options that probe unasked features (A, C, F, H)
N. Use of traditional bush medicine	Incorrect. Important culturally, but no Australian APSGN guideline lists bush remedies as a trigger or diagnostic clue
O. Rash on lower limbs	Incorrect. Purpuric leg rash suggests IgA vasculitis (Henoch-Schönlein); not among APSGN hallmark signs
P. Itchy skin without rash	Incorrect. Pruritus points to allergies or cholestasis, not to post-streptococcal nephritis.

Case Learning Points



- **Nephritic Red Flags** – New macroscopic haematuria, peri-orbital oedema and hypertension in a child = acute glomerulonephritis until proven otherwise
- **Post-Strep Timing** – GAS pharyngitis (7–10 days) or skin sores (2–4 weeks) before symptoms are the two classic triggers for APSGN
- **Dipstick Pattern** – Blood 3+ ± Protein 1+ with sterile nitrites/leucocytes strongly indicates a glomerular source; UTI unlikely
- **Essential Baseline Tests** – Order UEC, FBC, C3/C4, ASOT/anti-DNase B to confirm diagnosis and assess severity
- **Blood-Pressure Staging** – $\geq 95^{\text{th}}$ centile = Stage 1; $\geq 99^{\text{th}}$ centile + 5 mmHg = Stage 2 → Stage 2 needs same-day paediatric review or admission
- **First-Line Management** – Give IM benzathine penicillin to eradicate GAS, start fluid/ Na^+ restriction, strict I/O, daily weight, and involve paediatrics early
- **Public-Health Duty** – APSGN is notifiable; household contacts need skin/throat checks, urine dipstick & BP within 5 days
- **Long-Term Follow-Up** – Monitor BP and urinalysis for ≥ 12 months; refer if proteinuria or hypertension persists beyond 3 months

References

[Acute Post-Streptococcal Glomerulonephritis \(APSGN\) | Queensland Health](#)

[Clinical Practice Guidelines : Hypertension in children and adolescents](#)



[Acute Post-Streptococcal Glomerulonephritis in the Northern Territory of Australia: A Review of Data from 2009 to 2016 and Comparison with the Literature - PubMed](#)

[The hypertensive child](#)



KFP Case 4: Kieran Dunn

Kieran Dunn, aged 7 years, is brought in by his aunt to your regional clinic with a 2-week history of worsening itch and skin irritation. The rash began on his lower back and buttocks and has now spread to his wrists and abdomen. It is especially itchy at night.

Kieran lives in a household of 10 people in a remote Aboriginal community in the Northern Territory. His family have had difficulty accessing the clinic due to transport issues, but were prompted to come in after symptoms disrupted sleep and school attendance. His aunt is unsure if anyone else in the household has symptoms, but says she's worried everybody will have it too.

He is otherwise well, with no fever or systemic symptoms.

On examination:

- Temperature: 36.9 °C
- Heart rate: 96/min regular
- Respiratory rate: 18/min
- Blood pressure: 102/64 mmHg
- Mild cervical lymphadenopathy
- Multiple excoriated papules and pustules are present across the buttocks, abdomen, and flexor surfaces of the wrists and elbows
- Several lesions show crusting

A photo of the patient's rash is provided.



What are the MOST appropriate non-pharmacological management steps? Select four (4) from the following list.



- A. Advise all household members to apply treatment simultaneously
- B. Arrange home visit by child protection services
- C. Recommend laundering clothes, linen, and towels in hot water
- D. Keep the child home from school for 2 weeks
- E. Advise household members to avoid close skin contact with each other for 1 month
- F. Provide education on treatment adherence and symptom resolution
- G. Recommend treating symptomatic household members only
- H. Instruct to dry washed items in sunlight if hot dryer unavailable
- I. Advise vinegar soaks for affected areas twice daily
- J. Refer urgently to dermatologist
- K. Inform school of notifiable condition requiring exclusion
- L. Recommend storing unused clothing in sealed plastic bags for 72 hours
- M. Offer a follow-up phone call to review adherence in 1 week
- N. Instruct to apply topical antibiotic to all crusted lesions
- O. Recommend repeated treatment after 7 days
- P. Advise bleach cleaning of all household surfaces daily
- Q. Arrange serology screening for hepatitis and syphilis
- R. Arrange school-wide screening and swabbing programme

Rationale

Kieran Dunn, aged 7 years, is brought in by his aunt to your regional clinic with a 2-week history of worsening itch and skin irritation. The rash began on his lower back and buttocks and has now spread to his wrists and abdomen. It is especially itchy at night.

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- G. Recommend treating symptomatic household members only
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- Q. Arrange serology screening for hepatitis and syphilis
- R. Arrange school-wide screening and swabbing programme



Problem Representation

7yo Aboriginal boy with a 2-week, rapidly spreading nocturnal pruritic papulopustular rash and mild crusting, consistent with scabies in an overcrowded remote NT household.

Symptoms

- **Night-time itch** - classic symptom; scabies mites are most active in warmth and darkness, so pruritus peaks after lights-out.
- **Initial buttocks/lower-back rash then spread to flexor wrists & abdomen** - Mirrors the typical “under-clothes then flexures” pattern in kids.
 - Other alternative: impetigo can start in similar spots but usually shows honey-coloured crusts early and spreads more rapidly
- **Two-week course disrupting sleep & school** - Sub-acute progression fits incubation + hypersensitivity timeline for a first infestation.
 - Persistent sleep loss raises risk of daytime behavioural issues; reinforces need for prompt household treatment.
- **No fever or systemic upset** - Serious bacterial skin infection unlikely; outpatient care safe.
 - Watch for fever in crusted scabies or secondary invasive infection (rare in simple scabies)

Signs

- **Excoriated papules/pustules** - Scratching hides burrows; pustules mean early impetigo but not crusted ('Norwegian') scabies.
 - Differential check: papular urticaria (individual bites, not burrows), molluscum (central dell), dermatophyte (annular scale).
- **Several lesions with superficial crusting** - Thin golden crusts = minor impetigo, not the thick hyperkeratosis of crusted (Norwegian) scabies.
 - If thick, generalised crusts were present, notify public health and seek specialist help; crusted scabies is notifiable in some jurisdictions
- **Mild cervical lymphadenopathy, vitals normal** - Reactive nodes common with impetiginised scabies; absence of tachycardia or fever supports community management.

Context

- **7-year-old Aboriginal boy, 10-person remote NT household** - Overcrowding + transport barriers ↔ high reinfection risk; guidelines mandate whole-house treatment and simple, pictorial instructions.
 - In endemic settings, mass drug administration (MDA) may be considered if community prevalence > 10 %.
- **School attendance** - Child may return once *two* treatments 1 week apart are finished (permethrin or ivermectin) as per eTG
 - Inform school but scabies is not nationally notifiable
- **Early secondary skin infection risk**
 - Scabies plus impetigo can trigger acute post-streptococcal complications (ARF, APSGN) in Indigenous kids; monitor and treat impetigo promptly.
 - Encourage daily skin checks by carer during treatment week

4. Question

- **Action:** non-pharmacological management
- **Qualifier:** to minimise household and community transmission of suspected scabies in this 7-year-old Aboriginal boy living in an overcrowded remote NT household

Option	Rationale
A. Advise all household members to apply treatment simultaneously	Correct. Treat the whole family at the same time even if they do not have the itch. This breaks the reinfestation cycle; first line management
B. Arrange home visit by child protection services	Incorrect. No neglect or risk factors. Neither ETG nor RACGP recommend mandatory child-protection referral for uncomplicated scabies.
C. Recommend laundering clothes, linen, and towels in hot water	Correct. Wash clothes, towels and bedding, preferably on a hot cycle [60 °C]. Hot wash (or dryer) kills mites/eggs; guideline priority.
D. Keep the child home from school for 2 weeks	Incorrect. Children with scabies can return to school when two treatments 1 week apart are completed. Prolonged 2-week exclusion exceeds guidance and harms schooling
E. Advise household members to avoid close skin contact with each other for 1 month	Incorrect. Guidelines do not mandate extended contact avoidance once simultaneous treatment is given; impractical in overcrowded homes.
F. Provide education on treatment adherence and symptom resolution	Correct. If treatment fails, consider inadequate contact tracing and check adherence to treatment. Itch may persist 3 weeks or longer; explaining this prevents premature retreatment
G. Recommend treating symptomatic household members only	Incorrect. Contradicts directives to treat all contacts; asymptomatic carriers common.
H. Instruct to dry washed items in sunlight if hot dryer unavailable	Correct. <i>If possible, place mattresses, pillows and blankets in the sun;</i> accepted heat alternative for remote settings.
I. Advise vinegar soaks for affected areas twice daily	Incorrect. No Australian guideline endorses acetic-acid soaks for scabies; adds no proven benefit.
J. Refer urgently to dermatologist	Incorrect. Uncomplicated scabies is GP-level; urgent referral reserved for crusted scabies or diagnostic uncertainty.
K. Inform school of notifiable condition requiring exclusion	Incorrect. Crusted scabies is a notifiable disease in some states; ordinary scabies is not nationally notifiable.
L. Recommend storing unused clothing in sealed plastic bags for 72 hours	Incorrect. Guidelines specify they must be <i>stored in a sealed plastic bag for 8 days</i> , because the mites unlikely to survive longer than 7 days away from a host; 72 h insufficient
M. Offer a follow-up phone call to review adherence in 1 week	Acceptable but less prioritised. Helpful for adherence in remote settings but not one of the four core measures
N. Instruct to apply topical antibiotic to all crusted lesions	Incorrect. Minor crusting ≠ impetigo. Antibiotics only if secondary bacterial infection present; this is pharmacological, not strictly non-pharm.
O. Recommend repeated treatment after 7 days	Incorrect. Guideline does advise a second permethrin/ivermectin dose after 7 days, but drug instructions are outside non-pharmacological scope of this question.
P. Advise bleach cleaning of all household surfaces daily	Incorrect. Yes to vacuuming but not routine bleach; mites survive briefly on hard surfaces, so bleach offers minimal extra value.
Q. Arrange serology screening for hepatitis and syphilis	Incorrect. Scabies has no link to blood-borne viruses; not guideline-recommended.

R. Arrange school-wide screening and swabbing program



Incorrect. Mass screening reserved for confirmed outbreaks or crusted scabies index cases; single uncomplicated case does not meet criteria.

Case Learning Points

- **Treat every contact, same day** – single most effective step to break “ping-pong” reinfestation
- **Hot-wash ≥ 60 °C OR sun-dry 4h** – heat reliably kills mites/eggs; 8-day bag seal is the fallback when washing impossible.
- **Expect itch ≤ 3 weeks post-kill** – normal hypersensitivity; explain early to stop unnecessary retreatment.
- **School return after 2nd dose (day 7)** – prolonged exclusion is unnecessary and harms learning.
- **Know “crusted” red flags** – generalised hyperkeratosis, minimal itch ⇒ notifiable + urgent specialist care.
- **Scabies + impetigo ↑ risk of ARF/APSGN** in Indigenous kids – treat impetigo promptly, track for haematuria or joint pain.
- **Document practical follow-up** (phone/outreach) – verifies correct cream application in remote settings.
- **Bleach & vinegar not needed** – hard-surface mites die quickly; stick to heat or 8-day bagging for fomites.

References

[Scabies](#)

[Scabies: A clinical update](#)



KFP Case 5: Samantha Reed

Samantha Reed, aged 18 years, presents to your general practice clinic alone. She appears nervous and hesitant to speak. On further discussion, she discloses that she is sexually active, has a boyfriend, and is considering starting contraception. She states she is feeling overwhelmed with school commitments and wants to avoid pregnancy.

She has no significant past medical history apart from frequent episodes of throbbing headaches that last more than 24 hours. Her last menstrual period was two days ago. She is not currently taking any regular vitamins or medications and admits to regularly forgetting to take things on time.

 Samantha does not smoke, has never been pregnant, and has not used contraception before.

 PassRACGP

What is the MOST appropriate advice? Select two (2) answers from the following list:

- A. Advise Samantha to practise abstinence
- B. Advise Samantha to see a therapist
- C. Advise Samantha to use barrier methods
- D. Prescribe drospirenone + ethinylestradiol one tab a day
- E. Advise Samantha to undergo ligation
- F. Prescribe cyproterone + ethinylestradiol one tab a day
- G. Advise Samantha to choose an intrauterine device (IUD)
- H. Encourage Samantha to use calendar or rhythm method

 PassRACGP
Rationale PassRACGP PassRACGP PassRACGP

Samantha Reed, **aged 18 years**, presents to your general practice clinic alone. She appears nervous and hesitant to speak. On further discussion, she discloses that she is **sexually active**, has a boyfriend, and is **considering starting contraception**. She states she is **feeling overwhelmed with school commitments and wants to avoid pregnancy**.

She has **no significant past medical history** apart from **frequent episodes of throbbing headaches that last more than 24 hours**. Her last menstrual period was two days ago. She is **not currently taking any regular vitamins or medications and admits to regularly forgetting to take things on time**.

Samantha does not smoke, has never been pregnant, and has not used contraception before.

 PassRACGP PassRACGP PassRACGP PassRACGP

What is the MOST appropriate advice? Select two (2) answers from the following list:

- A. Advise Samantha to practise abstinence
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- C. Advise Samantha to use barrier methods**
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- E. Advise Samantha to undergo ligation
- F. Prescribe cyproterone + ethinylestradiol one tab a day
- G. Advise Samantha to choose an intrauterine device (IUD)**
- H. Encourage Samantha to use calendar or rhythm method

 Problem Representation PassRACGP PassRACGP PassRACGP

18-year-old female seeking reliable contraception; sexually active, migraine-type headaches, poor adherence to daily tasks, requests low-maintenance method.

Symptoms



- **Frequent throbbing headaches > 24 h** – classical description of migraine; oestrogen-containing combined oral contraceptives (COCs) are relatively contraindicated if aura is present and can worsen headache frequency.

Signs

- **No neurological deficits or focal signs reported** – reduces suspicion of secondary headache pathology but does not rule out migraine with aura; caution remains with oestrogen.
- **No smoking, VTE history, hypertension or other Category 3–4 WHO contraindications** – progestogen-only LARCs (implant or IUD) are safe.



- **18-year-old, nulliparous, future fertility desired** – permanent contraception (ligation) is inappropriate.
- **Headache history suggests migraine** – combined hormonal pills (Nordette, cyproterone + EE) carry avoidable risk; progestogen-only methods do not.
- **Admits forgetting to take things on time** – anticipates poor adherence to any method that relies on daily, weekly or even monthly user action; favours long-acting reversible contraception (LARC)
- **Feels overwhelmed with school commitments / anxious to avoid pregnancy** – indicates high high perceived pregnancy risk → choose method with maximum efficacy & minimal effort
 - Note that adherence to daily pills often deteriorates during stressful study periods
- **Sexually active with one partner; no prior contraception** – first discussion should include dual protection for pregnancy and sexually transmitted infections (STIs)
 - Condoms reduce STI transmission and provide immediate cover while awaiting LARC insertion.
 - Opportunistic chlamydia screening for < 25 y sexually active females should also be offered.
 - **Barrier methods** – recommended irrespective of primary method to mitigate STI risk; typical-use failure 13% yet still integral to counselling.

Question

- **Action:** Select TWO most appropriate recommendations
- **Qualifier:** for an 18-year-old sexually active woman with migraine-type headaches who requests an effective method requiring minimal ongoing attention
- Advise the patient on contraception options; exclude methods already ruled out by the clinical context.

Option	Rationale
A. Advise Samantha to practise abstinence	Incorrect – Because Samantha is <i>already</i> sexually active and expressly wants pregnancy prevention, recommending abstinence disregards first-line care and would be judged non-patient-centred. For already-sexual adolescents focuses on reliable contraception, not celibacy. Long-acting reversible contraception methods are the first-line choice for young people.
B. Advise Samantha to see a therapist	Incorrect – No mental-health red flags are raised in the stem; headache is physical and contraception-related. Referral would not address pregnancy prevention. Over-medicalising normal adolescent anxiety is discouraged.
C. Advise Samantha to use barrier methods	Correct – Dual protection is mandatory for adolescents. Protection against both unplanned pregnancy and STIs can be achieved by condoms combined with a second form of contraception. Condoms give immediate cover while awaiting LARC insertion and uniquely prevent STIs – highly relevant for an 18-year-old with a new contraceptive plan.

D. Prescribe drospirenone + ethynodiolone one tab a day	Incorrect – Combined pills are contraindicated if migraine with aura is present and require daily adherence; poor fit for someone who “regularly forgets”. Safer, non-user-dependent LARC options exist, so this choice conflicts with guideline recommendations.
E. Advise Samantha to undergo ligation	Incorrect – Tubal ligation is permanent and therefore contraindicated in adolescents and nulliparous women who are likely to desire future fertility. Samantha is 18 years old with no children; reversible methods are guideline-mandated first line.
F. Prescribe cyproterone + ethynodiolone one tab a day	Incorrect – This high-dose CHC carries greater VTE risk and is PBS-restricted to moderate-severe acne with hirsutism; not indicated purely for contraception. Shares the same migraine and adherence concerns as Nordette, with a higher venous thrombo-embolism risk
G. Advise Samantha to choose an intrauterine device (IUD)	Correct – Avoids failing due to forgetfulness and is safest with possible migraine with aura. Long-acting reversible contraception methods are one of the first-line choices for young people. LNG-IUD typically ↓ menstrual bleeding, an advantage for many teens; copper IUD offers hormone-free long-term cover & emergency contraception if inserted ≤ 5 days after unprotected intercourse.
H. Encourage Samantha to use calendar or rhythm method	Incorrect – Very high typical-use failure and heavy daily user input. Given Samantha's forgetfulness, advising rhythm method conflicts with best-practice, high-efficacy guidance.

Case Learning Points

- LARC first-line in adolescents** — Etonogestrel implants and hormonal or copper IUDs are the preferred highly-effective, low-maintenance methods for people <25 y initiating contraception
- Migraine ± aura steers method choice** — Any CHC is WHO MEC 3–4 if aura present; progestogen-only methods remain category 1 and avoid the stroke risk
- Adherence dictates real-world efficacy** — Typical-use failure for daily COCs ≈ 8 % vs < 0.5 % for implants/IUDs; always match regimen to the patient's capacity for routine dosing.
- Dual-protection principle** — Condoms are still advised with LARC to prevent STIs and provide immediate pregnancy cover while waiting for insertion
- Anchor counselling in shared decision-making** — Elicit preferences (e.g. “no daily attention”), discuss risks, then recommend guideline-aligned options to optimise adherence and satisfaction

References

RACGP - Sexual and Reproductive health

Murtagh, J., Rosenblatt, J., Coleman, J., & Murtagh, C. (2022). *Murtagh's General Practice* (8th ed.). McGraw-Hill Education.

[Contraception and sexually transmitted infections](#)

[Migraine management](#)

[Choosing a combined oral contraceptive pill - Australian Prescriber](#)

[Contraception options during pubertal transition: Risks, benefits and considerations](#)



KFP Case 6: Brian Weber

Brian Weber, aged 61 years, is brought to your clinic due to right wrist pain. He is a retired army man who lives alone with his dog. He recently experienced a fall after tripping over the foot of a chair, reporting that he supported himself with his right hand during the incident. He complains of a sense of bodily stiffness and difficulty maintaining balance.

He also notes recent changes in his handwriting, describing it as having become smaller and more difficult to control. He enjoys writing poems and has found these changes frustrating.

Brian has a history of hypertension and type 2 diabetes, both managed with medication. He quit smoking years ago, for which he smoked 2 packs per day, and now drinks alcohol only occasionally.

Past medical history

- Type 2 diabetes mellitus
- Hypertension

Medications

- Metformin modified-release 500 mg daily
- Perindopril erbumine 4 mg once a day
- Dapagliflozin 10 mg daily

Examination findings

- Temperature: 36.3 °C
- Heart rate: 72/min, regular
- Respiratory rate: 18/min
- Blood pressure: 127/82 mmHg
- Oxygen saturation: 99 % on room air
- Gait: Stooped posture and unsteady gait observed

What is the MOST appropriate management for this patient? Select two (2) from the following list.

- A. Refer to a neurologist for further assessment
- B. Prescribe L-dopa 100 mg with carbidopa 25 mg, half tablet twice daily
- C. Start amantadine 100 mg twice daily
- D. Prescribe propranolol 20 mg twice daily for tremor control
- E. Advise physiotherapy for postural instability
- F. Investigate serum ceruloplasmin and 24-hour urinary copper
- G. Request brain MRI to rule out normal pressure hydrocephalus
- H. Recommend writing rehabilitation to improve fine motor skills

Rationale

Brian Weber, aged 61 years, is brought to your clinic due to right wrist pain. He is a retired army man who lives alone with his dog. He recently experienced a fall after tripping over the foot of a chair, reporting that he supported himself with his right hand during the incident. He complains of a sense of bodily stiffness and difficulty maintaining balance.

He also notes recent changes in his handwriting, describing it as having become smaller and more difficult to control. He enjoys writing poems and has found these changes frustrating.

Brian has a history of **hypertension** and **type 2 diabetes**, both managed with medication. He quit smoking years ago, for which he smoked 2 packs per day, and now drinks alcohol only occasionally.

Past medical history

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- F. Investigate serum ceruloplasmin and 24-hour urinary copper
- G. Request brain MRI to rule out normal pressure hydrocephalus
- H. Recommend writing rehabilitation to improve fine motor skills

Problem Representation

61-year-old man with new parkinsonian features (rigidity, micrographia, postural instability) after a low-impact fall causing right wrist dislocation, on a background of hypertension and type 2 diabetes.

Symptoms

- **Right wrist pain after fall** – mechanical pain localising to the wrist supports an acute traumatic injury; the fall itself alerts to possible underlying gait / balance disorder.
- **Bodily stiffness** – generalised rigidity is a core motor feature of idiopathic Parkinson disease (PD), raising diagnostic suspicion.
- **Difficulty maintaining balance / recent unsteadiness** – early postural instability increases fall risk and justifies allied-health input.
- **Micrographia (smaller, cramped handwriting)** – classic fine-motor manifestation of PD, further strengthening the working diagnosis.
- **Absence of red-flag features (headache, focal neurological deficit, acute confusion)** – makes intracranial pathology or stroke less likely at this presentation.

Signs

- **Stooped posture & unsteady gait on examination** – typical axial motor signs of PD; explains the low-impact fall and indicates need for falls-prevention strategies.
- **Right-wrist X-ray – dorsal carpal dislocation** – confirms a significant ligamentous injury requiring prompt reduction and immobilisation; no fracture visualised.
- **Normal vitals & cardiorespiratory exam** – no evidence of systemic compromise that would alter immediate management priorities.

Context

- **Age 61, male** – matches peak incidence for idiopathic PD; Wilson disease and normal-pressure hydrocephalus are far less prevalent in this demographic.
- **Comorbid hypertension & type 2 diabetes** – vascular risk factors can mimic or exacerbate parkinsonian features but do not contra-indicate dopaminergic therapy; do influence physiotherapy goals (safe exercise, neuropathy screening).
- **Current medicines (metformin, perindopril, dapagliflozin)** – none are dopamine-blocking agents; propranolol (option D) risks masking hypoglycaemia and worsening postural hypotension, so is inappropriate.
- **Living alone with a dog** – social context highlights functional impact of fine-motor decline and supports early multidisciplinary referral to maintain independence.
- **Diagnostic certainty** – definitive PD diagnosis requires specialist assessment; recommend neurologist input before commencing levodopa or amantadine. Allied-health (physiotherapy) may begin immediately to reduce falls while awaiting review.

Question

- **Action:** Select TWO most appropriate initial management actions
- **Qualifier:** for a 61-year-old man with a confirmed right-wrist dorsal dislocation and clinical features suggestive of early Parkinson disease

Option	Rationale
A. Refer to a neurologist for further assessment	Correct – Diagnosis of idiopathic Parkinson disease should be confirmed by a clinician experienced in movement disorders before dopaminergic therapy is commenced. In a 61-year-old with new rigidity, micrographia and postural instability, early specialist review allows diagnostic confirmation, initiation of levodopa at the optimum time, and access to multidisciplinary PD program
B. Prescribe L-dopa 100 mg with carbidopa 25 mg, half tablet twice daily	Acceptable but less-prioritised – There is no rationale to delaying levodopa therapy if there is anything more than mild disability, especially in older patients. However, the patient's disability is currently limited to handwriting and a single fall; guidelines still place specialist confirmation and allied-health fall prevention ahead of GP-initiated pharmacotherapy. A 50 mg BD start is also below the 50 mg TDS titration commonly recommended, so neurologist-led dosing is preferred.
C. Start amantadine 100 mg twice daily	Incorrect – Amantadine reduces the severity of dyskinesia in some patients and is therefore used after levodopa, mainly for motor fluctuations rather than early rigidity or balance problems. Initiating it now offers minimal benefit and risks confusion, oedema and livedo reticularis.
D. Prescribe propranolol 20 mg twice daily for tremor control	Incorrect – Rest tremor in PD responds poorly to β-blockers, and RACGP diabetes guidance warns that signs of hypoglycaemia may be masked by beta blockers, tachycardia and tremor in particular. Given the patient's T2DM and

 PassRACGP	postural instability, propranolol is both ineffective and potentially unsafe.
E. Advise physiotherapy for postural instability	Correct – Exercise and physical therapies should be considered a core component of early treatment. Physiotherapy is of proven benefit - strategies include gait and balance training. This directly targets his stooped posture, documented fall and future fracture risk, satisfying immediate safety priorities.
F. Investigate serum ceruloplasmin and 24-hour urinary copper	Acceptable but less prioritised – Wilson disease typically presents between 4 to 40 years of age. At 61 years with classic PD features, the pre-test probability is very low, so these tests are not among the two most cost-effective first steps.
G. Request brain MRI to rule out normal-pressure hydrocephalus	Acceptable but less prioritised – NPH classically presents with the triad of cognitive impairment, urinary incontinence and gait impairment. Our patient lacks cognitive or urinary symptoms, so MRI can await neurologist review unless new features emerge.
H. Recommend writing rehabilitation to improve fine motor skills	Acceptable but less prioritised – Early OT is supported, but explicitly ranks falls-focused physiotherapy ahead of fine-motor programs: Early referral to allied health services, such as physiotherapy and occupational therapy, may facilitate maintaining these skills. Handwriting training is useful once safety and diagnostic priorities are addressed.

Case Learning Points

- **Confirm PD diagnosis before starting dopaminergic drugs** – Advise neurologist review for all new-suspected PD prior to levodopa or amantadine initiation
- **Early physiotherapy halves fall risk** – Gait- and balance-focused programs are first-line non-pharmacological therapy in early PD and should be offered immediately after a sentinel fall
- **Rest tremor ≠ β-blocker tremor** – Propranolol benefits action/essential tremor, not classic PD rest tremor, and masks hypoglycaemia in diabetes
- **Normal-pressure hydrocephalus needs the full triad** – Absent cognitive decline/urinary urgency sharply lowers pre-test probability; defer MRI unless features evolve
 - NPH = subtype of frontal gait disorder; classically presents with the triad of:
 - cognitive impairment
 - urinary incontinence
 - gait impairment
- **Perilunate dislocation = ortho urgency** – Requires closed reduction within 6h to avoid median-nerve compromise and chronic carpal instability
- **Falls often unmask prodromal PD** – Stooped posture, micrographia and imbalance should trigger neurological screen in any “mechanical” fall
- **Review cardio-metabolic medicines** – None of the patient’s current drugs are dopamine antagonists, but antihypertensives may compound postural hypotension once PD therapy begins

References

[The initial diagnosis and management of Parkinson's disease](#)

[Drugs for Parkinson's disease - Australian Prescriber](#)

[Adults with diabetes Pharmacological management of hypertension](#)

[Wilson Disease](#)

[Gait assessment in general practice](#)

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KFP Case 7: Janella Davis

Janella Davis, aged 27 years, presents with complaints of blood on her stool. She reports noticing bright red blood on toilet paper after wiping, as well as in the toilet bowl. She denies pain or discomfort during defecation.

Janella is currently 34 weeks pregnant. Her pregnancy has been progressing normally apart from some nausea and vomiting earlier in gestation. She has one other child, aged 3 years.

On external examination, soft, pink, non-tender lumps are visible around the anus. She is otherwise well.

Examination findings:

- Temperature: 36.7 °C
- Heart rate: 83/min, regular
- Respiratory rate: 16/min
- Blood pressure: 124/84 mmHg
- Oxygen saturation: 99% on room air
- Fundal height: 33 cm
- Fetal heart rate: 147/min (handheld Doppler)
- Body mass index: 23.1 kg/m²
- External perianal examination: soft, pink, non-tender lumps on the anus
- Abdominal examination: normal

What are the MOST appropriate next steps in management? Select three (3) from the following list:

- A. Encourage Janella to eat high-fibre foods
- B. Schedule Janella for rubber band ligation ASAP
- C. Advise Janella to increase her caffeine intake
- D. Prescribe topical hydrocortisone 0.5 % ointment twice daily
- E. Refer for urgent colonoscopy
- F. Encourage increased fluid intake
- G. Recommend she avoids delaying the urge to defecate and avoid straining
- H. Recommend daily use of laxatives
- I. Advise warm sitz baths 15 minutes, twice daily
- J. Suggest use of over-the-counter anaesthetic suppositories
- K. Encourage prolonged sitting to improve peristalsis

Rationale

Janella Davis, aged **27 years**, presents with **complaints of blood on her stool**. She reports noticing **bright red blood** on toilet paper after wiping, as well as in the toilet bowl. She **denies pain or discomfort during defecation**.

Janella is currently **34 weeks pregnant**. Her pregnancy has been progressing normally apart from some nausea and vomiting earlier in gestation. She has one other child, aged 3 years.

On external examination, **soft, pink, non-tender lumps** are visible around the anus. She is otherwise well.

Examination findings:

- Temperature: 36.7 °C
- Heart rate: 83/min, regular
- Respiratory rate: 16/min
- Blood pressure: 124/84 mmHg
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- Fundal height: 33 cm
- Fetal heart rate: 147/min (handheld Doppler)
- Body mass index: 23.1 kg/m²
- **External perianal examination:** soft, pink, non-tender lumps on the anus
- Abdominal examination: normal

What are the MOST appropriate next steps in management? Select three (3) from the following list:

- A. Encourage Janella to eat high-fibre foods
- B. Schedule Janella for rubber band ligation ASAP
- C. Advise Janella to increase her caffeine intake
- D. Prescribe topical hydrocortisone 0.5 % ointment twice daily
- E. Refer for urgent colonoscopy
- F. Encourage increased fluid intake
- G. Recommend she avoids delaying the urge to defecate and avoid straining
- H. Recommend daily use of laxatives
- I. Advise warm sitz baths 15 minutes, twice daily
- J. Suggest use of over-the-counter anaesthetic suppositories
- K. Encourage prolonged sitting to improve peristalsis

Problem Representation

27 yo woman at 34 wks' gestation with painless bright red rectal bleeding and soft external haemorrhoids, vitally stable → uncomplicated pregnancy-associated haemorrhoids requiring conservative management.

Symptoms

- **Bright red blood on toilet paper / in bowl** – colour and timing localise the source to the anal canal or distal rectum, most consistent with haemorrhoidal bleeding rather than an upper GI lesion.
- **Blood noticed after wiping** – post-defaecatory streaking strengthens the haemorrhoid diagnosis and makes colorectal malignancy much less likely.
- **Denies pain or discomfort during defaecation** – painless bleeding points away from anal fissure or thrombosed haemorrhoid and supports uncomplicated external or internal haemorrhoids.

Signs

- **Soft, pink, non-tender perianal lumps** – classic appearance of uncomplicated external haemorrhoids; absence of induration or tenderness indicates no thrombosis or strangulation.
- **Normal vital signs** – haemodynamically stable; no concern for significant blood loss or sepsis.
- **Fundal height 33 cm; fetal heart rate 147 bpm** – pregnancy progressing appropriately; management must be obstetrically safe.
- **Normal abdominal examination** – no mass, tenderness, or organomegaly to suggest an alternative intra-abdominal pathology.

Context

- **34-week pregnancy** – gravid uterus and progesterone-mediated bowel slowing predispose to haemorrhoids; many interventions (e.g. rubber-band ligation, elective colonoscopy) are deferred until postpartum.
- **First presentation, no red-flag gastrointestinal features** – urgent colonoscopy or surgical referral not required; conservative primary-care management is guideline-endorsed.
- **Likely external haemorrhoids** – first-line measures: optimise bowel habit (high-fibre diet, adequate fluids), avoid straining, warm sitz baths; topical corticosteroid preparations (0.5 % hydrocortisone) are considered safe in pregnancy for short-term symptomatic relief.
- **Stable, non-anaemic young adult** – no immediate haematological or obstetric complications; follow-up can occur in routine antenatal care.

Question

- Action:** Select the MOST appropriate next steps in management
- Qualifier:** For a 34-week pregnant woman with painless bright red rectal bleeding and external haemorrhoids
- Choose three interventions that should be initiated now in general practice; exclude invasive procedures or investigations not indicated during uncomplicated pregnancy.

Option	Rationale
A. Encourage Janella to eat high-fibre foods	<p>Correct – Treatment includes correction of constipation by increasing the fibre intake¹. High-fibre (25–30 g/day) softens stool, lowers intrarectal pressure and reduces bleeding. In pregnancy, fibre is safe, inexpensive and tackles the precipitating factor (constipation from progesterone)²</p> <p>The majority of first degree haemorrhoids can be managed by conservative measures alone. Treatment includes correction of constipation if present, by increasing the fibre intake, mild laxatives and the avoidance of medications containing constipating drugs such as codeine. These measures are also important for patients with more severe haemorrhoids.</p> <p>Recommended daily fibre intake for adults</p> <p>Many adults do not consume enough fibre – on average, most Australians consume 20–25g of fibre daily.</p> <p>The recommended daily fibre intake is:</p> <ul style="list-style-type: none"> men = 30g of fibre each day women = 25g of fibre each day. <p>During pregnancy, adequate dietary fiber intakes of 28 g/day are recommended in Australia [8]. In addition to increasing gut microbiome diversity, higher dietary fiber intakes during pregnancy may also reduce excessive weight gain, glucose intolerance, gestational hypertensive disorder and constipation</p>
B. Schedule Janella for rubber-band ligation ASAP	<p>Incorrect – Haemorrhoids which occur for the first time in pregnancy can be managed with simple measures, as most will go away after the baby is born.³ Banding is reserved for persistent Grade II/III internal piles after failed conservative therapy and is usually deferred until postpartum because anaesthesia/procedure risks outweigh benefits in late pregnancy.</p> <p>treatment. Those with second degree haemorrhoids, or more severe haemorrhoids, require additional measures such as sclerosant injection, rubber band ligation or haemorrhoidectomy.</p>
C. Advise Janella to increase her caffeine intake	<p>Incorrect – Limit caffeine intake during pregnancy to 200 mg⁴. Higher caffeine does nothing for haemorrhoids and may worsen reflux, palpitations and sleep; advising an increase contradicts national pregnancy guidance.</p>

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<p>D. Prescribe topical hydrocortisone 0.5 % ointment BD</p>	<p>Acceptable but less prioritised – Hydrocortisone is classified as a Category A drug in pregnancy. Topical corticosteroids safely relieve pruritus/oedema but do not address straining; guidelines place them after lifestyle measures. Use for ≤ 7 days then review.</p>
<p>E. Refer for urgent colonoscopy</p>	<p>Incorrect – Any patient over 40 years presenting with rectal bleeding should be considered for colonoscopy . At 27 years with obvious external haemorrhoids and no red flags, colonoscopy offers little benefit and carries obstetric risk.</p>
<p>F. Encourage increased fluid intake</p>	<p>Correct – It is important to increase both fibre and fluid intake, because it is ineffectual to dump a whole lot of fibre into the gut without supplementing it with fluids. Fluids (\approx 2 L/day) optimise fibre effect, preventing hard stool and straining.</p> <p>Haemorrhoids – Medical Treatment</p> <ul style="list-style-type: none"> • Constipation and abnormal bowel habits play a significant role in symptomatic haemorrhoids. • Increase fiber and fluid intake • Improve symptoms of mild-to-moderate prolapse and bleeding. • A Cochrane review including 7 RCTs (378 participants) compared fiber with a non-fiber control • Fiber had a beneficial effect in the treatment of symptomatic hemorrhoids (RR = 0.47 (95% CI, 0.32–0.68)). • The effect on bleeding showed a significant difference in favor of fiber supplementation (RR = 0.50 (95% CI, 0.28 to 0.89)) <p>STEP 3</p> <p>Encourage mobility and adequate fluid intake (at least 2 litres per day). Encourage adequate fibre intake (e.g. whole grains, rice, bran, beans, lentils, nuts, dried fruit, fresh fruit and vegetables. Introduce these foods gradually if the woman is not used to these foods as bloating and flatulence may occur otherwise.</p>
<p>G. Recommend she avoids delaying the urge to defecate and avoids straining</p>	<p>Correct – Patients need to avoid straining and limit time on the toilet. Prompt response to urge and minimising Valsalva reduce venous engorgement, a core conservative measure.</p> <ul style="list-style-type: none"> • Patients should be counseled as to maintaining proper bowel habits, such as avoidance of straining and limiting time on the toilet. • These practices have been associated with higher rates of symptomatic hemorrhoids
<p>H. Recommend daily use of laxatives</p>	<p>Acceptable but less prioritised – Use mild laxatives after fibre optimisation . Bulk-forming agents (psyllium) are safe in pregnancy but should follow assessment of diet/fluids to avoid unnecessary medication or diarrhoea.</p>
<p>I. Advise warm sitz baths 15 min twice daily</p>	<p>Acceptable but less prioritised – Warm baths as symptom relief. Helps oedema/itch but does not modify the underlying cause, so offered adjunctively once core measures (A, F, G) are in place.</p>
<p>J. Suggest over-the-counter anaesthetic suppositories</p>	<p>Acceptable but less prioritised – Local lignocaine is Category A, yet guidelines reserve it for painful haemorrhoids; this patient is painless. Routine use adds cost and possible sensitisation without benefit; consider only if discomfort arises</p>

K. Encourage prolonged sitting to improve peristalsis	Incorrect – Advise women to avoid sitting for long periods of time. Prolonged sitting increases venous pressure and worsens haemorrhoids; no evidence it aids peristalsis.
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Case Learning Points

- **Distal, painless fresh bleeding = haemorrhoids until proven otherwise** – Bright-red blood separate from stool, no pain, and visible perianal cushions point strongly to external/internal piles; still screen for change in bowel habit, weight loss, anaemia before excluding sinister causes
- **Pregnancy shifts management hierarchy** – Most haemorrhoids triggered by venous congestion and progesterone-induced constipation regress post-partum; advise conservative care first, delaying procedural options unless severe or complicated.
- **Fibre and fluids act synergistically** – Aim ≥ 25 g/day mixed soluble/insoluble fibre plus ≈ 2 L water; fibre without water hardens stool and worsens straining
- **Behavioural cues matter** – Prompt defaecation, < 2 min on the toilet, and avoidance of Valsalva lower venous pressure more effectively than most OTC products
- **Topical steroids are short-course adjuncts** – Hydrocortisone 0.5% or 1% is Category A in pregnancy; limit to ≤ 7 days to reduce mucosal atrophy and always pair with preventive measures
- **When to escalate** – Persistent grade II/III internal piles after ≥ 4 weeks optimal conservative therapy, recurrent bleeding causing anaemia, or thrombosis warrant postpartum rubber-band ligation or surgical review
- **Red-flag checklist never stops** – Age <40 y lowers colorectal cancer risk, but ongoing bleeding, altered habit, FHx CRC, or iron-deficiency mandate colonoscopic evaluation regardless of pregnancy status.

References

- [Anorectal pain, bleeding and lumps - RACGP](#)
[High-Fiber Diet during Pregnancy Characterized by More Fruit and Vegetable Consumption](#)
[Haemorrhoids in Pregnancy and Breastfeeding](#)
[Caffeine and breastfeeding](#)
[Dietary fibre | Better Health Channel](#)
[RACGP - Advances in the diagnosis and management of anorectal disorders and colorectal cancer: a comprehensive update](#)
[Bowel Care](#)
[RACGP - Advances in the diagnosis and management of anorectal disorders and colorectal cancer: a comprehensive update](#)

KFP Case 8: Michael Broad

Michael Broad, aged 49 years, presents to your clinic with intermittent rectal discomfort and bright red blood on toilet paper over the past two weeks. He describes noticing a soft perianal swelling after defecation, which resolves spontaneously within minutes. His bowel motions are regular but occasionally hard, especially on days when he skips breakfast or consumes more coffee.

On further history, he shared that he sits on the toilet for prolonged periods, mostly due to scrolling through his phone. He admits to straining when he feels incomplete evacuation. He reports a sedentary lifestyle and works long hours as an accountant. He has recently started drinking protein shakes and admitted that **his water intake has reduced**. He does not smoke and drinks alcohol only on weekends.

Examination findings:

- Temperature: 36.8 °C
- Heart rate: 82 beats per minute, regular
- Respiratory rate: 16 breaths per minute
- Blood pressure: 126/78 mmHg
- Oxygen saturation: 98 % on room air
- BMI: 25.2 kg/m²
- External inspection: Mildly prolapsed haemorrhoids, non-tender, reducible
- Digital rectal exam: No masses, normal tone
- Bright red blood on glove, no active bleeding visualised
- Abdomen: Soft, non-tender, no organomegaly:

What is the **MOST** appropriate advice for this patient to reduce recurrence and symptom burden? Select three (3) from the following list:

- A. Sit in warm water for 20 minutes after each bowel motion
- B. Increase intake of fresh fruit, vegetables, and wholegrain cereals
- C. Use laxatives daily to ensure soft stools
- D. Avoid drinking coffee
- E. Avoid sitting on the toilet for longer than 2–3 minutes
- F. Perform digital rectal self-reduction daily before bed
- G. Increase daily fluid intake with non-caffeinated fluids
- H. Use alcohol-free wet wipes instead of toilet paper
- I. Ignore the urge to defecate if not at home
- J. Begin regular fibre supplements
- K. Avoid lifting heavy weights or straining during exercise
- L. Apply topical lignocaine gel three times daily
- M. Maintain daily bowel movements through scheduled toileting
- N. Reduce spicy food intake to avoid anal irritation

Rationale

Michael Broad, aged **49 years**, presents to your clinic with **intermittent rectal discomfort and bright red blood on toilet paper over the past two weeks**. He describes noticing a **soft perianal swelling after defecation, which resolves spontaneously within minutes**. His bowel motions are regular but **occasionally hard**, especially on days when he skips breakfast or consumes more coffee.

On further history, he shared that he **sits on the toilet for prolonged periods**, mostly due to scrolling through his phone. He admits to **straining when he feels incomplete evacuation**. He reports a sedentary lifestyle and works long hours as an accountant. He has recently started drinking protein shakes and admitted that **his water intake has reduced**. He does not smoke and drinks alcohol only on weekends.

Examination findings:



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- **External inspection: Mildly prolapsed haemorrhoids, non-tender, reducible**
- Digital rectal exam: No masses, normal tone
- **Bright red blood on glove, no active bleeding visualised**
- Abdomen: Soft, non-tender, no organomegaly:

What is the MOST appropriate advice for this patient to reduce recurrence and symptom burden? Select three (3) from the following list:

- A. Sit in warm water for 20 minutes after each bowel motion
- B. Increase intake of fresh fruit, vegetables, and wholegrain cereals**
- C. Use laxatives daily to ensure soft stools
- D. Avoid drinking coffee
- E. Avoid sitting on the toilet for longer than 2–3 minutes**
- F. Perform digital rectal self-reduction daily before bed
- G. Increase daily fluid intake with non-caffeinated fluids**
- H. Use alcohol-free wet wipes instead of toilet paper
- I. Ignore the urge to defecate if not at home
- J. Begin regular fibre supplements
- K. Avoid lifting heavy weights or straining during exercise
- L. Apply topical lignocaine gel three times daily
- M. Maintain daily bowel movements through scheduled toileting
- N. Reduce spicy food intake to avoid anal irritation

Problem Representation

49-year-old man with two-week history of painless bright-red rectal bleeding and self-reducing perianal swelling, examination confirming grade II haemorrhoids; behavioural factors (prolonged toileting, straining, low fluid, hard stool) require first-line lifestyle advice to prevent recurrence.

Symptoms



- **Bright-red rectal bleeding** – localises the source to the anorectum; absence of mixed-stool bleeding or melaena lowers suspicion for proximal GI pathology
- **Intermittent perianal swelling that self-reduces** – classic for grade II internal haemorrhoids
 - I = prominent hemorrhoidal vessels, no prolapse
 - II = prolapse with Valsalva and spontaneous reduction
 - III = prolapse with Valsalva requires manual reduction
 - IV = chronically prolapsed manual reduction ineffective
- **Hard stools on low-fluid / high-protein days** – precipitate straining and venous engorgement, driving haemorrhoidal flares.
- **Prolonged toilet sitting & phone use** – static pelvic congestion markedly increases haemorrhoidal pressure.
- **Straining for “incomplete evacuation”** – repetitive Valsalva manoeuvres worsen prolapse and bleeding.
- **No weight loss, mucus or altered bowel habit** – makes colorectal neoplasm, IBD and infective colitis unlikely.



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Signs



- **Vital signs stable** – negligible acute blood loss; safe for outpatient conservative management.
- **BMI 25.2 (overweight)** – modifiable contributor to raised intra-abdominal pressure.
- **Mildly prolapsed, non-tender, reducible cushions** – confirms grade II haemorrhoids amenable to lifestyle intervention before procedural options
- **Normal digital rectal exam (no masses, normal tone)** – lowers probability of neoplasm or fissure.
- **No active bleeding on inspection** – supports conservative first-line approach.
- **Soft, non-tender abdomen; no organomegaly** – no portal hypertension or intra-abdominal cause for bleeding.

Context

- **49-year-old sedentary male accountant** – occupation and inactivity perpetuate venous stasis; advice must target behavioural change.
- **Diet: high protein shakes / takeaway, reduced water** – low soluble fibre and dehydration underpin hard stools; cornerstone of management is fibre + fluid optimisation.
- **Non-smoker, minimal alcohol** – fewer confounders; lifestyle modifications feasible.
- **No family history of colorectal cancer; never scoped** – low immediate alarm, but colonoscopy warranted if bleeding persists despite optimal conservative therapy
- **Grade II internal haemorrhoids** – strongest evidence supports conservative measures (high-fibre diet, adequate non-caffeinated fluid, prompt toileting, minimal time on toilet, avoid straining) before considering rubber-band ligation or other procedures.

Question

- **Action:** Provide four evidence-based lifestyle and behavioural measures
- **Qualifier:** to minimise recurrence and symptom burden in a 49-year-old man with grade II haemorrhoids

Option	Rationale
A. Sit in warm water for 20 minutes after each bowel motion	Acceptable but less prioritised – Self-care advice includes having warm baths a few times a day for anal-perianal conditions. This provides short-term comfort but does not alter the pathophysiology, so it is supportive rather than core haemorrhoid prevention. <ul style="list-style-type: none">• Trying not to strain when passing a stool during• Having warm baths a few times a day.• Seeing your pharmacist for creams to reduce th
B. Increase intake of fresh fruit, vegetables, and whole-grain cereals	Correct – Both prevention and treatment rely on changing your diet to include plenty of fruits, vegetables, cereals and water. A high-fibre diet softens stool, reduces straining and venous pressure – exactly what Michael lacks on protein-shake days. <ul style="list-style-type: none">• Both prevention and treatment rely on changing your diet to include plenty of fruits, vegetables, cereals and water.
C. Use laxatives daily to ensure soft stools	Incorrect – RACGP AFP article notes first-degree haemorrhoids are managed by <i>increasing the fibre intake, mild laxatives and the avoidance of constipating drugs</i> . Laxatives are reserved if fibre ± fluid fail; routine daily use before simple measures risks dependence and electrolyte disturbance.



	<p>The majority of first degree haemorrhoids can be managed by conservative measures alone. Treatment includes correction of constipation if present, by increasing the fibre intake, mild laxatives and the avoidance of medications containing constipating drugs such as codeine. These measures are also important for patients with more severe haemorrhoids.</p>
D. Avoid drinking coffee	<p>Incorrect – No Australian guideline lists caffeine restriction for haemorrhoids; focus is on fibre, fluid and toileting habits; coffee avoidance is not evidence-based for recurrence prevention.</p>
E. Avoid sitting on the toilet for longer than 2–3 minutes	<p>Correct – Avoid sitting on the toilet for long periods of time. Prolonged pelvic congestion is a recognised precipitant; this directly targets Michael's phone scrolling.</p> <ul style="list-style-type: none"> ● avoid sitting on the toilet for long periods of time
F. Perform digital rectal self-reduction daily before bed	<p>Acceptable but less prioritised – Manual reduction benefits grade III prolapse; guidelines do not recommend routine reduction for grade II cushions that self-reduce, so effect is marginal.</p> <ul style="list-style-type: none"> • first degree haemorrhoids that cause bright red bleeding separate from the motions • second degree haemorrhoids also bleed. The patient becomes aware of a lump, which disappears spontaneously after defaecation • third degree haemorrhoids differ from the above in that manual replacement of the lump becomes necessary
G. Increase daily fluid intake with non-caffeinated fluids	<p>Correct – Drink plenty of water and increase your fluid intake; fibre in the stools acts like a sponge. Better Health also pairs water with fibre. Adequate fluid optimises fibre bulking and prevents Michael's hard stools.</p>
H. Use alcohol-free wet wipes instead of toilet paper	<p>Acceptable but less prioritised – Rectal-care advice includes use of soft, moist toilet paper or baby wipes; do not rub. This reduces local irritation but does not influence venous engorgement, so lower priority. Adjunct only.</p>
I. Ignore the urge to defecate if not at home	<p>Incorrect – All Australian sources stress <i>prompt response</i> to defaecatory urge; suppression leads to harder stool and greater straining. Advising the opposite contradicts core conservative management</p>
J. Begin regular fibre supplements	<p>Acceptable but less prioritised – Supplements are adjuncts when dietary fibre intake is insufficient. Michael is otherwise well, has no dietary restrictions and can realistically adopt whole-food fibre; the supplements add cost/compliance burden without clear incremental benefit once diet and fluids are optimised.</p>
K. Avoid lifting heavy weights or straining during exercise	<p>Acceptable but less prioritised – <i>Regularly lifting heavy objects</i> is among factors that increase haemorrhoid risk. Sensible advice but not as impactful as</p>

	fibre/fluid/toileting interventions.
L. Apply topical lignocaine gel three times daily	Acceptable but less prioritised – Pharmacy creams can be used for symptom relief; provides short-term analgesia but does not prevent recurrence, hence not core advice.
M. Maintain daily bowel movements through scheduled toileting	Incorrect – Guidelines advise responding naturally to urge, not scheduled sitting; scheduled attempts may prolong toilet time, undermining recommendation E and increasing congestion.
N. Reduce spicy food intake to avoid anal irritation	Incorrect – No Australian haemorrhoid guideline cites spice avoidance for prevention or treatment. Evidence is lacking; advice would be anecdotal at best.

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Case Learning Points



- **Hard stools + straining = core haemorrhoid trigger** – stool softness is first-line prevention; every fibre/fluid measure targets this modifiable precipitant.
- **Prolonged toilet sitting engorges anal cushions** – pelvic venous congestion during >2-3 min on the pan; counselling to limit screen-time on the toilet is a high-yield behavioural fix.
- **Bright-red blood localises bleeding to distal anorectum** – In the absence of mixed-stool blood or melaena, distal causes (grade I-II haemorrhoids, fissure) outrank proximal pathology
- **Self-reducing prolapse = Grade II haemorrhoids → conservative first** – lifestyle ± fibre supplements precede rubber-band ligation for Grades I-II.
- **≥ 2 L non-caffeinated fluid daily potentiates fibre effect** – water “activates” fibre bulk; counselling fluid alongside diet prevents hard stool rebound.
- **Respond promptly to urge; never ‘hang on’** – suppression worsens constipation and straining
- **When to scope?** – colonoscopy if bleeding persists >6 weeks despite optimal conservative care or if alarm features (weight loss, family CRC) emerge

References

[Rectal bleeding - treatments, causes and related symptoms | healthdirect](#)
[Haemorrhoids | Better Health Channel](#)
[Anorectal pain, bleeding and lumps](#)
[Haemorrhoids - treatments, symptoms and complications | healthdirect](#)
[Haemorrhoids – a review](#)





KFP Case 9: Maya Brown



Maya Brown, an 11-month-old infant, is brought to your general practice by her parents. She has had profuse watery diarrhoea for the last 48 hours, with at least 8 episodes in the past 24 hours. There has been no vomiting. Her parents report that she has **been** feeding poorly and appears increasingly tired. They are concerned because she has had only one noticeably wet nappy in the past 10 hours. They also mention that her breathing appears deeper than usual.

On examination, Maya is lying still and only responds to painful stimulation. Her eyes appear **sunken**, and her lips and tongue are dry. Her capillary refill time is 3 seconds, and her peripheral pulses are thready. Deep acidotic breathing is **noted**, and her skin turgor is reduced with delayed recoil. Her anterior fontanelle is flat.

Vital signs:



- Weight: 7.74 kg (previous weight 8.7 kg one month ago)
- Temperature: 37.5°C
- Heart rate: 168 bpm
- Respiratory rate: 44 breaths per minute (deep acidotic breathing)
- Blood pressure: 85/50 mmHg
- Oxygen saturation: 99% on room air

Which clinical features are MOST reliable in supporting significant dehydration in this child? Select four (4) from the list below:

A. Capillary refill time of 3 seconds

B. Dry mucous membranes

C. Flat anterior fontanelle

D. Weight loss of 11% since last review

E. Decreased skin turgor

F. Sunken eyes

G. Heart rate of 168 bpm

H. Thready peripheral pulses

I. Normal peripheral pulses

J. Blood pressure 85/50 mmHg

K. Alert and interactive

L. Lethargic but arousable

M. Deep acidotic breathing

N. No vomiting

Rationale



Maya Brown, an **11-month-old infant**, is brought to your general practice by her parents. She has had **profuse watery diarrhoea for the last 48 hours, with at least 8 episodes in the past 24 hours**. There has been **no vomiting**. Her parents report that she has **been feeding poorly and appears increasingly tired**. They are concerned because she has had **only one noticeably wet nappy in the past 10 hours**. They also mention that her **breathing appears deeper than usual**.

On examination, **Maya is lying still and only responds to painful stimulation**. Her **eyes appear sunken**, and her **lips and tongue are dry**. Her **capillary refill time is 3 seconds**, and her **peripheral pulses are thready**. Deep acidotic breathing is noted, and her skin turgor is reduced with delayed recoil. Her anterior fontanelle is flat.

Vital signs:



- Weight: 7.74 kg (previous weight 8.7 kg one month ago)



- Temperature: 37.5°C
- Heart rate: 168 bpm
- Respiratory rate: 44 breaths per minute (deep acidotic breathing)
- Blood pressure: 85/50 mmHg
- Oxygen saturation: 99% on room air

Which clinical features are MOST reliable in supporting significant dehydration in this child? Select four (4) from the list below:

- A. Capillary refill time of 3 seconds
- B. Dry mucous membranes
- C. Flat anterior fontanelle
- D. Weight loss of 11% since last review
- E. Decreased skin turgor
- F. Sunken eyes
- G. Heart rate of 168 bpm
- H. Thready peripheral pulses
- I. Normal peripheral pulses
- J. Blood pressure 85/50 mmHg
- K. Alert and interactive
- L. Lethargic but arousable
- M. Deep acidotic breathing
- N. No vomiting

Problem Representation

11-month-old infant with 48-hour profuse watery diarrhoea, lethargy, poor intake, and signs consistent with severe dehydration (deep breathing, delayed capillary refill, sunken eyes, weight loss).

Symptoms

- Profuse watery diarrhoea for 48 hours (≥ 8 episodes/24 h) – high stool volume over two days markedly increases extracellular fluid loss.
- Poor feeding and increasing tiredness – low intake plus emerging lethargy signal escalating volume depletion.
- Only one wet nappy in the past 10 hours – oliguria is a sensitive indicator of significant ($> 5\%$) dehydration.
- Breathing “deeper than usual” – parent-observed hyperpnoea suggests metabolic (lactic) acidosis secondary to severe dehydration.

Signs

- Lies still, responds only to painful stimulation – depressed consciousness aligns with severe ($> 10\%$) dehydration / incipient shock.
- Sunken eyes – classic feature of extracellular volume contraction.
- Dry lips and tongue – mucous-membrane dryness supports fluid deficit.
- Capillary refill time 3 s – prolonged central CRT is one of the three most reliable markers of $> 5\%$ dehydration in children .
- Thready peripheral pulses – weak pulses denote reduced perfusion from intravascular volume loss.
- Deep acidotic breathing – Kussmaul-type respiration; part of the reliable triad predicting significant dehydration .
- Reduced skin turgor with delayed recoil – key predictor of $> 5\%$ dehydration per ETG guidance .
- Weight loss of 0.96 kg ($\approx 11.01\%$ since last month) – objective confirmation of severe dehydration.
- Heart rate 168 bpm & BP 85/50 mmHg – tachycardia with low-normal BP fits moderate-severe dehydration.
- Respiratory rate 44 /min – tachypnoea accompanying acidotic breathing.
- Flat anterior fontanelle – neither confirms nor excludes severity; less discriminating.

Context



- **11-month-old infant** – age group at high physiological risk for rapid fluid loss and limited compensatory reserve.
- **Acute gastroenteritis scenario** – diarrhoeal illness is the commonest cause of paediatric dehydration, framing differential and management priorities.
- **≈ 10 % recent weight loss** – places Maya in the severe dehydration category, guiding urgency of IV rehydration.
- **Minimal urine output (single wet nappy/10 h)** – prerenal oliguria indicating significant intravascular depletion.
- **Reliable ETG triad present (prolonged CRT, reduced skin turgor, deep respiration)** – firmly supports diagnosis of significant (> 5 %) dehydration, justifying high-level care.

Question



- **Action:** Select four (4) clinical features
- **Qualifier:** that are MOST reliable in supporting significant dehydration in this 11-month-old child with acute gastroenteritis.

Option	Rationale						
A. Capillary refill time of 3 seconds	<p>Correct – Prolonged central CRT (≥ 2 s) is one of the three most reliable clinical signs of ≥ 5 % dehydration in children. Maya's 3-second CRT therefore strongly predicts significant fluid loss and is prioritised by eTG.</p> <p>lost 3 to 5% of their body weight as fluid. The most reliable signs for predicting significant dehydration in children are prolonged central capillary refill time, reduced skin turgor and deep respiration.</p> <table border="1"><tr><td>central capillary refill time [NB2]</td><td>capillary refill normal</td><td>capillary refill normal</td><td>prolonged capillary refill (greater than 2 seconds)</td></tr></table>	central capillary refill time [NB2]	capillary refill normal	capillary refill normal	prolonged capillary refill (greater than 2 seconds)		
central capillary refill time [NB2]	capillary refill normal	capillary refill normal	prolonged capillary refill (greater than 2 seconds)				
B. Dry mucous membranes	<p>Incorrect – Although commonly seen in gastroenteritis, oral dryness has low sensitivity and specificity for grading dehydration; eTG does not list it among the key predictive signs, and it can be confounded by ambient conditions or crying.</p>						
C. Flat anterior fontanelle	<p>Incorrect – Fontanelle assessment is unreliable once infants approach 12 months; a flat fontanelle may even be falsely reassuring. eTG omits it from the reliable-sign list, so it should not guide high-stakes decisions here.</p>						
D. Weight loss of 11% since last review	<p>Correct – An 11 % fall ($8.7 \text{ kg} \rightarrow 7.74 \text{ kg}$) objectively confirms severe loss ($> 10\%$), outperforming any single clinical sign —the best measure of dehydration when pre-illness weight is known. Loss $> 5\%$ confirms significant dehydration and eclipses less objective signs.</p> <p>The best measure of dehydration in children is the percentage loss of body weight. T</p> <table border="1"><tr><td colspan="3">Degree of dehydration (percentage loss of body weight) [NB1]</td></tr><tr><td>mild (less than 5%)</td><td>moderate (5 to 10%)</td><td>severe (11% or more)</td></tr></table>	Degree of dehydration (percentage loss of body weight) [NB1]			mild (less than 5%)	moderate (5 to 10%)	severe (11% or more)
Degree of dehydration (percentage loss of body weight) [NB1]							
mild (less than 5%)	moderate (5 to 10%)	severe (11% or more)					
E. Decreased skin turgor	<p>Correct – <i>Abnormal skin turgor (pinched skin retracts slowly in 1–2 seconds)</i> is one of the best signs for identifying dehydration. Delayed recoil seen on exam therefore fulfils a key predictor of $\geq 5\%$ loss.</p>						

	<p>1). The best signs for identifying dehydration include:</p> <ul style="list-style-type: none"> decreased peripheral perfusion as evidenced by prolongation of capillary refill time (<i>Figure 2a–c</i>) abnormal skin turgor (pinched skin retracts slowly in 1–2 seconds), and
F. Sunken eyes	Acceptable but less prioritised – Sunken eyes correlate with extracellular loss but are less predictive than the triad; ETG ranks them under “moderate/severe” features rather than “most reliable”, so they are out-ranked in a <i>select-four</i> question.
G. Heart rate 168 bpm	Incorrect – Tachycardia appears in many conditions; may serve as supportive sign (<i>heart-rate row: normal/mild tachycardia for 5–9 %</i>); note the imprecision of individual vitals; not among the top three validated features.
H. Thready peripheral pulses	Incorrect – Weak pulses indicate <i>advanced</i> intravascular depletion but lack sensitivity and may be absent in compensated shock. Not listed among ETG’s key discriminators.
I. Normal peripheral pulses	Incorrect – A normal finding does not support dehydration.
J. Blood pressure 85/50 mmHg	Incorrect – Hypotension is a late, low-sensitivity sign in infants; by the time BP falls, shock is imminent. ETG guides clinicians to earlier signs (triad + weight change) to avoid waiting for BP drop.
K. Alert and interactive	Incorrect – Normal mental status argues against significant dehydration; not supportive.
L. Lethargic but arousable	Incorrect – Altered consciousness flags severe depletion but, like hypotension, is not part of the validated triad and lacks discriminatory power compared with weight loss.
M. Deep acidotic breathing	<p>Correct – Abnormal respiratory pattern (deep acidotic breathing) is the third element of the proven triad. Kussmaul-type respirations reflect metabolic acidosis from tissue hypoperfusion and reliably predict $\geq 5\%$ loss.</p> <p>lost 3 to 5% of their body weight as fluid. The most reliable signs for predicting significant dehydration in children are prolonged central capillary refill time, reduced skin turgor and deep respiration.</p>
N. No vomiting	Incorrect – Absence of vomiting provides no positive evidence for dehydration severity.

Case Learning Points

- Reliable dehydration triad** – ETG recognises prolonged central capillary refill ≥ 2 s, reduced skin turgor and deep acidotic breathing as the *three* signs validated to discriminate $\geq 5\%$ dehydration in children. Integrate these early to avoid under-triage
- Weight change is the gold-standard metric** – A pre-illness weight allows objective grading. Always ask for the last clinic weight or personal health-record entry. Not always practical to calculate this
 - Mild (less than 5%)
 - Moderate (5 to 10%)
 - Severe (11% or more)
- Clinical signs are not present until the child has lost at least 4% of their bodyweight**

References

[Gastrointestinal - Therapeutic Guidelines](#)
[Acute gastroenteritis in children](#)



KFP Case 10: Thomas Paige



Thomas Paige, a 13-month-old boy, is brought to your GP clinic by his parents due to ongoing watery diarrhoea for the past 2.5 days. He is usually well but has had 6–8 episodes of loose stools per day and minimal fluid intake. His parents report that he has vomited twice in the last 24 hours and has become more irritable than usual. He has passed only one wet nappy in the last 12 hours.

On examination:

- Thomas is irritable and restless.
- His eyes appear mildly sunken.
- His mucous membranes are dry.
- His capillary refill time is 2 seconds.
- Skin turgor is slightly reduced (sluggish recoil).
- Weight today is 9.2 kg (previously 10 kg, one month ago).

Vital signs:

- Heart rate: 144 bpm
- Respiratory rate: 36 breaths/min
- Blood pressure: 92/60 mmHg

Based on your clinical assessment, what is the MOST appropriate management plan for this child? Select three (3) from the list below.

- A. Commence IV rehydration with sodium chloride 0.9% + glucose 5%
- B. Give oral rehydration solution in small frequent volumes (e.g., 0.5 mL/kg every 5 minutes)
- C. Recommend full-strength apple juice
- D. Consider referral to paediatric critical care unit for fluid management
- E. Delay feeding until diarrhoea has resolved
- F. Continue breastfeeding as tolerated
- G. Use nasogastric tube to deliver oral rehydration solution
- H. Give 20 mL/kg sodium chloride 0.9% bolus IV urgently
- I. Resume age-appropriate diet once rehydrated
- J. Prescribe loperamide to reduce stool frequency
- K. Administer intravenous rehydration over 24 hours using maintenance formula only
- L. Monitor electrolytes and glucose daily during IV rehydration
- M. Encourage ongoing oral fluids like diluted sports drinks and cordial
- N. Arrange hospital admission for observation and fluid monitoring

Rationale

Thomas Paige, a **13-month-old boy**, is brought to your GP clinic by his parents due to **ongoing watery diarrhoea for the past 2.5 days**. He is usually well but has had **6–8 episodes of loose stools per day and minimal fluid intake**. His parents report that he has **vomited twice in the last 24 hours** and has become **more irritable than usual**. He has **passed only one wet nappy in the last 12 hours**.

On examination:

- Thomas is irritable and restless.
- His eyes appear mildly sunken.
- His mucous membranes are dry.
- His capillary refill time is 2 seconds.
- Skin turgor is slightly reduced (sluggish recoil).



- Weight today is 9.2 kg (previously 10 kg, one month ago).



Vital signs:

- Heart rate: 144 bpm
- Respiratory rate: 36 breaths/min
- Blood pressure: 92/60 mmHg

Based on your clinical assessment, what is the MOST appropriate management plan for this child? Select three (3) from the list below.

Answer Options:

- A. Commence IV rehydration with sodium chloride 0.9% + glucose 5%
- B. Give oral rehydration solution in small frequent volumes (e.g., 0.5 mL/kg every 5 minutes)
- C. Recommend full-strength apple juice
- D. Consider referral to paediatric critical care unit for fluid management
- E. Delay feeding until diarrhoea has resolved
- F. Continue breastfeeding as tolerated
- G. Use nasogastric tube to deliver oral rehydration solution
- H. Give 20 mL/kg sodium chloride 0.9% bolus IV urgently
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- K. Administer intravenous rehydration over 24 hours using maintenance formula only
- L. Monitor electrolytes and glucose daily during IV rehydration
- M. Encourage ongoing oral fluids like diluted sports drinks and cordial
- N. Arrange hospital admission for observation and fluid monitoring

Problem Representation

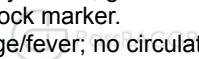
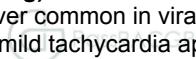
13-month-old boy with acute gastroenteritis and moderate dehydration (11% weight loss, reduced intake, oliguria, tachycardia, dry mucosa, sunken eyes) requiring fluid resuscitation and close monitoring.

Symptoms

- **Ongoing watery diarrhoea for 2.5 days** – prolonged high-volume losses place the child at clear risk of $\geq 5\%$ dehydration
- **6 – 8 loose stools per day** – frequency consistent with *moderate* fluid deficit; not mild.
- **Minimal fluid intake** – ongoing negative balance; limits self-correction by oral fluids alone.
- **Vomited twice in 24 h** – intermittent emesis still compatible with oral/NG rehydration; persistent vomiting would push toward IV route.
- **Only one wet nappy in 12 h** – oliguria (> 8 h) reliably correlates with $\geq 5\%$ dehydration.

Signs

- **Eyes mildly sunken** – supports fluid loss; “very sunken” would indicate severe.
- **Dry mucous membranes** – classic sign once losses exceed 5 % body weight.
- **Capillary refill 2 s** – borderline normal; preserved perfusion confirms haemodynamic stability.
- **Skin turgor sluggish recoil** – delayed < 2 s = moderate deficit; frank tenting suggests severe.
- **Weight 9.2 kg (was 10 kg)** – $\approx 8\%$ loss \rightarrow moderate dehydration; guides fluid calculation.
- **37.8 °C** – low-grade fever common in viral AGE; not a shock marker.
- **Heart rate 144 bpm** – mild tachycardia appropriate for age/fever; no circulatory collapse.
- **Respiratory rate 36 breaths/min** – normal range; absence of Kussmaul breathing argues against severe acidosis.
- **Blood pressure 92/60 mmHg & warm extremities** – stable circulation; bolus fluids not indicated.



- **Oxygen saturation 98 % RA** – no hypoxia; supports outpatient-level management if oral route tolerated.



Context

- **13-month-old boy** – infants < 2 y dehydrate rapidly; close monitoring needed.
- **Previously well, no comorbidities or medications** – no complicating factors altering fluid choice.
- **Haemodynamically stable** – allows oral or nasogastric (NG) rehydration per ETG/RCH algorithms.
- **~ 8 % weight loss** – places child firmly in the *moderate* dehydration category; oral/NG rehydration first line, IV reserved for failure.
- **Primary-care setting with parents present** – requires clear safety-net advice and follow-up plan; hospital transfer if oral/NG not tolerated or deterioration occurs.

Question



- **Action:** Select the **THREE** most appropriate management actions.
- **Qualifier:** for a haemodynamically stable 13-month-old with *moderate dehydration* secondary to acute gastroenteritis, managed in general practice.
- Consider current Australian paediatric rehydration guidelines; avoid duplicate or contraindicated options.

Option	Verdict & Guideline-anchored rationale
A. Commence IV rehydration with sodium chloride 0.9 % + glucose 5 %	Incorrect – Intravenous rehydration is usually required for children with severe dehydration, and may be required if the degree of dehydration does not improve with oral or nasogastric rehydration. Thomas meets only moderate criteria, is haemodynamically stable and has not yet failed enteral therapy, so IV fluids are not first-line.
B. Give oral rehydration solution in small frequent volumes (e.g. 0.5 mL/kg every 5 min)	Correct - Give frequent small volumes (eg 0.5 mL/kg every 5 minutes) of oral rehydration solution. This precisely matches the recommended regimen for mild–moderate dehydration and is feasible because the child is alert with only intermittent vomiting. Oral rehydration solutions should be made up exactly according to instructions, because incorrect preparation can worsen dehydration. Solutions should be refrigerated and replaced every 24 hours. Give frequent small volumes (eg 0.5 mL/kg every 5 minutes) of oral rehydration solution by spoon or syringe. Chilling the solution or making ice blocks may improve palatability. Intermittent vomiting does not preclude the use of oral rehydration.
C. Recommend full-strength apple juice	Incorrect -- Soft drinks, sports and energy drinks, cordials and fruit juice are not optimal and may cause further deterioration or dehydration if not properly diluted; diluted (50:50) apple juice is limited to mild dehydration only. Full-strength juice is hyperosmolar and contra-indicated here.



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balanced quantities of sodium and glucose are used, such as proprietary oral rehydration solutions. Soft drinks, sports and energy drinks, cordials and fruit juice are not optimal for use as rehydration fluids in children and may cause further deterioration or dehydration if not properly diluted. However, in children with mild dehydration who cannot tolerate or are refusing an oral rehydration solution, or if an oral rehydration solution is unavailable, it is reasonable to try rehydration using apple juice diluted with water (half strength) or a homemade rehydration solution (see the International Federation of Red Cross and Red Crescent Societies website for instructions).

D. Consider referral to paediatric critical care unit for fluid management	Incorrect. Urgently seek advice from a senior clinician if haemodynamic instability persists . The child is perfused (CRT 2 s, warm extremities, normal BP); community or short-stay ORS/NG management with review is guideline-consistent. RACGP
E. Delay feeding until diarrhoea has resolved	Incorrect. Once rehydrated, the child should return to an age-appropriate unrestricted diet as soon as possible. Withholding food prolongs illness and is specifically discouraged.
F. Continue breastfeeding as tolerated	Correct. <i>Breastfeeding of infants should continue even during oral rehydration.</i> ETG . Maintains calories, reduces stool output and is entirely compatible with ORS. Once rehydrated, the child should return to an age-appropriate unrestricted diet as soon as possible (see Diet and feeding during gastroenteritis). Breastfeeding of infants should continue even during oral rehydration.
G. Use nasogastric tube to deliver oral rehydration solution	Acceptable but less prioritised – Nasogastric administration of ORS may be required if the child refuses to drink or has frequent vomiting and is associated with a decreased risk of electrolyte derangement and more rapid recovery than IV rehydration. Provides an evidence-backed escalation path if oral attempts fail. Nasogastric administration of oral rehydration solution may be required if the child refuses to drink or has frequent vomiting. It is associated with a decreased risk of electrolyte derangement and more rapid recovery from gastroenteritis than intravenous rehydration. Nasogastric rehydration is generally well tolerated in preschool-aged children; it can be considered for
H. Give 20 mL/kg sodium chloride 0.9 % bolus IV urgently	Incorrect – For a child with haemodynamic instability, give 10–20 mL/kg NaCl 0.9 % rapidly. Thomas is stable; an IV bolus risks fluid overload and unnecessary cannulation. For a child with haemodynamic instability, give 10 to 20 mL/kg sodium chloride 0.9% by rapid intravenous infusion; reassess and repeat if haemodynamic instability persists. Urgently seek advice from a senior clinician about ongoing management and need for transfer to a paediatric critical care service.
I. Resume age-appropriate diet once rehydrated	Correct – Same ETG directive as in option E (<i>return to unrestricted diet as soon as possible</i>) . Early feeding shortens illness and restores enterocyte function. Once rehydrated, the child should return to an age-appropriate unrestricted diet as soon as possible (see Diet and feeding during gastroenteritis). Breastfeeding of infants should continue even during oral rehydration.
J. Prescribe loperamide to reduce stool frequency	Incorrect – Loperamide is contra-indicated in children < 12 y due to risk of ileus and CNS toxicity
K. Administer intravenous rehydration over 24 h using maintenance formula only	Incorrect – Moderate dehydration requires deficit + maintenance over 48 h ; giving maintenance alone under-treats and the time-frame is wrong. .
L. Monitor electrolytes and glucose daily during IV rehydration	Acceptable but less prioritised – Check serum electrolytes and glucose concentration at baseline and at least every 24 hours in children receiving IV rehydration. Appropriate only if IV therapy is commenced; not needed while pursuing enteral routes.

	<p>Monitoring for dehydration is usually required for children with severe dehydration, and may be required if the degree of dehydration does not improve with oral or nasogastric rehydration. Check serum electrolytes (especially sodium, potassium and bicarbonate) and glucose concentration at baseline and at least every 24 hours in children receiving intravenous rehydration.</p>
M. Encourage ongoing oral fluids like diluted sports drinks and cordial	Incorrect – These fluids are not optimal and may cause further deterioration or dehydration. They have unbalanced osmolality and are unsuitable for rehydration in moderate dehydration.
N. Arrange hospital admission for observation and fluid monitoring	Acceptable but less prioritised – Many Australian centres admit children with moderate dehydration if oral intake is uncertain; however, guidelines permit outpatient ORS with close review when vitals are stable and caregivers reliable, making other correct options higher yield.

Case Learning Points

- Assessing clinical features of dehydration in children

Clinical feature	Degree of dehydration (percentage loss of body weight) [NB1]		
	mild (less than 5%)	moderate (5 to 10%)	severe (11% or more)
conscious state	alert and responsive	altered responsiveness (eg lethargic, irritable)	decreased level of consciousness
skin colour	skin colour unchanged	skin colour unchanged	pale or mottled skin
extremities	warm extremities	warm extremities	cold extremities
eyes	eyes not sunken	sunken eyes	sunken eyes
mucous membranes	moist mucous membranes	dry mucous membranes	dry mucous membranes
heart rate	heart rate normal	heart rate normal	increased heart rate
breathing [NB2]	respiratory rate normal	increased respiratory rate	increased respiratory rate
peripheral pulses	peripheral pulses normal	peripheral pulses normal	weak peripheral pulses
central capillary refill time [NB2]	capillary refill normal	capillary refill normal	prolonged capillary refill (greater than 2 seconds)
skin turgor [NB2]	skin turgor normal (ie instant recoil)	decreased skin turgor	decreased skin turgor
blood pressure	blood pressure normal	blood pressure normal	decreased blood pressure

- Breastfeeding continues throughout rehydration** – Maintains calories, immune factors and gut integrity; does not worsen stool losses.
- Return to unrestricted age-appropriate diet once rehydrated** – Early feeding restores enterocyte function and reduces illness duration; no evidence for “gut rest.”
- IV fluids reserved for severe or failed enteral therapy** – Initiate only after unsuccessful oral/NG trial or if severe dehydration/shock; use NaCl 0.9 % + glucose 5 %.
- Hyperosmolar drinks (soft drinks, sports drinks, full-strength juice) are contraindicated** – Worsen diarrhoea; if ORS refused in *mild* dehydration, half-strength apple juice is acceptable.

References



[Gastrointestinal - Therapeutic Guidelines](#)



KFP Case 11: Charles Brinkley

Charles Brinkley, a 57-year-old man, presents to your clinic complaining of persistent generalised itch over the past 3 weeks. There is no visible rash. He describes the itch as worse at night and interfering with his sleep.

On your initial skin examination, you find no rash or lesions. His skin is normal in colour, texture, and moisture.

He is an accountant, lives alone, and does not smoke or drink alcohol.

What are the MOST appropriate next steps would you do for this patient? Select four (4) from the list below:

- A. Start Charles on an oral antihistamine
- B. Treat for scabies empirically
- C. Improve skin condition using emollients and soap substitute
- D. Refer Charles to a dermatologist
- E. Prescribe oral doxepin 10 mg at night
- F. Perform full blood count and liver, kidney and thyroid function tests
- G. Take a full drug history
- H. Assess for psychological factors
- I. Trial betamethasone valerate 0.02% cream for 2 weeks
- J. Recommend oral antihistamine only at night
- K. Refer for patch testing to exclude contact allergy
- L. Identify possible irritants such as detergents or soaps
- M. Recommend use of mentholated emollient stored in the fridge
- N. Perform skin scraping to test for dermatophyte infection

Rationale

Charles Brinkley, a **57-year-old man**, presents to your clinic complaining of **persistent generalised itch over the past 3 weeks**. There is **no visible rash**. He describes the itch as **worse at night** and interfering with his sleep.

On your initial skin examination, you find **no rash or lesions**. His **skin is normal** in colour, texture, and moisture.

He is an accountant, lives alone, and does not smoke or drink alcohol.

What are the MOST appropriate next steps would you do for this patient? Select four (4) from the list below:

- A. Start Charles on an oral antihistamine
- B. Treat for scabies empirically
- C. Improve skin condition using emollients and soap substitute
- D. Refer Charles to a dermatologist
- E. Prescribe oral doxepin 10 mg at night
- F. Perform full blood count and liver, kidney and thyroid function tests
- G. Take a full drug history
- H. Assess for psychological factors
- I. Trial betamethasone valerate 0.02% cream for 2 weeks
- J. Recommend oral antihistamine only at night
- K. Refer for patch testing to exclude contact allergy
- L. Identify possible irritants such as detergents or soaps**
- M. Recommend use of mentholated emollient stored in the fridge
- N. Perform skin scraping to test for dermatophyte infection

Problem Representation



57yo man with 3-week history of nocturnally worse generalised pruritus, no rash, and normal skin exam — likely systemic or psychogenic aetiology requires broad-based workup.

Symptoms

- **Persistent generalised itch for 3 weeks** – Chronic pruritus (>2 weeks) without an obvious dermatosis shifts the differential away from acute inflammatory rashes toward xerosis, systemic disease (eg renal, cholestatic, haematological), neuropathic or psychogenic causes.
- **Worse at night and interfering with sleep** – Nocturnal accentuation is typical of scabies, uraemic or cholestatic itch, and highlights the need for symptomatic relief alongside aetiological work-up.
- **No visible rash** (patient report and clinician observation) – The lack of primary skin lesions places the presentation squarely in the “itch without rash” pathway, prompting a structured search for systemic, neuropathic, drug-induced or xerotic triggers rather than empiric topical steroid therapy.

Signs

- **No rash or lesions on examination** – Supports a non-inflammatory aetiology; reduces likelihood of eczema, psoriasis or lichen planus, and makes an infestation such as scabies less likely (though not ruled out without burrow inspection).
- **Skin normal in colour, texture and moisture** – Absence of xerosis, jaundice or pallor argues against simple dry skin or overt cholestasis/anaemia but does not exclude early systemic disease; normal turgor also makes dehydration-related pruritus unlikely.

Context



- **57-year-old male** – Middle age increases baseline risk of systemic drivers of pruritus (eg chronic kidney disease, cholestasis, haematological malignancy).
- **Lives alone; accountant** – Psychosocial stressors and limited collateral history warrant formal screening for anxiety/depression and review of workplace or household exposures (detergents, solvents).
- **Does not smoke or drink alcohol** – Modestly lowers—but does not eliminate—hepatic or alcohol-related neuropathic causes.
- **No regular medications stated** – Drug-induced itch cannot be excluded; a comprehensive drug history (prescribed, OTC, supplements) is essential before ordering investigations or prescribing new pharmacotherapy.

Question



- **Action:** Identify the MOST appropriate next steps in management
- **Qualifier:** for a 57-year-old man with generalised itch and a completely normal skin examination (itch without rash)

Option	Rationale
A. Start Charles on an oral antihistamine	Incorrect – Antihistamines are recommended only after skin optimisation ± topical steroid when the cause remains unknown. They alleviate symptoms but provide no diagnostic information.
B. Treat for scabies empirically	Incorrect – Treat scabies when classic pointers are present; here none are seen. Empiric treatment adds no diagnostic value and may mask the real aetiology.

C. Improve skin condition using emollients and soap substitute	Acceptable but less prioritised – First-line if cause is dry skin or is not known. Helpful for symptom control, yet offers limited insight into the underlying cause compared with history, labs and irritant review.
D. Refer Charles to a dermatologist	Acceptable but less prioritised – Referral after simple work-up (history, labs, stepwise therapy) has failed. Early referral can determine cause, but primary-care diagnostics should precede it.
E. Prescribe oral doxepin 10 mg at night	Incorrect – Doxepin as a symptomatic agent once antihistamines fail, warning against premature use. It does not elucidate cause.
F. Perform full blood count and liver, kidney and thyroid function tests	<p>Correct – <i>It is reasonable to order a full blood count, renal, liver, fasting glucose and thyroid function studies in the first instance</i> for generalised pruritus. These tests screen for common systemic causes (cholestasis, CKD, anaemia, thyroid disease).</p> <pre> graph TD A[Skin is normal] --> B[Take drug history
(including over-the-counter, complementary and alternative, and topical therapy)] B --> C[Identify irritants] C --> D[Perform full blood count and
kidney, liver and thyroid function tests;
also consider performing
investigations to identify or
exclude any suspected causes or
alternate diagnoses.] D --> E[Assess for psychological cause
(eg depression, anxiety)] </pre>
G. Take a full drug history	Correct – Itch can be an adverse effect of almost any drug ; if no other cause is identified, stop/change the drug to exclude it as the cause. A meticulous prescribed/OTC/supplement review is an essential diagnostic step.
H. Assess for psychological factors	Correct – Stress, anxiety, depression are under psychological and psychiatric conditions that cause itch without rash. Screening (eg K10) identifies psychogenic pruritus or contributors.
I. Trial betamethasone valerate 0.02 % cream for 2 weeks	Acceptable but less prioritised – Allowed <i>after</i> emollients when cause unknown, yet primarily therapeutic, not investigative.

J. Recommend oral antihistamine only at night	Acceptable but less prioritised – Same reasoning as Option A; symptomatic and positioned later in the algorithm.
K. Refer for patch testing to exclude contact allergy	Incorrect – Contact allergy usually presents with an eczematous rash; ETG does not advise routine patch testing for “itch without rash” unless history strongly suggests it.
L. Identify possible irritants such as detergents or soaps	Correct – Soaps, detergents and chlorine are explicitly listed among adverse effects of drugs and topical irritants causing itch without rash. Systematic elimination trials are cornerstone diagnostic steps.
M. Recommend use of mentholated emollient stored in the fridge	Acceptable but less prioritised – Cooling measures (mentholated emollient, fridge storage) are endorsed as adjuncts to emollient therapy to relieve symptoms. Helpful, but secondary to establishing emollient/soap-substitute use and addressing causes.
N. Perform skin scraping to test for dermatophyte infection	Incorrect – Dermatophyte itch is typically accompanied by an annular scaly rash; absent here. ETG does not recommend scrapings when skin is completely normal.

Case Learning Points

- **Stepwise approach before treatment** – Clarify cause first via history, irritant review and baseline bloods **before** reaching for empirical therapies; skipping this risks masking red-flag aetiologies.
- **Comprehensive drug history is diagnostic gold** – Any prescribed, OTC or herbal agent can provoke pruritus; cessation / substitution is an early investigative step.
- **Baseline blood screen identifies >50 % of systemic causes** – FBC, U&E, LFT, fasting glucose and TFTs are the RACGP-endorsed “first instance” tests that uncover cholestasis, CKD, iron-deficiency or thyroid disease.
- **Irritant elimination is low-cost, high-yield** – Detergents, soaps and chlorine commonly drive itch without visible rash; guideline-backed practice is to replace soaps with pH-neutral substitutes and review response.
- **Psychogenic contributions are common but under-recognised** – Anxiety / depression in up to one-third of idiopathic pruritus cases; targeted mental-health screening (e.g. K-10) is therefore part of the primary work-up.
- **Barrier repair first, corticosteroid later** – Even when skin appears normal, ETG advises emollient + soap substitute if dry skin or cause unknown, reserving topical steroid for non-responders.
- **Antihistamines are for persistent itch, not for finding the cause** – They sit after skin optimisation in the algorithm and offer symptomatic relief only; they add no diagnostic value.

References:



[Itch without rash](#)



KFP Case 12: Ryan McLean



Ryan McLean, a 35-year-old secondary school teacher, presents for review of a persistent itchy rash on his groin and inner thighs. He was previously diagnosed by another GP with tinea cruris and prescribed terbinafine 1% cream, applied twice daily for two weeks. Despite adhering to this regimen, he reports no improvement, and the itch is still bothersome, particularly after exercise. There is no discharge, pain, or systemic symptoms.

On examination:

A large, well-demarcated annular erythematous plaque with raised scaly border and central clearing is visible on both inner thighs extending into the inguinal folds (see image). The skin is dry and mildly excoriated from scratching.



You remain confident the diagnosis is tinea cruris, and there is no evidence of secondary bacterial infection.

What are the MOST appropriate pharmacological management options for this patient? Select four (4) from the list below.

- A. Terbinafine 1% cream twice daily for 4 more weeks
- B. Fluconazole 150 mg orally once weekly for 6 weeks
- C. Ketoconazole 2% cream twice daily for 2 weeks
- D. Itraconazole 100 mg orally once daily for 2 weeks
- E. Clotrimazole 1% cream three times daily for 4 weeks
- F. Terbinafine 250 mg orally once daily for 2 weeks
- G. Bifonazole 1% cream once daily for 4 weeks
- H. Cephalexin 500 mg orally three times daily for 5 days
- I. Hydrocortisone 1% cream twice daily for 7 days
- J. Miconazole 2% cream twice daily for 4 weeks
- K. Griseofulvin 500 mg orally once daily for 8–12 weeks
- L. Ketoconazole shampoo 2% applied daily for 7 days



Rationale



Ryan McLean, a **35-year-old secondary school teacher**, presents for review of a **persistent itchy rash on his groin and inner thighs**. He was previously diagnosed by another GP with **tinea cruris** and prescribed **terbinafine 1% cream, applied twice daily for two weeks**. Despite adhering to this regimen, he reports **no improvement**, and the itch is still



bothersome, particularly after exercise. There is no discharge, pain, or systemic symptoms.



On examination:

A large, well-demarcated annular erythematous plaque with raised scaly border and central clearing is visible on both inner thighs extending into the inguinal folds (see image). The skin is dry and mildly excoriated from scratching.



You remain confident the diagnosis is **tinea cruris**, and there is no evidence of secondary bacterial infection.

What are the MOST appropriate pharmacological management options for this patient? Select four (4) from the list below.

- A. Terbinafine 1% cream twice daily for 4 more weeks
- B. Fluconazole 150 mg orally once weekly for 6 weeks
- C. Ketoconazole 2% cream twice daily for 2 weeks
- D. Itraconazole 100 mg orally once daily for 2 weeks
- E. Clotrimazole 1% cream three times daily for 4 weeks
- F. Terbinafine 250 mg orally once daily for 2 weeks
- G. Bifonazole 1% cream once daily for 4 weeks
- H. Cephalexin 500 mg orally three times daily for 5 days
- I. Hydrocortisone 1% cream twice daily for 7 days
- J. Miconazole 2% cream twice daily for 4 weeks
- K. Griseofulvin 500 mg orally once daily for 8–12 weeks
- L. Ketoconazole shampoo 2% applied daily for 7 days

Problem Representation

35yo man with confirmed tinea cruris, unresponsive to initial topical terbinafine — still symptomatic without signs of secondary infection, requires escalation or alternative antifungal therapy.



Symptoms



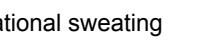
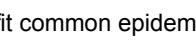
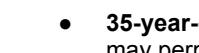
- **Persistent pruritus in groin/inner thighs** – classic site for tinea cruris; ongoing itch after 2-week topical course signals inadequate response and need to escalate
- **No improvement with terbinafine 1 % cream bid × 14 days** – adequate first-line regimen already tried; true treatment failure rather than non-adherence.
- **No pain, discharge or systemic features** – lowers suspicion for bacterial super-infection or cellulitis; supports continuing antifungal rather than adding antibiotics.
- **Pruritus worse after exercise** – perspiration and occlusion promote dermatophyte persistence, reinforcing fungal aetiology.

Signs



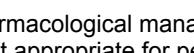
- **Large, well-demarcated annular erythematous plaque with raised scaly edge + central clearing** – textbook morphology for dermatophyte infection; differentiates from candidiasis or eczema.
- **Dry, mildly excoriated skin** – scratching artefact; no weeping or maceration, so secondary infection unlikely.
- **No satellite lesions/pustules** – helps exclude *Candida* intertrigo.
- **No regional lymphadenopathy** – further evidence against bacterial spread.
- **Normal toenails and feet** – no concurrent tinea pedis/onychomycosis; oral therapy can focus on groin involvement alone.

Context



- **35-year-old male, physically active teacher** – age/sex fit common epidemiology; occupational sweating may perpetuate infection.
- **Immunocompetent, no regular medicines** – systemic azoles or terbinafine can be used without major interaction or hepatic risk factors.
- **Completed adequate topical course** – meets ETG criteria for switching to oral therapy when topical treatment fails or disease is established.
- **Diagnosis reaffirmed as tinea cruris, no bacterial infection** – narrows management to antifungals only; antibacterial or combination steroid-antifungal creams are inappropriate.

Question



- **Action:** Select the pharmacological management options
- **Qualifier:** that are most appropriate for persistent *tinea cruris* unresponsive to adequate topical therapy in an otherwise healthy adult
- **Clarification:** Base selections on current Australian guidelines; include oral agents indicated for established disease and avoid duplicating the failed regimen

Option	Rationale
A. Terbinafine 1 % cream twice daily for 4 more weeks	Incorrect. The patient has already completed an adequate first-line course (bd × 14 days) with no improvement. ETG states that lack of response to appropriate topical therapy is an indication to switch to oral treatment rather than extend or repeat topicals. Continuing the same agent delays cure and increases cost without added benefit.
B. Fluconazole 150 mg orally once weekly for 6 weeks	Correct. Fluconazole 150 mg/week for 4 weeks is as an accepted schedule for <i>tinea cruris</i> . It is the second line as per ETG. A 6-week course therefore sits within evidence-based limits and is an appropriate option after topical failure in an immunocompetent adult.

	<p>2 fluconazole 150 mg (adult) orally, once weekly for 6 weeks</p>
C. Ketoconazole 2 % cream twice daily for 2 weeks	Incorrect. Switching to another topical disregards the same escalation rule above (“failed topical treatment” → oral therapy). In addition, imidazoles require ≥ 4 weeks for cure; a 2-week course is sub-therapeutic.
D. Itraconazole 100 mg orally once daily for 2 weeks	Correct. Itraconazole 100 mg/day × 15 days as an alternative oral regimen for tinea cruris. This meets the guideline’s dose & duration, is fungistatic against dermatophytes, and suits a healthy 35-year-old without drug interactions.
	<p>Terbinafine 250 mg/day/2-4 weeks, Itraconazole 100 mg/day/15 days, Fluconazole 150 mg/week for 4 weeks</p> <p>https://australianprescriber.tg.org.au/articles/systemic-antifungal-agents-for-cutaneous-fungal-infections.html</p>
E. Clotrimazole 1 % cream three times daily for 4 weeks	Incorrect. Re-instituting a different topical after terbinafine failure conflicts with the escalation principle (see option A) and burdens adherence
F. Terbinafine 250 mg orally once daily for 2 weeks	Correct. Recommended first-line oral therapy is terbinafine 250 mg once daily for two weeks. Fungicidal, short course, and no interaction issues in this patient, so it is the highest-priority choice.
	<p>1 terbinafine 250 mg (child less than 20 kg: 62.5 mg; child 20 to 40 kg: 125 mg) orally, once daily for 2 weeks</p>   
G. Bifonazole 1 % cream once daily for 4 weeks	Incorrect. Another topical agent offers no advantage once prior topical therapy has failed (see option A).
H. Cephalexin 500 mg orally three times daily for 5 days	Incorrect. Antibiotics are reserved for secondary bacterial complications; guideline notes bacterial infection is merely a complication (“maceration and secondary infection with bacteria”). Examination shows none, so cephalexin is unjustified.
I. Hydrocortisone 1 % cream twice daily for 7 days	Incorrect. Mild topical steroid can be used short-term but is not appropriate as a monotherapy or long-term. Steroid-only treatment risks tinea incognito and masks infection.
J. Miconazole 2 % cream twice daily for 4 weeks	Incorrect. As for other topical swaps, repeats topical therapy despite documented failure; escalation to oral agents is recommended.
K. Griseofulvin 500 mg orally once daily for 8–12 weeks	Correct. ETG lists it as 4th line; AJGP deems it third-line and less effective than terbinafine and azoles.. Longer course, fungistatic profile, and lower cure rates make it a backup when allylamines/azoles are unsuitable.

	<p>4 griseofulvin 500 mg (child older than 1 month: 10 mg/kg up to 500 mg) orally, once daily for 8 to 12 weeks [Note 2].</p> <p>PBS   </p>
L. Ketoconazole shampoo 2 % applied daily for 7 days	<p>Incorrect. Topical antifungal shampoos for tinea capitis are ineffective in treating the infection. Shampoos have no therapeutic role in tinea cruris, so this option is inappropriate.</p>

Case Learning Points

- **Confirm Persistent Dermatophyte Failure** – Lack of response after an **adequate allylamine course** (terbinafine 1 % bd × 14 days) fulfils ETG criteria for escalation to systemic treatment
- **Oral Terbinafine Is First-Line** – Terbinafine 250 mg daily for two weeks achieves ≥90 % mycological cure and is RACGP-listed as the preferred oral agent for tinea cruris outside scalp/nail disease
- **Weekly Fluconazole or 15-Day Itraconazole as Equivalents** – Fluconazole 150 mg weekly (4–6 weeks) or itraconazole 100 mg daily (15 days) are ETG-endorsed alternatives when terbinafine is contraindicated or unavailable.
- **Reserve Griseofulvin for Intolerance/Cost Issues** – Griseofulvin 500 mg daily for 6–8 weeks remains acceptable but has lower cure rates and longer duration; use when allylamines/azoles are unsuitable
- **Non-Pharmacological Adjuncts Matter** – Encourage daily drying of groin, moisture-wicking underwear, and post-exercise showering; these simple measures reduce maceration and recurrence
- **Counsel on Treatment Adherence & Follow-Up** – Advise patient to complete the full oral course and review at four weeks; persistent lesions warrant KOH/MC&S to exclude non-dermatophyte or resistant strains

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References

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KFP Case 13: Adrian Lukas



You are working in a suburban general practice. Adrian Lukas is a 42-year-old male bus driver attending for a general health check, which is mandatory as part of his workplace health policy. He reports no current symptoms and appears disengaged throughout the consultation. He states that he is attending only because it is required for work.

He has not seen a GP in over five years.

You note the following:

- BMI: 31
- Waist circumference: 108 cm
- BP: 142/88 mmHg
- Smoking: 5–10 cigarettes per day
- Alcohol intake: 6–8 standard drinks on weekends

When you attempt to discuss risk factors such as smoking, alcohol, weight, and blood pressure, he appears resistant. He is not receptive to lifestyle advice, does not perceive any health issues, and expresses reluctance to make changes.

Which of the following strategies would be MOST effective in supporting behaviour change at this stage? Select four (4) most appropriate options.

- A. Acknowledge his ambivalence and ask permission to explore further
- B. Give a printed handout on alcohol and smoking harms
- C. Use open-ended questions to assess his readiness to change
- D. Recommend a dietitian referral for weight management
- E. Advise that continued smoking increases his risk of stroke and MI
- F. Reflect back his statements to validate his perspective
- G. Explore how he feels about his current health status
- H. Arrange follow-up appointment in 3 months
- I. Emphasise the need for urgent lifestyle change due to BMI and BP
- J. Offer to support him if he decides to make any changes later

Rationale

You are working in a suburban general practice.



Adrian Lukas is a **42-year-old male bus driver attending for a general health check**, which is **mandatory as part of his workplace health policy**. He reports **no current symptoms** and **appears disengaged throughout the consultation**. He states that he is attending **only because it is required for work**.

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- J. Offer to support him if he decides to make any changes later

Symptoms

- No current symptoms reported – low perceived susceptibility & severity → typical of pre-contemplation stage of behaviour change
- Disengaged demeanour during consult – cues resistance; need for empathic, patient-centred style rather than directive advice
- States attendance is purely mandatory – extrinsic motivation only; highlights importance of eliciting intrinsic reasons for change
- Reluctance to make lifestyle changes – confirms readiness is low; guides selection of motivational-interviewing (MI) strategies over prescriptive interventions

Signs

- BMI 31 (obesity class I) – modifiable cardiometabolic risk factor; central to future health discussion
- Waist circumference 108 cm – exceeds male threshold (≥ 94 cm); indicates visceral adiposity & ↑ CVD risk
- BP 142/88 – stage 1 hypertension; reinforces need for routine CVD risk assessment
- Smoking 5–10 cig/day – independent CV risk; MI can explore ambivalence & confidence to quit
- Alcohol 6–8 std drinks on weekends – binge pattern; contributes to metabolic & BP risk

Context

- 42-year-old male bus driver – sedentary occupation, possible shift work; practical barrier to activity & healthy eating
- Mandatory workplace health check – external requirement may heighten defensiveness; clinician must avoid the “righting reflex”
- Hasn’t seen a GP in >5 years – limited prior engagement with preventive care; relationship-building crucial
- Stage of change: pre-contemplation – evidence supports MI core skills: expressing empathy, developing discrepancy, rolling with resistance, supporting self-efficacy

Question

- Action: Select the MOST effective strategies to support behaviour change
- Qualifier: for a 42-year-old man in the pre-contemplation stage attending a mandatory workplace health check
- Clarification: Prioritise motivational-interviewing techniques; avoid directive or unsolicited treatment plans

Option	Rationale				
<p>A. Acknowledge his ambivalence and ask permission to explore further</p>	<p>Correct — It is customary to ask permission before giving advice as this honours the patient's autonomy. Seeking permission and naming ambivalence embody MI's RULE principles, reduce resistance, and are practitioner tasks for the pre-contemplation stage, where the goal is to "raise doubt" rather than prescribe action.</p> <p>For Adrian, who attends only because of workplace policy, this approach builds rapport and opens space for intrinsic motivation.</p> <p style="background-color: #f0f0f0; padding: 5px;">spirit of MI as the guiding principle and eliciting from the patient what they plan to do (rather than instructing or advising). If a practitioner feels that the patient needs health advice at this point in order to set appropriate goals, it is customary to ask permission before giving advice as this honours the patient's autonomy. Examples of key questions to build a 'change plan' include:</p> <table border="1" data-bbox="518 629 1383 819" style="width: 100%; border-collapse: collapse;"> <caption data-bbox="518 629 1383 671">Table 1. Practitioner tasks within the Stages of Change model^{1,2}</caption> <thead> <tr> <th data-bbox="518 671 747 734">Patient stage</th><th data-bbox="747 671 1383 734">Practitioner tasks</th></tr> </thead> <tbody> <tr> <td data-bbox="518 734 747 819">Precontemplation (Not ready)</td><td data-bbox="747 734 1383 819">Raise doubt and increase the patient's perception of the risks and problems with their current behaviour. Provide harm reduction strategies</td></tr> </tbody> </table>	Patient stage	Practitioner tasks	Precontemplation (Not ready)	Raise doubt and increase the patient's perception of the risks and problems with their current behaviour. Provide harm reduction strategies
Patient stage	Practitioner tasks				
Precontemplation (Not ready)	Raise doubt and increase the patient's perception of the risks and problems with their current behaviour. Provide harm reduction strategies				
<p>B. Give a printed hand-out on alcohol and smoking harms</p>	<p>Incorrect — Hand-outs, given before engagement, constitute passive dissemination and risk further disengagement in a resistant, pre-contemplative patient; ; written material works best after interest is expressed.</p>				
<p>C. Use open-ended questions to assess his readiness to change</p>	<p>Correct — OARS skills begin with asking open-ended questions. The patient doing most of the talking gives the practitioner the opportunity to learn what the patient cares about. This aligns with MI guidance to determine readiness/confidence before advice and is therefore ideal for Adrian's low-readiness state.</p> <p style="background-color: #f0f0f0; padding: 10px;">At times, rolling with resistance and resisting the righting reflex requires the practitioner to 'sit on their hands', especially for patients in the pre-contemplation and contemplation stages of change. Alternative communication techniques are well described in motivational interviewing.^{27,28} Simple memory aids, such as OARS, can help GPs to build rapport and talk about change:²⁷</p> <ul style="list-style-type: none"> • asking Open-ended questions • making Affirmations • using Reflections • using Summarising statements. 				
<p>D. Recommend a dietitian referral for weight management</p>	<p>Incorrect — Referral presumes readiness and sets an action agenda the patient has not agreed to. Do referrals after the patient indicates willingness; premature referrals increase drop-out rates.</p>				
<p>E. Advise that continued smoking increases his risk of stroke and MI</p>	<p>Incorrect — This is an "educate-and-warn" advice, which embodies the righting reflex. RULE principle 1 is Resist the righting reflex; pushing advice can paradoxically strengthen resistance. With Adrian's expressed reluctance, such directive advice is counter-productive at this stage.</p>				

Resist the righting reflex

The righting reflex describes the tendency of health professionals to advise patients about the right path for good health. This can often have a paradoxical effect in practice, inadvertently reinforcing the argument to maintain the status quo. Essentially, most people resist persuasion when they are ambivalent about change and will respond by recalling their reasons for maintaining the behaviour. Motivational interviewing in practice requires clinicians to suppress the initial righting reflex so that they can explore the patient's motivations for change.

F. Reflect back his statements to validate his perspective

Correct — MI emphasises use of reflections to encourage exploration and help people understand their motivations more fully. Reflective listening demonstrates empathy, decreases defensiveness, and often elicits change talk in resistant patients.

efforts for change are noticed and affirmed

Use Reflections*

- Involves rephrasing a statement to capture the implicit meaning and feeling of a patient's statement
- Encourages continual personal exploration and helps people understand their motivations more fully
- Can be used to amplify or reinforce desire for change

G. Explore how he feels about his current health status

Correct — The RULE mnemonic includes “**Understand the patient’s own motivations**”. Exploring feelings uncovers discrepancy between perceived health and objective risks (BMI 31, BP 142/88 mmHg), a key MI strategy to move clients from pre-contemplation toward contemplation.

Motivational interviewing is a counselling method that involves enhancing a patient's motivation to change by means of four guiding principles, represented by the acronym RULE: Resist the righting reflex; Understand the patient's own motivations; Listen with empathy; and Empower the patient.

H. Arrange follow-up appointment in 3 months

Acceptable but less prioritised — 5As approach lists **Arrange follow-up**” as the final step after Assist. Follow-up is valuable once engagement begins; however, it does not itself create readiness, so other MI skills (A, C, F, G) outrank it in the immediate consult.

	<p>Comprehensive intervention: The 5As approach</p> <p>If the practice has the capacity to offer comprehensive support for cessation, then the 5As approach (Ask, Assess, Advise, Assist, Arrange) provides a structure. It involves:</p> <ul style="list-style-type: none"> Ask – enquire about and document the smoking status of all patients. Assess – evaluate nicotine dependence and assess and address barriers to quitting. Advise – counsel all patients who smoke to quit in a way that is clear but not confrontational. Assist – offer assistance in quitting, agree on a quit plan and recommend pharmacotherapy if the patient is nicotine dependent. If the patient is not willing to quit, use a motivational approach, explore barriers and review at future visits. Arrange – for patients making a quit attempt, arrange follow-up contact starting within a week of the quit day. At these visits, congratulate and encourage the patient, review progress and problems, encourage continued use of pharmacotherapy, and monitor and manage any medication side effects.
I. Emphasise the need for urgent lifestyle change due to BMI and BP	Incorrect — Again violates the RULE principle “Resist the righting reflex”. Urgency statements can feel confrontational, provoking further resistance in a patient who “feels fine” and is attending under duress.
J. Offer to support him if he decides to make any changes later	Acceptable but less prioritised — Reinforces autonomy and self-efficacy, a core MI goal. While supportive, it does not actively foster engagement <i>in this consultation</i> as strongly as options A, C, F, G. It is therefore a sound adjunct once rapport is established rather than a primary tool at the outset

Case Learning Points



- Tailor interventions to the patient's stage of change (pre-contemplation)
 - In this stage the aim is to *raise doubt* and *build rapport* rather than prescribe treatment; directive advice can entrench resistance
- Use open-ended questions and reflective listening to create engagement
 - OARS toolkit:
 - Open-ended questions – invite the patient to tell their story
 - Affirmations – recognise strengths and past successes
 - Reflections – mirror statements to show understanding and reduce resistance
 - Summaries – link key points and check shared meaning
- Protect autonomy to minimise defensiveness
 - RULE principles:
 - Resist the righting reflex (avoid telling/lecturing)
 - Understand the patient's motivations (ask what matters to him)
 - Listen with empathy (active, reflective listening)
 - Empower the patient (support self-efficacy and choice)
- Provide Written Material Only When Interest Is Shown – Hand-outs are reinforcement tools, not engagement tools; give them once the patient signals a desire for information
- Brief MI Works in Primary Care – Even 3–5-minute MI interventions in GP settings improve quit rates and weight-loss attempts; integrate seamlessly into routine checks
- Cardiometabolic Screening Remains Essential – BMI > 30 kg/m², waist ≥ 94 cm (men) and BP ≥ 140/90 mmHg trigger comprehensive CVD risk assessment and scheduled review

References

[RACGP - Motivational interviewing techniques – facilitating behaviour change in the general practice setting](#)



[Smoking cessation](#)

Jonah Richards is a **3-year-old** boy brought to your general practice by his father due to sudden onset noisy breathing that began overnight. His symptoms started two days ago with a mild runny nose, low-grade fever, and dry cough. Overnight, he developed a hoarse voice, increasing cough, and noisy breathing during sleep, which disturbed both him and his parents.

Today, Jonah remains febrile and is described as clingy but alert and drinking small sips. His father notes that Jonah becomes more distressed and the breathing louder when upset. There is no drooling or difficulty swallowing, and Jonah is still tolerating some oral fluids.

On examination:

- Temperature: 38.3°C
- Respiratory rate: 40 breaths/min
- Oxygen saturation: 96% on room air
- Heart rate: 148 bpm
- Barking cough audible in waiting room
- Mild tracheal tug and intercostal recession
- Inspiratory stridor only when agitated

His immunisations are up to date.

What are the MOST appropriate differential diagnoses? Select four (4) from the following list.

- A. Croup
- B. Bacterial tracheitis
- C. Epiglottitis
- D. Inhaled foreign body
- E. Peritonsillar abscess
- F. Retropharyngeal abscess
- G. Bronchiolitis
- H. Asthma
- I. Laryngomalacia
- J. Acute otitis media
- K. Pneumonia
- L. Allergic reaction
- M. Vocal cord dysfunction
- N. Infectious mononucleosis
- O. Sinusitis
- P. Tonsillitis

Rationale

Jonah Richards is a **3-year-old** boy brought to your general practice by his father due to sudden **onset noisy breathing** that began overnight. His **symptoms started two days ago with a mild runny nose, low-grade fever, and dry cough**. Overnight, he developed a **hoarse voice, increasing cough, and noisy breathing during sleep**, which disturbed both him and his parents.

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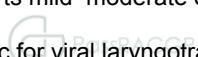


Symptoms

- **Sudden onset noisy breathing overnight** – signals an acute upper-airway event rather than a chronic structural problem
- **Two-day prodrome of coryza ± low-grade fever** – typical viral sequence preceding croup; still compatible with early bacterial tracheitis or a deep-neck abscess evolving from a viral URTI.
- **Progressive hoarse voice and bark-like cough** – classic subglottic inflammation (croup/tracheitis); hoarseness is usually absent in epiglottitis, helping discriminate.
- **Inspiratory noisy breathing that worsens when upset** – agitation-provoked stridor suggests a dynamic (partial) obstruction seen in mild–moderate croup; fixed stridor at rest would raise concern for more critical pathology.
- **No drooling or dysphagia** – argues against epiglottitis or retropharyngeal abscess but does not exclude them completely (must-not-miss group).

Signs

- **Temperature 38.3 °C** – moderate fever; temperatures >39–40 °C and toxic appearance would favour bacterial tracheitis or deep-neck abscess over viral croup
- **RR 40 /min (mild tachypnoea for age 3)** – consistent with increased work of breathing but not yet severe distress.
- **SpO₂ 96 % on room air** – preserved oxygenation; supports mild–moderate obstruction (croup severity tables).
- **Barking cough audible in waiting room** – highly specific for viral laryngotracheitis.
- **Mild tracheal tug & intercostal recession** – objective evidence of upper-airway obstruction; severity still low because recession is mild.



- Inspiratory stridor only when agitated** – by RCH/ETG grading this equates to mild–moderate croup; constant stridor at rest would be severe/critical and broaden differential toward epiglottitis or tracheitis.
- No mention of neck stiffness, trismus or unilateral tonsillar swelling** – lowers likelihood of peritonsillar or retropharyngeal abscess.

Context

- Age 3 years** – peak incidence for croup; retropharyngeal abscesses also cluster in <5 yrs; epiglottitis now rare post-Hib immunisation yet still possible.
- Immunisations up to date** – markedly reduces Hib epiglottitis but guideline emphasis on “can’t-miss” airway emergencies mandates inclusion.
- No witnessed choking event** – diminishes probability of an inhaled foreign body.
- Tolerating small oral fluids** – supports less severe obstruction; in epiglottitis children usually refuse oral intake.
- Community GP setting** – requires a differential list broad enough to identify emergencies needing urgent referral (e.g., epiglottitis, bacterial tracheitis) alongside common viral causes.

Question

- Action:** Identify the most appropriate differential diagnoses
- Qualifier:** for a febrile 3-year-old with acute inspiratory stridor, barky cough and viral prodrome in general practice
- Include both the most likely and the must-not-miss upper-airway causes; select four (4) answers from the list provided

Option	Rationale																																								
A. Croup	<p>Correct – Most likely. Classic triad of barky cough, hoarse voice, and inspiratory stridor in a febrile preschooler. Described prodrome (coryza then overnight stridor) is textbook. Croup is the most common cause of acute stridor in children 6 months–6 years. Mild intercostal recession and stridor when agitated suggest mild–moderate croup.</p> <table border="1"> <thead> <tr> <th colspan="5">Examination</th> </tr> <tr> <th></th> <th>Mild</th> <th>Moderate</th> <th>Severe</th> <th>Life-threatening</th> </tr> </thead> <tbody> <tr> <td>Appearance/colour</td> <td>Normal, well-perfused</td> <td>Normal, well-perfused</td> <td>Pale</td> <td>Pale, mottled or cyanosed</td> </tr> <tr> <td>Behaviour</td> <td>Alert and active</td> <td>Alert and active, intermittent mild agitation</td> <td>Increasing agitation, drowsiness</td> <td>Confused, drowsy, agitated May be not moving, drooling</td> </tr> <tr> <td>Stridor</td> <td>None, or only when active or upset</td> <td>Intermittent at rest</td> <td>Persistent at rest, or biphasic</td> <td>Biphasic or may be soft</td> </tr> <tr> <td>Respiratory rate</td> <td>Normal</td> <td>Increased</td> <td>Marked increase or decrease</td> <td>Abnormal, signs of impending respiratory exhaustion</td> </tr> <tr> <td>Accessory muscle use</td> <td>None or minimal</td> <td>Intercostal and subcostal recession, tracheal tug</td> <td>Abdominal breathing, marked intercostal and subcostal recession, tracheal tug</td> <td>Severe sternal recession, exhausted, poor respiratory effort</td> </tr> <tr> <td>Oxygen saturation</td> <td>Normal</td> <td>Normal</td> <td colspan="2">Hypoxia is a late sign which may indicate imminent complete upper airway obstruction</td></tr> </tbody> </table>	Examination						Mild	Moderate	Severe	Life-threatening	Appearance/colour	Normal, well-perfused	Normal, well-perfused	Pale	Pale, mottled or cyanosed	Behaviour	Alert and active	Alert and active, intermittent mild agitation	Increasing agitation, drowsiness	Confused, drowsy, agitated May be not moving, drooling	Stridor	None, or only when active or upset	Intermittent at rest	Persistent at rest, or biphasic	Biphasic or may be soft	Respiratory rate	Normal	Increased	Marked increase or decrease	Abnormal, signs of impending respiratory exhaustion	Accessory muscle use	None or minimal	Intercostal and subcostal recession, tracheal tug	Abdominal breathing, marked intercostal and subcostal recession, tracheal tug	Severe sternal recession, exhausted, poor respiratory effort	Oxygen saturation	Normal	Normal	Hypoxia is a late sign which may indicate imminent complete upper airway obstruction	
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B. Bacterial tracheitis	<p>Correct - eTG lists bacterial tracheitis as a key alternative when systemic signs of infection accompany stridor. High fever (38.3 °C), persistent barking cough and worsening distress overnight raise the possibility of this serious bacterial complication, so it remains within the four most likely causes that require active exclusion; raises suspicion of this croup mimic which might require urgent antibiotics/airway support</p> <div style="background-color: #e0f2e0; padding: 10px;"> <p>Differential diagnosis of stridor</p> <p>Children with croup present with acute stridor; however, not all children with acute stridor have croup. Consider alternative diagnoses such as:</p> <ul style="list-style-type: none"> • infective causes—children with croup may have fever but do not have systemic signs of infection. If systemic signs of infection are present, consider causes such as bacterial tracheitis, acute epiglottitis, acute tonsillitis or pharyngitis (with or without peritonsillar abscess), or retropharyngeal abscess </div>		
C. Epiglottitis	<p>Correct - Rare post-Hib vaccine, but a critical can't-miss differential. Presents with sudden onset stridor, high fever, drooling, and toxic appearance. Jonah can drink and is not drooling, making it less likely but still a red flag to exclude. Any febrile stridor mandates that epiglottitis stay in the differential to avoid catastrophic airway loss.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%; padding: 5px;">Epiglottitis</td><td style="width: 80%; padding: 5px;"> Inadequate Hib immunisation or immunocompromised High fever and systemically unwell Muffled voice Hyperextension of neck Dysphagia Pooling of secretions, drooling Absent cough Low pitched expiratory stridor or stertor </td></tr> </table>	Epiglottitis	Inadequate Hib immunisation or immunocompromised High fever and systemically unwell Muffled voice Hyperextension of neck Dysphagia Pooling of secretions, drooling Absent cough Low pitched expiratory stridor or stertor
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D. Inhaled foreign body	<p>Acceptable but less prioritised - Suspect foreign body inhalation in children with acute stridor after a choking episode. No witnessed choke or unilateral signs makes this lower probability, yet every GP must think of aspiration in acute stridor; omit only if a clearer choking history absent after careful enquiry.</p> <p>Jonah's evolving viral prodrome and absence of sudden, fixed symptoms reduce likelihood, so it remains off the top four list but warrants broader consideration in unclear cases</p> <div style="background-color: #e0f2e0; padding: 10px; margin-top: 10px;"> <ul style="list-style-type: none"> • foreign body inhalation—should be suspected in children who present with acute stridor after a choking episode; urgently refer for specialist advice. </div>		
E. Peritonsillar abscess	<p>Incorrect - A differential for stridor but usually causes severe unilateral sore throat, trismus, muffled 'hot-potato' voice, uvular deviation. None of these are present; doesn't explain barky cough/stridor.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%; padding: 5px;">Peritonsillar abscess (quinsy)</td><td style="width: 80%; padding: 5px;"> Severe sore throat (often unilateral) Hot potato/muffled voice Trismus Swollen posterior palate and tonsil, with medial displacement of tonsil and deviation of the uvula </td></tr> </table>	Peritonsillar abscess (quinsy)	Severe sore throat (often unilateral) Hot potato/muffled voice Trismus Swollen posterior palate and tonsil, with medial displacement of tonsil and deviation of the uvula
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F. Retropharyngeal abscess	<p>Correct - Important mimic in children <5. Follows URTI, presents with fever and stridor. No neck stiffness noted, but this doesn't rule out early deep-neck infection. Age <5 plus stridor after URTI prodrome makes this a reasonable can't-miss cause to include in the top four. Guidelines emphasise exclusion given risk of airway compromise, especially in febrile toddlers.</p>		

	<p>Differential diagnosis of stridor</p> <p>Children with croup present with acute stridor; however, not all children with acute stridor have croup. Consider alternative diagnoses such as:</p> <ul style="list-style-type: none"> infective causes—children with croup may have fever but do not have systemic signs of infection. If systemic signs of infection are present, consider causes such as bacterial tracheitis, acute epiglottitis, acute tonsillitis or pharyngitis (with or without peritonsillar abscess), or retropharyngeal abscess
	<p>Retropharyngeal abscess is an uncommon but potentially life-threatening condition. Symptoms of retropharyngeal abscess may initially mimic <u>pharyngitis</u> but, as inflammation increases, pain, trismus, respiratory distress and airway obstruction can develop.</p> <p>Retropharyngeal abscesses are most common in children younger than 5 years and are typically a complication of infection in the oropharynx, middle ear, prevertebral space, nasal cavity or nasopharynx, which all drain to the lymph nodes in the retropharyngeal space. As children become older, the lymph nodes in the retropharyngeal space tend to involute and abscesses are less common.</p> <p>Retropharyngeal abscess can also result from local trauma from a procedure or ingestion of a foreign body, particularly in adults. Spontaneous infection can also occur, especially in children. If infection spreads to the lymph nodes in the retropharyngeal space, cellulitis, phlegmon, suppuration and abscess formation can occur. The abscess may be localised or extend inferiorly into the posterior mediastinum and prevertebral space. For management of infection extending into the mediastinum, see <u>Mediastinitis</u>.</p> <p>Retropharyngeal abscess is usually a polymicrobial infection; implicated organisms include <i>Streptococcus pyogenes</i> (group A streptococcus), <i>Staphylococcus aureus</i> and anaerobes (eg <i>Prevotella</i>, <i>Peptostreptococcus</i> and <i>Fusobacterium</i> species).</p>
G. Bronchiolitis	Incorrect - Lower-airway expiratory wheeze in infants <12 months; stridor absent
H. Asthma	Incorrect - Produces expiratory wheeze, not inspiratory stridor; barky cough/hoarseness atypical
I. Laryngomalacia	Incorrect - Congenital chronic stridor since infancy that improves by 18 months; Jonah's stridor is acute
J. Acute otitis media	Incorrect – May co-exist with URTI but does not cause upper-airway obstruction/stridor; guidelines do not list it among stridor causes.
K. Pneumonia	Incorrect – Would give crackles or focal chest signs; stridor suggests supraglottic/subglottic source.
L. Allergic reaction	Incorrect – Anaphylaxis would show sudden airway swelling, urticaria, hypotension; none present. Listed as alternate cause only when acute swelling/urticaria seen
M. Vocal cord dysfunction	Incorrect – Functional inspiratory noise in older children/teens, not febrile preschoolers.
N. Infectious mononucleosis	Incorrect – Gradual pharyngitis with cervical nodes; acute barky cough/stridor not typical.
O. Sinusitis	Incorrect – May explain nasal congestion but cannot account for laryngeal stridor. Not listed in any Australian stridor differential tables.
P. Tonsillitis	Incorrect – TG lists tonsillitis/pharyngitis as a possible infective cause of stridor when tonsillar hypertrophy is massive; Jonah has barky cough and subglottic signs instead, so probability is far lower than top four options

Case Learning Points

- **Secure the airway first**

- Any inspiratory stridor = **airway problem until proven otherwise**; follow ABCDE with minimal handling to avoid agitation
- Call for senior/ambulance backup early if stridor is present at rest, $\text{SpO}_2 < 95\%$, or the child looks toxic

- **Croup has a recognisable clinical triad**

- Barking cough + hoarse voice/cry + inspiratory stridor in a 6 months–6 years child = viral laryngotracheitis
- Mild–moderate when stridor occurs only on agitation and SpO_2 is normal; manage confidently in primary care with steroids and safety-netting

- **Treat early with corticosteroid**

- Single oral dexamethasone 0.15 mg/kg (max 10 mg) or prednisolone 1 mg/kg lowers return rates and shortens symptom duration

Give even in mild cases; onset within 30–60 min, lasts > 24 h — explains why repeat dose rarely needed

- **Know the 'can't-miss' mimics of febrile stridor**

- Epiglottitis, bacterial tracheitis, retropharyngeal abscess: higher fever, toxic look, drooling or neck stiffness
- Hib vaccination cuts epiglottitis incidence but *Staph/Strep* tracheitis still occurs — urgent hospital transfer if suspected

- **Avoid precipitating complete obstruction**

- Do **not** inspect the throat or force the child to lie flat when epiglottitis is on the cards; keep parent present and child upright en route

References

[Antibiotic - Therapeutic Guidelines](#)

[Croup](#)

[Clinical Practice Guidelines : Acute upper airway obstruction](#)

[Clinical Practice Guidelines : Croup \(Laryngotracheobronchitis\)](#)



KFP Case 15: Ella Mackenzie

PassRACGP



PassRACGP

Ella Mackenzie is a 14-year-old girl presenting with a 3-day history of sore throat, fever, and painful swallowing. She reports feeling increasingly fatigued and has missed school due to tiredness and throat discomfort. She denies a runny nose or cough.

On further history, her mom says Ella's appetite has been reduced. They shared that she has no history of recent travel, no known sick contacts, and has not taken antibiotics for this illness.

On examination:

- Temperature: 38.5°C
- Enlarged, erythematous tonsils with white exudate
- Tender bilateral cervical lymphadenopathy
- Petechiae noted on the soft palate
- Abdomen: palpable spleen tip

Immunisations are up to date.

What are the MOST likely differential diagnoses? Select three (3) from the following list.

- A. Group A streptococcal pharyngitis
- B. Infectious mononucleosis
- C. Viral pharyngitis
- D. Peritonsillar abscess
- E. Retropharyngeal abscess
- F. Lemierre syndrome
- G. Diphtheria
- H. Primary HIV infection
- I. Herpangina
- J. Scarlet fever
- K. Acute leukaemia
- L. Kawasaki disease

Rationale

Ella Mackenzie is a 14-year-old girl presenting with a **3-day history of sore throat, fever, and painful swallowing**. She reports **feeling increasingly fatigued** and has **missed school due to tiredness and throat discomfort**. She denies a **runny nose or cough**.

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Problem Representation

14yo girl with fever, exudative tonsillitis, cervical lymphadenopathy, fatigue, petechiae, and splenomegaly — likely infectious aetiology, mononucleosis vs. strep pharyngitis vs. viral.

Symptoms

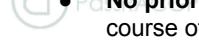
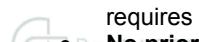
- **Sore throat with odynophagia (painful swallowing)** – Sudden, severe throat pain plus swallowing difficulty raises the pre-test probability of bacterial tonsillitis (GAS) or EBV tonsillitis; more intense than typical viral URTI
- **Fever 38.5 °C** – High-grade fever fulfils one of the Centor criteria for GAS and is also typical of infectious mononucleosis
- **Fatigue and school absenteeism** – Prominent constitutional symptoms (malaise, tiredness) are characteristic of EBV infection and help prioritise it over simple viral sore throat
- **Denies cough or rhinorrhoea** – Absence of upper-respiratory viral features strengthens the Centor score, favouring GAS over routine viral pharyngitis
- **Reduced appetite** – Non-specific systemic marker of significant infection; aligns with the heavier systemic burden of EBV/GAS compared with mild viral URTI

Signs

- **Enlarged, erythematous tonsils with white exudate** – Classic exudative tonsillitis finding in both GAS and EBV; less typical for non-streptococcal viral causes
- **Tender bilateral anterior cervical lymphadenopathy** – Meets a Centor criterion for GAS and, when generalized, is hallmark for EBV; supports these two over deep-space abscesses (which are often unilateral)
- **Petechiae on soft palate** – Early EBV sign; can also occur with GAS, reinforcing both diagnoses while arguing against uncomplicated viral pharyngitis
- **Palpable spleen tip (splenomegaly)** – Strong discriminator for infectious mononucleosis; rarely seen in straightforward GAS or viral throat infections

Context

- **Adolescent (14 years)** – Peak incidence age for GAS pharyngitis and infectious mononucleosis; retropharyngeal abscesses and Kawasaki disease are epidemiologically less likely
- **Fully immunised** – Effectively rules out diphtheria in contemporary Australian practice
- **No recent travel or sick contacts** – Lowers suspicion for exotic or outbreak-related pathogens; EBV requires no specific exposure history
- **No prior antibiotics** – Clinical picture unmodified by recent therapy, so findings represent the natural course of illness
- **Splenomegaly present** – Management consideration (avoid contact sports) and diagnostic cue pointing strongly to EBV

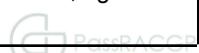
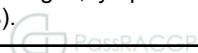
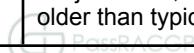


Question



- **Action:** Select the three MOST likely differential diagnoses
- **Qualifier:** for this fully immunised 14-year-old with acute exudative pharyngitis, systemic symptoms and splenomegaly.

Option	Verdict — Guideline-anchored rationale
A. Group A streptococcal pharyngitis	Correct - GAS is common in adolescents. Classic features listed include fever > 38 °C, abrupt onset, tonsillar exudate, tender anterior cervical nodes and absence of cough – all present here except cough, which she denies.
B. Infectious mononucleosis	Correct - EBV typically affects teenagers and causes severe sore throat, cervical lymphadenopathy, <i>splenomegaly</i> and palatal petechiae – the exact constellation seen in Ella
C. Viral pharyngitis	Correct - Viral aetiology remains the <i>most common</i> cause of sore throat overall. Although typical viral pointers (cough, rhinitis) are absent, a non-streptococcal, non-EBV virus still sits in the top three purely on epidemiological grounds.
D. Peritonsillar abscess	Incorrect - PTA usually presents with unilateral severe throat pain, “hot-potato” voice, uvular deviation, trismus and drooling – none are present and mouth opening is specifically normal.
E. Retropharyngeal abscess	Incorrect - More common in < 6-year-olds; manifests with neck stiffness, torticollis, stridor or severe systemic toxicity. Ella is 14 and has none of those red-flag signs.
F. Lemierre syndrome	Incorrect . Listed under deep-neck space infections; classically follows 3–5 days of pharyngitis then rapid septic deterioration (rigors, neck swelling, pulmonary emboli). Ella is systemically well without neck swelling or sepsis.
G. Diphtheria	Incorrect . Immunisations are up to date; no grey pseudomembrane, no airway compromise. In Australia, diphtheria is exceedingly rare in vaccinated adolescentsX.
H. Primary HIV infection	Incorrect - Acute HIV can cause a mononucleosis-like illness, but requires recent high-risk exposure plus generalised rash. Neither is suggested in the stem.
I. Herpangina	Incorrect . Coxsackie-related herpangina shows vesicular/ulcerative lesions on the posterior oropharynx, high fever and abdominal pain – not exudative tonsils or splenomegaly.
J. Scarlet fever	Incorrect . Requires the characteristic sand-papery rash, strawberry tongue and circum-oral pallor – none are described.
K. Acute leukaemia	Incorrect - Leukaemic infiltration can give sore throat and splenomegaly, yet systemic signs such as bruising, anaemia, bone pain or cytopenias would be expected; not hinted at here.
L. Kawasaki disease	Incorrect . Diagnostic criteria (≥ 5 days fever plus mucosal changes, conjunctivitis, rash, extremity changes, lymphadenopathy) are not met; age is older than typical peak (≤ 5 yrs).



Case Learning Points



- **Triad of exudate, fever, no cough**
 - Meets 3 Centor criteria → raises probability of GAS to ~50 % in Australian adolescents (ETG Sore Throat).
 - Still insufficient to rule out EBV or other viruses; confirms need for broader differential thinking.
- **Splenomegaly tips the scale to EBV**
 - Palpable spleen together with palatal petechiae is highly suggestive of infectious mononucleosis; very uncommon in uncomplicated GAS or routine viral pharyngitis (AFP 2018).
 - Guides priority for heterophile or EBV serology if diagnosis will alter school-sport advice.
- **Lack of upper-respiratory symptoms lowers viral odds**
 - Absence of cough / rhinorrhoea decreases pre-test probability of non-EBV viral pharyngitis, per RCH clinical guide.
 - Helps justify ranking GAS and EBV above generic viral URTI in “most likely” lists.
- **Age and immunisation refine the list**

Adolescents (10-19 yrs) show peak incidence for GAS and EBV; deep-neck abscesses peak under 6 yrs, Kawasaki under 5 yrs.

 - Full vaccination effectively excludes diphtheria in contemporary Australian practice (RACGP Red Book).
- **Red-flag pattern for deep-neck sepsis is absent**
 - No trismus, unilateral swelling or “hot-potato” voice → makes peritonsillar or retropharyngeal abscess unlikely despite exudate.
 - Reinforces selecting common infective causes over surgical emergencies in a probability-based question.

References



[Clinical Practice Guidelines : Sore throat](#)





KFP Case 16: Hamish Ryan



Hamish Ryan is a 9-year-old boy who presents with a 2-day history of sore throat and difficulty swallowing. His parents report he had a fever overnight and is refusing food today. He has been drinking small amounts but is less active than usual.

This is his third episode of a sore throat in the past year. Previous episodes have resolved on their own or were treated with simple pain relief. He has no cough, runny nose, or rash.

On examination:

- Temperature: 38.6°C
- Enlarged tonsils with white spots
- Tender lymph nodes on both sides of his neck
- Dry lips and mildly reduced skin turgor
- Mouth opening is normal

He has no history of medication allergies. His immunisations are up to date. The family does not have Medicare but attends regularly.

What is the MOST appropriate management for this patient? Select four (4) from the following list.

- A. Lidocaine throat spray
- B. Warm fluids and regular paracetamol
- C. Azithromycin 10 mg/kg orally once daily for 3 days
- D. Phenoxymethypenicillin 250 mg orally twice daily for 10 days
- E. Refer to ENT for tonsillectomy
- F. Dexamethasone 0.15 mg/kg orally once
- G. Admit to hospital for IV fluids and antibiotics
- H. Advise school exclusion for 24 hours after starting antibiotics
- I. Amoxicillin 25 mg/kg/dose orally twice daily for 10 days
- J. Benzathine penicillin G 900 mg IM single dose
- K. Reassurance and symptomatic care only
- L. Throat swab and wait for results before starting antibiotics

Rationale

Hamish Ryan is a 9-year-old boy who presents with a **2-day history of sore throat and difficulty swallowing**. His parents report he had a **fever overnight** and is **refusing food today**. He has been **drinking small amounts** but is **less active than usual**.

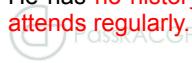
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- K. Reassurance and symptomatic care only
- L. Throat swab and wait for results before starting antibiotics

Symptoms

- **Sore throat with painful swallowing (odynophagia)** – sudden, severe pain plus dysphagia markedly raises the pre-test probability of bacterial tonsillitis (GAS) rather than a mild viral URTI.
- **Fever 38.6 °C** – high-grade temperature fulfils a Centor criterion and, together with exudate, makes GAS the leading diagnosis.
- **Refusing food / reduced oral intake** – indicates painful swallowing and early dehydration, warranting prompt analgesia, fluids and a short course of corticosteroid for symptom relief.
- **Third sore-throat episode in 12 months** – recurrent but below ENT tonsillectomy thresholds (≥ 7 in one year, ≥ 5 for two consecutive years, or ≥ 3 for three years).
- **No cough, rhinorrhoea or rash** – absence of viral URTI features strengthens Centor score and justifies antibiotic consideration.

Signs

- **Enlarged tonsils with white exudate** – classic feature of GAS or EBV tonsillitis; in a 9-year-old, GAS is far more common.
- **Tender bilateral cervical lymphadenopathy** – another Centor point supporting streptococcal aetiology.
- **Dry lips ± mildly reduced skin turgor** – early dehydration but not yet meeting admission criteria; reinforces need for oral fluids and timely symptom control.
- **Normal mouth opening** – rules out peritonsillar abscess or trismus, supporting outpatient management.



- **Age 9 years, otherwise well** – low rheumatic-fever risk in metropolitan Australia but guideline still supports penicillin when Centor ≥ 3 + marked systemic features.
- **No drug allergies** – allows first-line phenoxycephalothin (narrower spectrum, cheaper).
- **Immunisations up to date** – no additional vaccine-preventable considerations.
- **Family without Medicare** – cost-efficient oral therapy (phenoxycephalothin syrup/tablets) preferable to IM benzathine or prolonged macrolide course.
- **Symptom severity and hydration status** – justify adding single-dose dexamethasone for rapid pain relief and advising 24 h school exclusion after antibiotics start.

Question



- **Action:** Select the four (4) most appropriate management steps you would initiate **today**.
- **Qualifier:** for a 9-year-old boy with probable group A streptococcal tonsillitis, Centor score 4, painful dysphagia and early dehydration in a low-risk metropolitan setting.



PassRACGP Option	PassRACGP	Rationale	PassRACGP
A. Lidocaine throat spray	Incorrect – RCH/ETG endorse paracetamol/NSAID ± lozenges/sprays only for adults/adolescents; topical anaesthetic sprays are not recommended for children because of aspiration risk and negligible added benefit .		
B. Warm fluids and regular paracetamol	Correct – First-line supportive therapy is recommended for every sore throat, with simple analgesia and hydration explicitly listed as standard care .		
C. Azithromycin 10 mg/kg daily × 3 days	Incorrect – Macrolide is reserved for severe β-lactam hypersensitivity. Child has no allergy; macrolides also carry higher resistance pressure. Guideline dose is 12 mg/kg daily × 5 days, so this regimen is sub-therapeutic .		
D. Phenoxycephalothin 250 mg BD × 10 days	Correct – When antibiotics are indicated in low-risk children with severe throat pain/dysphagia (Centor ≥ 3, refusing solids, early dehydration), ETG recommends empirical phenoxycephalothin 15 mg/kg (\approx 250 mg for 9 y/o) twice daily for 10 days .		
E. Refer to ENT for tonsillectomy	Incorrect – Tonsillectomy criteria are ≥7 episodes in 1 year, ≥5/year for 2 years, or ≥3/year for 3 years. Child has only 3 episodes in 12 months, well below threshold.		
F. Dexamethasone 0.15 mg/kg orally once	Correct – Single-dose corticosteroid is advised for severe pain or dysphagia unresponsive to simple analgesia. Dose and route match paediatric guideline (max 10 mg) .		
G. Admit to hospital for IV fluids and antibiotics	Incorrect – ETG admission triggers are airway compromise, stridor, deep-neck infection or severe dehydration. Child only has mildly reduced turgor and normal mouth opening, so outpatient care is appropriate .		
H. Advise school exclusion for 24 h after starting antibiotics	Correct – For confirmed or presumptive GAS given antibiotics, guideline states children may return to school 24h after first antibiotic dose .		
I. Amoxicillin 25 mg/kg BD × 10 days	Acceptable but less prioritised – Amoxicillin is second-line (used only when phenoxy liquid not tolerated). Phenoxycephalothin is narrower spectrum and preferred; therefore this is inferior but still guideline-compliant if formulation issues arise .		
J. Benzathine penicillin G 900 mg IM single dose	Incorrect – Intramuscular benzathine is reserved for high-risk ARF patients or adherence problems; child is low-risk and weighs >20 kg (would require 1.2 MU, not 0.9 MU), so this dose and route are inappropriate .		
K. Reassurance and symptomatic care only	Acceptable but less prioritised – Support-only is adequate for most low-risk cases; however, this child's severe pain, inability to eat and Centor 4 justify adding antibiotic and steroid for faster recovery, so purely conservative care is lower priority .		
L. Throat swab and wait for results before starting antibiotics	Incorrect – Throat swab is not routinely required in low-risk children and should not delay treatment when antibiotics are otherwise justified; waiting would prolong symptoms and dehydration		

Case Learning Points



- **Full Centor criteria: 1 point each**
 - Fever, tonsillar exudate, tender cervical nodes, no cough → score 4/4
 - 0–1 → supportive care
 - 2 → consider swab
 - ≥ 3 → empirical penicillin
- **Centor 4 in this case mandates antibiotics**
 - Child meets all four criteria — highest pre-test probability of GAS
 - Phenoxymethypenicillin 15 mg/kg BD × 10 days is first-line
- **Phenoxymethypenicillin outranks amoxicillin or macrolide**
 - Narrow spectrum, lower resistance pressure, low cost for uninsured families
 - Reserve amoxicillin for palatability issues and macrolide only for proven β-lactam allergy
- **Single-dose dexamethasone speeds pain relief**
 - 0.15 mg/kg PO (max 10 mg) shortens pain and time off school
- **Analgesia and hydration remain core therapy**
 - Regular paracetamol / ibuprofen plus warm fluids address the primary morbidity: odynophagia and dehydration
 - RCH highlights simple supportive care for every sore throat regardless of aetiology
- **School exclusion limited to 24 h post-antibiotics**
 - Balances infection control with minimal educational disruption
- **ENT referral thresholds: ≥ 7 episodes in one year**
 - Three episodes so far — continue medical management and monitor
- **Hospital admission only for airway threat or severe dehydration**
 - Normal mouth opening and mild turgor loss support outpatient care with safety-netting

References



[Antibiotic - Therapeutic Guidelines](#)

[Clinical Practice Guidelines : Sore throat](#)



KFP Case 17: Olivia Thomson**Case 17: Olivia Thomson**

Olivia Thomson, a 14-year-old girl, is brought in after feeling faint during school sports. She reports feeling light-headed, generally weak, and more tired than usual over the past week. Her appetite has been reduced, and she has had some trouble concentrating in class. She has been taking an over-the-counter "water pill" she purchased online, which she started two weeks ago for bloating and acne.

She attends school regularly and is usually well. There is no known family history of renal, cardiac, or endocrine conditions. She takes no prescribed medications. Her menstrual periods are regular. She does not smoke or drink alcohol.

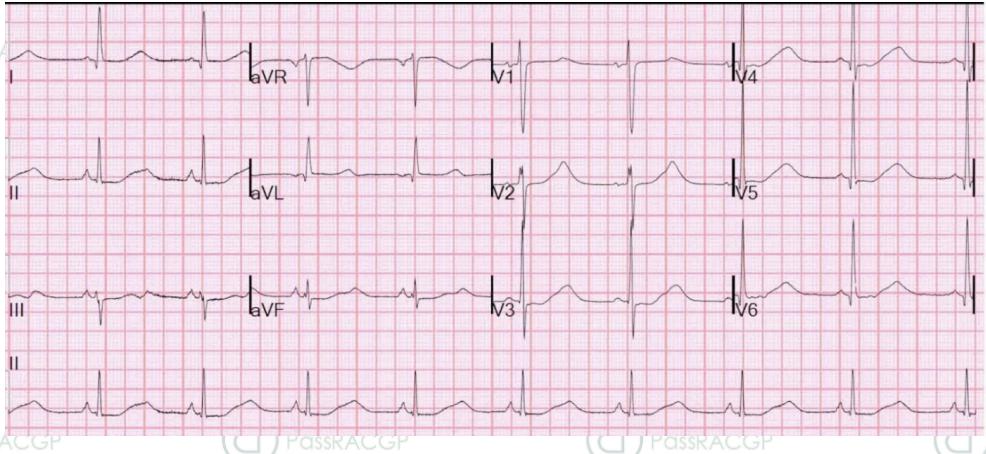
On examination:

- Blood pressure: 88/52 mmHg
- Heart rate: 108 bpm
- Generalised muscle weakness is noted
- She is alert and able to follow conversation

Initial investigation results:

Test Name	Result	Reference Range
Serum potassium	2.4 mmol/L	3.5–5.0 mmol/L
Serum sodium	139 mmol/L	135–145 mmol/L
Serum bicarbonate	32 mmol/L	22–28 mmol/L
Urea	4.8 mmol/L	2.5–7.0 mmol/L
Creatinine	49 µmol/L	45–90 µmol/L

An ECG is performed. See image below



What is the MOST appropriate initial management? Select three (3) from the following list.

- A. Oral potassium chloride 40 mmol with food
- B. 0.9% sodium chloride IV infusion with added potassium chloride
- C. Stop all potassium-wasting medications
- D. Immediate referral for renal ultrasound
- E. Oral sodium bicarbonate
- F. ECG monitoring
- G. Magnesium sulfate 5 mmol IV
- H. Potassium iodide
- I. Admit for IV rehydration and close monitoring
- J. Hypertonic saline
- K. Intramuscular potassium
- L. Serum cortisol and ACTH testing

Rationale

Olivia Thomson, a 14-year-old girl, is brought in after **feeling faint during school sports**. She reports feeling **light-headed, generally weak, and more tired than usual over the past week**. Her **appetite has been reduced**, and she has had **some trouble concentrating in class**. She has been taking an **over-the-counter “water pill”** she purchased online, which she started **two weeks ago** for **bloating and acne**.

She attends school regularly and is usually well. There is **no known family history of renal, cardiac, or endocrine conditions**. She **takes no prescribed medications**. Her **menstrual periods are regular**. She **does not smoke or drink alcohol**.

On examination:

- Blood pressure: 88/52 mmHg
- Heart rate: 108 bpm
- Generalised muscle weakness is noted
- She is alert and able to follow conversation

Initial investigation results:

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PassRACGP

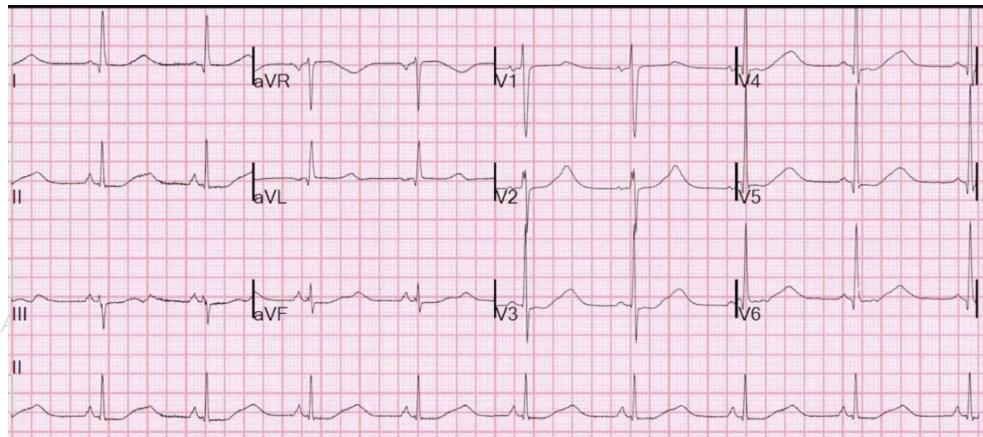
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- I. Admit for IV rehydration and close monitoring**
- J. Hypertonic saline
- K. Intramuscular potassium
- L. Serum cortisol and ACTH testing

Symptoms

- **Feeling faint/light-headed during exercise** – suggests impaired cardiac output from intravascular depletion and arrhythmogenic hypokalaemia.
- **Generalised muscle weakness & reduced concentration** – classic neuromuscular manifestations of severe K⁺ deficit (< 2.5 mmol/L).

- **Fatigue over one week** – progressive intracellular depletion rather than abrupt loss; helps time-frame the deficit and guides repletion rate.
- **Appetite ↓, mild orthostatic symptoms** – points to extracellular volume contraction from diuretic misuse rather than gastrointestinal K⁺ loss.
- **No vomiting/diarrhoea** – makes GI losses unlikely; directs attention to renal/medication causes.

Signs

- **Blood pressure 88/52 mmHg & heart rate 108 bpm** – hypotension with reflex tachycardia signals volume depletion that must be corrected alongside K⁺.
- **Generalised muscle weakness on exam** – corroborates symptomatic hypokalaemia needing IV replacement.
- **Serum potassium 2.4 mmol/L (↓)** – severe grade (< 2.5 mmol/L) fulfilling IV replacement criteria.
- **Serum bicarbonate 32 mmol/L (↑)** – metabolic alkalosis typical of thiazide/loop diuretic effect, confirming mechanism.
- **ECG: flattened T-waves, prominent U-waves** – electrophysiological evidence of hypokalaemia; mandates continuous monitoring during correction.
- **Creatinine normal (49 µmol/L)** – kidneys intact; loss is functional/renal rather than failure-related, influencing fluid choice (isotonic saline).

Context

- **14-year-old female athlete** – adrenergic drive and low body stores increase arrhythmia risk; paediatric-specific dosing applies.
- **OTC “water pill” started 2 weeks ago** – likely thiazide-based; ongoing renal K⁺ wasting continues until the drug is ceased.
- **No chronic disease or medications** – simplifies differential; rapid correction is safe with monitoring.
- **School setting syncopal event** – underscores need for prompt stabilisation before return to sports.
- **Volume depletion + metabolic alkalosis** – isotonic saline with KCl is guideline-preferred; dextrose solutions would worsen intracellular shift of K⁺.

Question

- **Action:** Identify the three most appropriate *initial management* actions
- **Qualifier:** for a 14-year-old girl presenting with severe symptomatic hypokalaemia (K⁺ 2.4 mmol/L, ECG changes) secondary to diuretic misuse
- Clarification: Focus on immediate interventions required **today**; exclude investigations or therapies that address long-term aetiology or follow-up

Option	Rationale
A. Oral potassium chloride 40 mmol with food	Incorrect - Oral K ⁺ can be used for mild/moderate hypokalaemia, but guideline criteria for IV replacement are met here: K ⁺ 2.4 mmol/L (severe) and symptomatic (muscle weakness, presyncope) and ECG changes. RCH recommends IV therapy when initial serum potassium < 2.5 mmol/L or presence of ECG changes
B. 0.9 % sodium chloride IV infusion with <i>added</i> potassium chloride	Incorrect - While IV KCl in isotonic saline is recommended for severe hypokalaemia, it must be delivered via infusion pump with continuous cardiac monitoring. A standard suburban GP clinic cannot provide that level of supervision; commencing the infusion in-rooms would be outside normal GP scope and unsafe.
C. Stop all potassium-wasting	Correct - Ongoing urinary losses must be halted for replacement to succeed.

medications	ETG emphasises therapy may not be successful until the mechanism of ongoing potassium loss has been identified and corrected (eg. diuretic drug abuse). The OTC "water pill" is the likely precipitant and should be ceased immediately.
D. Immediate referral for renal ultrasound	Incorrect - No clinical or biochemical suggestion of structural renal disease; hypokalaemia is explainable by diuretic use. Imaging does not treat the acute problem and is not part of first-line management in guidelines.
E. Oral sodium bicarbonate	Incorrect - Metabolic alkalosis is already present. Giving bicarbonate would worsen alkalosis and drive K ⁺ further into cells, aggravating hypokalaemia; not recommended in any Australian guideline for this presentation.
F. ECG monitoring	Correct - Severe hypokalaemia with U-waves mandates continuous ECG monitoring during initial resuscitation and transfer. A GP can initiate monitoring (three-lead or ambulance) while arranging hospital admission, making this an essential safety step.
G. Magnesium sulfate 5 mmol IV	Acceptable but less prioritised - Guidelines note hypomagnesaemia often co-exists and serum magnesium should be measured and replaced as required. Empirical Mg ²⁺ repletion is reasonable after baseline Mg ²⁺ result if K ⁺ is refractory, but it is not one of the three highest-priority initial actions.
H. Potassium iodide	Incorrect - Not a treatment for hypokalaemia; used for thyroid conditions. No guideline support.
I. Admit for IV rehydration and close monitoring	Correct - Hospital admission and close monitoring are required for IV KCl and haemodynamic/ECG monitoring when K ⁺ < 2.5 mmol/L or symptomatic. Arranging urgent admission is squarely within GP responsibility and is the safest initial action.
J. Hypertonic saline	Incorrect - Reserved for severe hyponatraemia (not hypokalaemia). Would add sodium without correcting K ⁺ and risks volume overload.
K. Intramuscular potassium	Incorrect - IM potassium is painful, erratic, and specifically discouraged; Australian guidelines restrict potassium to oral or controlled IV routes.
L. Serum cortisol and ACTH testing	Incorrect (not urgent) - Adrenal causes give hyperkalaemia and hyponatraemia; neither is present. These tests do not influence the immediate correction of symptomatic severe hypokalaemia.

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Case Learning Points

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- **Severe hypokalaemia (<2.5) is an emergency**
 - K⁺ <2.5 or symptomatic patients require hospital admission for IV replacement and continuous monitoring.
 - Clinical red flags in this case – syncope, 88/52, generalised weakness, U-waves – all heighten arrhythmia risk and justify immediate escalation.
- **Stop the precipitating agent first**
 - Drug-induced renal losses (loop/thiazide diuretics, laxatives, "water pills") are the most common reversible cause in teenagers.
 - Cessation prevents ongoing K⁺ wasting and is a GP-actionable intervention
- **Continuous ECG monitoring protects against malignant arrhythmias**
 - Hypokalaemia prolongs repolarisation (U-waves, ST depression) and predisposes to VT/VF during repletion; ARC resuscitation guidance advises continuous telemetry from first medical contact.
 - A three-lead monitor in-practice or ambulance suffices until hospital telemetry is available.
- **Oral K⁺ is inadequate when K⁺ < 2.5**
 - Oral KCl corrects at ~10 mmol/h – too slow and unreliable for severe deficits. eTG endorses IV KCl

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- via infusion pump with senior input for rapid yet controlled correction.
○ Relying on oral therapy risks delayed repletion and cardiac arrest.
- **Metabolic alkalosis can compound hypokalaemia**
 - High bicarbonate (32 mmol/L) drives potassium into cells, worsening extracellular depletion.
 - Guideline algorithms stress assessing acid–base status and replacing volume with isotonic fluids alongside K⁺ to correct both problems.
 - **Unregulated “supplements” pose real clinical harm in adolescents**
 - Online “water pills” often contain potent diuretics not approved by the TGA; adolescents may under-report their use.
 - Incorporate HEADSSS-style questioning about non-prescribed products and deliver brief, tailored education to prevent recurrence and promote safe health-seeking behaviour.

References

[Clinical Practice Guidelines : Hypokalaemia](#)
[Electrolyte abnormalities](#)

Riley Sampson, a 19-year-old non-binary person presents to your practice requesting access to testosterone therapy. At the start of your session, they emphasised that they use they/them pronouns. This is their first visit with you. They report persistent gender incongruence since early adolescence and have socially transitioned over the past two years. Riley has researched masculinising hormone therapy extensively and states they are ready to start.

They have no current mental health diagnoses and are not taking any regular medications. They do not smoke or use illicit drugs. Their sexual health screening is up to date, and they are not sexually active. They do not have a regular GP. They are currently living independently and studying part time.

Their BMI is 22, BP is 112/72 mmHg, and results from pathology arranged prior to the appointment (requested via telehealth) are within normal limits.

They express a strong preference to remain under GP care and not be referred to a psychiatrist or multidisciplinary gender clinic. They state clearly that they understand the effects and risks of masculinising hormone therapy and are prepared to sign a consent form today.

What is the MOST appropriate next step? Select three (3) from the following list.

- A. Initiate testosterone therapy under an informed consent model
- B. Refer to psychiatrist for capacity assessment before prescribing
- C. Arrange baseline fertility counselling before initiating therapy
- D. Provide written information about masculinising hormone therapy
- E. Delay prescribing until a mental health provider confirms gender dysphoria
- F. Discuss effects, risks, and irreversible changes of hormone therapy
- G. Refer to endocrinologist for shared management
- H. Complete informed consent process and document capacity
- I. Arrange karyotype and pelvic ultrasound
- J. Require 12 months of psychological support before prescribing
- K. Provide Medicare access to breast/chest surgery before starting hormones
- L. Advise that multidisciplinary clinic referral is mandatory for all patients under 25

Rationale

Riley Sampson, a 19-year-old non-binary person presents to your practice requesting access to testosterone therapy. At the start of your session, they emphasised that they use they/them pronouns. This is their first visit with you. They report persistent gender incongruence since early adolescence and have socially transitioned over the past two years. Riley has researched masculinising hormone therapy extensively and states they are ready to start.

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Symptoms

- **Persistent gender incongruence since early adolescence**
 - Long-standing, consistent history satisfies DSM-5 'gender dysphoria' duration criteria and meets AusPATH threshold for hormone eligibility.
- **Completed social transition over two years**
 - Sustained social role change demonstrates persistence and reduces likelihood of regret; strengthens capacity and readiness for medical transition.
- **No current mental-health diagnoses or substance use**
 - Absence of uncontrolled psychiatric illness or substance dependence removes common contra-indications / delay factors for hormone therapy (AusPATH 2024 p.9).
- **States they are "ready to start" and understands effects / risks**
 - Indicates insight and decisional capacity, a prerequisite for the informed-consent pathway.

Signs / Investigations

- **BMI 22 kg/m²; BP 112/72 mmHg**
 - Within normal range – no cardiometabolic red flags that would necessitate specialist review prior to testosterone initiation (ETG Endocrinology).
- **Baseline pathology normal (FBC, LFTs, lipids, prolactin, HbA1c)**
 - Satisfies pre-treatment screening recommended by AusPATH (Table 3) and provides reference for future monitoring.
- **No thrombosis or hormone-sensitive conditions**
 - Removes major contraindications (e.g. active DVT, oestrogen-sensitive tumour) cited in RACGP 'Gender-affirming care' guidance.

Context

- **Age 19 → adult informed-consent model applies**
 - Patients ≥18 can consent without mandatory parent/guardian or MDT involvement (AusPATH p.8).
- **Prefers GP-led care; declines psychiatric or tertiary-clinic referral**
 - Aligns with patient-centred principle: "Care should be provided in the least restrictive setting that meets clinical need" (AusPATH p.7).
- **Living independently / studying part-time**
 - Demonstrates functional autonomy; supports assessment of capacity and ability to follow monitoring schedule.
- **No fertility counselling yet documented**
 - Testosterone can impair oocyte quality quickly; guidelines mandate discussion of gamete preservation options before first dose (AusPATH p.14).
- **No written consent recorded to date**
 - Legal and medico-legal requirement to document capacity, risks, benefits, and patient goals prior to prescribing (AusPATH p.11).

Question

- Action:** Select the **three (3) MOST appropriate next steps** you will take **today**.
- Qualifier:** to complete the informed-consent process and safely initiate masculinising hormone therapy for this 19-year-old patient.
- Prioritise steps required **before** any prescription is issued; disregard reasonable but lower-priority future tasks.

Option	Rationale
A. Initiate testosterone therapy under an informed consent model	Acceptable but less prioritised – Under the AusPATH Informed Consent Guidelines (2024, p. 10) a GP <i>may</i> prescribe on the first visit once the consent process (capacity check, fertility discussion, risk counselling, documentation) is complete. In Riley's very first consultation these preparatory elements have not yet been finalised , so immediate prescribing would leapfrog essential steps.
B. Refer to psychiatrist for capacity assessment before prescribing	Incorrect – The guidelines state that “referral for psychiatric or psychological assessment is not routinely required where the clinician is satisfied the person has decision-making capacity” (AusPATH 2024, p. 9). Riley is 19 years old, clearly articulates goals, and shows no red-flag mental-health concerns; compulsory psychiatric referral would therefore be <i>unwarranted</i> and unduly delaying.
C. Arrange baseline fertility counselling before initiating therapy	Correct – Clinicians must “discuss potential impact on fertility and options for gamete preservation before commencing gender-affirming hormone therapy”. Testosterone can quickly impair oocyte quality; offering counselling (and referral for oocyte or embryo cryopreservation) today protects Riley's future reproductive autonomy and meets guideline-mandated consent content.
D. Provide written information about masculinising hormone therapy	Acceptable but less prioritised – Supplying written resources is strongly encouraged (“Provide accessible written material to support verbal counselling” – AusPATH 2024, p. 11) to reinforce understanding, yet on its own it does not complete the informed-consent requirements. It should accompany, not replace, the higher-priority discussion (F) and documentation (H).
E. Delay prescribing until a mental health provider confirms gender dysphoria	Incorrect – AusPATH emphasises that a <i>diagnostic</i> label from mental-health services is not a prerequisite for hormone access; the informed-consent pathway relies on patient-reported gender incongruence and capacity (pp. 8-9). Imposing this condition would create an unnecessary barrier and contravenes best practice.
F. Discuss effects, risks, and irreversible changes of hormone therapy	Correct – A core element of informed consent is a comprehensive discussion of anticipated physical changes, timelines, irreversible effects, risks, and limitations. Conducting this detailed dialogue today directly addresses Riley's expressed readiness and fulfils medico-legal duty.
G. Refer to endocrinologist for shared management	Acceptable but less prioritised – Shared-care with an endocrinologist can be helpful if the GP lacks experience or the case is complex. However, AusPATH affirms that <i>any</i> suitably trained GP may prescribe masculinising therapy autonomously. Given Riley's straightforward presentation and their wish to remain with GP care, referral is optional , not essential.
H. Complete informed consent process and document capacity	Correct – The guidelines specify that clinicians must “formally document capacity and the informed-consent discussion in the medical record” (AusPATH 2024, p. 11). This written record protects patient and practitioner, satisfies medico-legal standards, and is an immediate, high-priority action

	today before any prescription is issued.
I. Arrange karyotype and pelvic ultrasound	Incorrect – Routine genetic or pelvic imaging is <i>not</i> recommended prior to testosterone therapy unless specific clinical indications exist. Riley has no such indications; ordering these tests would add cost and delay without benefit.
J. Require 12 months of psychological support before prescribing	Incorrect – Mandatory duration-based psychological therapy was abandoned in modern standards. AusPATH (p. 9) stresses that “there is no minimum time in counselling required” if the person demonstrates capacity and persistence of gender incongruence. Imposing a 12-month delay would be contrary to contemporary, patient-centred care.
K. Provide Medicare access to breast/chest surgery before starting hormones	Incorrect – Surgical referral pathways and MBS eligibility are separate issues and not a prerequisite for commencing hormones. At 19, Riley may or may not pursue chest surgery later; today’s priority is hormonal consent, not surgical planning.
L. Advise that multidisciplinary clinic referral is mandatory for all patients under 25	Incorrect – Current Australian guidance explicitly rejects age-based mandatory specialist-clinic referral (AusPATH 2024, p. 9). Competent young adults can access treatment via primary-care informed-consent models without compulsory tertiary involvement.

Case Learning Points

- **Follow informed-consent, not gatekeeping, pathway**
 - Adults ≥ 18 with capacity may start hormones in primary care
- **Psychiatric or multidisciplinary referral is optional unless complexity, risk, or capacity concerns arise.**
- **Discuss fertility preservation before first testosterone dose**
 - Testosterone can rapidly impair oocyte quality; offer gamete cryopreservation referral and document offer.
 - Aligns with AusPATH consent elements and protects future reproductive autonomy.
- **Cover effects, risks, and irreversible changes in detail**
 - Include voice deepening, clitoral growth, potential infertility, cardiometabolic and haematological risks.
 - Use patient-friendly written resources to reinforce verbal counselling
- **Document capacity and consent contemporaneously**
 - Record patient goals, understanding, capacity assessment, and consent form completion in the notes today.
 - Robust documentation satisfies medico-legal duty and supports continuity if care is transferred.
- **Order only guideline-recommended baseline tests**
 - FBC, LFTs, lipids, HbA1c, prolactin \pm pregnancy test; avoid routine karyotype or pelvic imaging without indication.
 - Provides reference values for 3- and 12-month monitoring schedule.
- **Plan ongoing GP-led monitoring schedule**
 - Review at 3 months for symptom check, BP, haematocrit; then 6- to 12-monthly once stable
 - Early detection of polycythaemia or lipid changes prevents downstream morbidity.
- **Use shared-decision principles to respect autonomy**
 - Elicit patient priorities and negotiate management using Ask-Provide-Ask or OARS micro-skills where helpful.
 - Builds trust and reduces the risk of disengagement from care.

References

- [Australian Informed Consent Standards of Care for Gender Affirming Hormone Therapy](#)
[Hormone therapy for trans and gender diverse patients in the general practice setting](#)

Michael Tran is a 54-year-old man who presents for a routine health check. He reports gradual weight gain and increased abdominal girth over the past year. He drinks 6–8 standard drinks per week.

His medical history includes type 2 diabetes diagnosed six years ago and hypertension. He takes metformin and perindopril. He does not smoke.

On examination:

- Height: 173 cm
- Weight: 89 kg
- BMI: 29.8
- Waist circumference: 106 cm
- Blood pressure: 134/82 mmHg

Investigation results:

Test	Result	Reference Range
ALT	58 U/L	<45 U/L
AST	42 U/L	<35 U/L
GGT	65 U/L	<55 U/L
Platelets	$180 \times 10^9/L$	$150\text{--}400 \times 10^9/L$
Fasting glucose	7.3 mmol/L	3.5–5.5 mmol/L
HbA1c	7.4%	<6.5%
Triglycerides	2.2 mmol/L	<1.7 mmol/L

An abdominal ultrasound is performed. See image.



What is the MOST appropriate next step? Select four (4) from the following list.

- A. Repeat liver ultrasound in 6 months
- B. Order autoimmune screen and ferritin
- C. Start vitamin E
- D. Refer to hepatologist
- E. Counsel on weight loss and optimisation of metabolic risk factors
- F. Diagnose MAFLD
- G. Diagnose NAFLD
- H. Calculate FIB-4 score
- I. Order CT abdomen to confirm fatty infiltration
- J. Order liver biopsy
- K. Advise alcohol abstinence for 3 months
- L. Order hepatitis B and C serology
- M. Refer for transient elastography
- N. Order abdominal MRI
- O. Repeat LFTs and metabolic bloods in 3 months
- P. Refer to dietitian for structured weight management

Rationale

Michael Tran is a 54-year-old man who presents for a **routine health check**. He reports **gradual weight gain and increased abdominal girth over the past year**. He **drinks 6–8 standard drinks per week**.

His medical history includes **type 2 diabetes diagnosed six years ago** and **hypertension**. He takes **metformin and perindopril**. He **does not smoke**.

On examination:

- Height: 173 cm
- Weight: 89 kg
- BMI: 29.8
- Waist circumference: 106 cm
- Blood pressure: 134/82 mmHg

Investigation results:

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ALT	58 U/L	<45 U/L
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GGT	65 U/L	<55 U/L
Platelets	180 ×10 ⁹ /L	150–400 ×10 ⁹ /L
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HbA1c	7.4%	<6.5%
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An abdominal ultrasound is performed. **See image.**



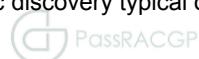
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Problem Representation

Middle-aged man with T2DM, metabolic risk factors, mildly raised LFTs and ultrasound-confirmed hepatic steatosis — consistent with MAFLD requiring metabolic optimisation and fibrosis risk stratification.

- **Gradual weight gain & ↑ abdominal girth**
 - Progressive central adiposity is a key driver of insulin resistance and hepatic fat accumulation → high pre-test probability of MAFLD.
- **6 – 8 standard drinks/week**
 - < 14 drinks/week is below the “harmful” threshold; steatosis therefore much more likely metabolic than alcoholic.
- **No hepatobiliary symptoms (pain, jaundice, pruritus)**
 - MAFLD is usually silent until advanced; absence of red-flag symptoms (e.g. acute pain, cholestasis) makes biliary obstruction or acute hepatitis unlikely.
- **No smoking; physically “well” at routine check-up**
 - Asymptomatic discovery typical of MAFLD in Australian general practice screening.



Signs

- **BMI 29.8 kg/m² & waist 106 cm**
 - Overweight with central obesity (> 94 cm male) – strongest modifiable risk factor for MAFLD progression.
- **Blood pressure 134/82 mmHg**
 - Borderline-controlled HTN adds cardiovascular risk; reinforces need for metabolic optimisation.
- **ALT 58 U/L (mild ↑), AST 42 U/L (AST < ALT), GGT 65 U/L**
 - “Diabesity” steatohepatitis pattern; AST/ALT ratio < 1 favours MAFLD over alcoholic liver disease.
- **Triglycerides 2.2 mmol/L; HbA1c 7.4 %**
 - Dyslipidaemia and sub-optimal glycaemic control – components of metabolic syndrome, increase fibrosis risk.
- **Platelets 180 × 10⁹/L (low-normal)**
 - Still > 150 → no cytopenia; clinically useful later when calculating FIB-4.
- **Ultrasound: diffusely hyperechoic liver (fatty infiltration)**
 - Confirms hepatic steatosis; no focal lesions or portal hypertension signs – stage now depends on fibrosis assessment.

Context

- **Demographics** – 54-year-old man with T2DM & HTN: mid-life male diabetics are the highest-risk primary-care cohort for MAFLD-related cirrhosis and HCC.
- **Medications** – Metformin (weight-neutral, protective for steatosis), Perindopril (neutral). No hepatotoxic drugs on board.
- **Alcohol intake** – Below the exclusion threshold (< 20 g/day) for defining MAFLD; rules out the need to defer metabolic work-up on the basis of alcohol control first.
- **Cardiometabolic burden** – Multiple metabolic syndrome components (central obesity, dyslipidaemia, hypertension, hyperglycaemia) require integrated management per RACGP Red Book preventive schedule.
- **Screening opportunity** – First presentation without regular GP: imperative to label disease (MAFLD), stratify fibrosis risk (FIB-4), and initiate lifestyle counselling today to curb progression.

Question

- **Action:** Select the 4 MOST appropriate next steps
- **Qualifier:** to investigate and manage newly identified hepatic steatosis in a 54-year-old man with metabolic risk factors
- Prioritise interventions that should be undertaken **today**; exclude options that duplicate existing findings, are second-line, or are referrals/investigations reserved for indeterminate or advanced disease.

Option	Rationale
A. Repeat liver ultrasound in 6 months	Incorrect – Ultrasound has already confirmed steatosis; repeating it adds no value before fibrosis risk-stratification and metabolic intervention. MAFLD consensus places re-imaging at 2–3 years for low-risk patients after FIB-4 calculation, not as an immediate next step.
B. Order autoimmune screen and ferritin	Acceptable but less prioritised – Ferritin (iron overload) is recommended baseline work-up; however, routine autoimmune screening is not part of first-line tests in MAFLD unless clinical clues (eg ANA-positive disease, cholestasis) exist. Choosing hepatitis serology (Option L) ranks higher because viral hepatitis is specifically mandated in consensus recommendations.
C. Start vitamin E	Incorrect – High-dose vitamin E is reserved for biopsy-proven NASH without diabetes. Our patient has T2DM; consensus and ETG warn of unclear benefit and possible CV risk.

D. Refer to hepatologist	Incorrect (premature) – Referral is advised only if FIB-4 > 2.7, elastography ≥ 8 kPa, or clinical cirrhosis. These data are not yet available.
E. Counsel on weight loss and optimisation of metabolic risk factors	Correct – Lifestyle-driven weight reduction is first-line treatment; $\geq 7\text{--}10\%$ loss improves steatosis & fibrosis. Consensus Recommendation 20 emphasises annual monitoring and active counselling.
F. Diagnose MAFLD	Correct – Diagnostic criteria are met: imaging-confirmed steatosis plus T2DM and central obesity, with alcohol <2 std drinks/day. Correct labelling guides ongoing care and patient education.
G. Diagnose NAFLD	Incorrect – The term NAFLD has been superseded by MAFLD in Australian guidance; using the outdated label risks overlooking metabolic drivers.
H. Calculate FIB-4 score	Correct – Consensus Recommendations 11–12 state FIB-4 is the initial non-invasive fibrosis test in primary care; a score < 1.3 reliably rules out advanced fibrosis.
I. Order CT abdomen to confirm fatty infiltration	Incorrect – CT adds radiation, is no more sensitive than ultrasound for steatosis, and is not recommended.
J. Order liver biopsy	Incorrect – Invasive biopsy is unnecessary unless non-invasive tests suggest advanced fibrosis or diagnosis is uncertain after second-line testing.
K. Advise alcohol abstinence for 3 months	Incorrect – He already drinks <10 std drinks/week (< 2/day), below the “harmful” threshold; consensus calls for screening and reduction where excessive, not enforced abstinence in low-risk drinkers.
L. Order hepatitis B and C serology	Correct – Consensus Recommendation 9: all MAFLD patients with elevated ALT should be tested for HBV/HCV to exclude co-existing viral liver disease before finalising management.
M. Refer for transient elastography	Acceptable but less prioritised – Elastography is second-line if FIB-4 is 1.3–2.7 or indeterminate. Calculating FIB-4 comes first.
N. Order abdominal MRI	Incorrect – MRI is not recommended for routine assessment of steatosis or fibrosis in primary care; costly and unnecessary.
O. Repeat LFTs & metabolic bloods in 3 months	Acceptable but less prioritised – Useful for monitoring, yet guidelines recommend fibrosis risk assessment and metabolic intervention now; therefore not a top-three priority.
P. Refer to dietitian for structured weight management	Acceptable but less prioritised – Multidisciplinary support is encouraged, but counselling (Option E) has already captured immediate lifestyle action; adding dietitian referral may follow after initial engagement.

Case Learning Points

- **Recognise MAFLD diagnostic triad early**
 - Hepatic steatosis on USS + T2DM/central obesity meets new MAFLD criteria
 - Clear labelling triggers guideline fibrosis pathway and focused metabolic review
- **Start with FIB-4 for fibrosis risk**
 - Formula uses age, AST, ALT, platelets; < 1.3 = low risk, > 2.7 = refer
 - Cheap, same-day result; avoids unnecessary elastography in most GP patients
- **Exclude other chronic liver diseases up front**
 - Order HBsAg/anti-HBc and HCV Ab for every raised ALT
 - Add serum ferritin \pm transferrin saturation if enzymes stay elevated > 6 months
- **Weight loss $\geq 7\%$ is first-line therapy**

- 7–10 % loss reverses steatosis and improves fibrosis markers
- Apply the 5 As (Ask, Assess, Advise, Assist, Arrange) and offer dietitian referral
- **MAFLD multiplies cardiovascular risk**
 - Target HbA1c < 7 %, BP < 130/80 mmHg, TG < 1.7 mmol/L alongside liver care
 - Annual absolute CVD risk assessment recommended (RACGP Red Book)
- **Use brief MI (OARS) to drive change**
 - Open questions, Affirmations, Reflections, Summaries build rapport in < 5 min
 - Align goals with measurable metrics (waist < 94 cm men) to sustain motivation

References

[Recommendations for the assessment of metabolic dysfunction-associated fatty liver disease \(MAFLD\) in primary care: a consensus](#)

KFP Case 20: David Somerville

David Somerville, aged 54 years, presents for review of routine fasting blood tests arranged during a general health check. He feels generally well and has no specific complaints.

He has worked as a long-haul truck driver for more than two decades. He says he rarely has time for structured exercise and eats “whatever’s available” while on the road—usually servo food, takeaway meals, and snack bars. His meal schedule varies depending on his route, and he often skips breakfast and eats a large dinner once parked for the night. He drinks 3 to 4 standard alcoholic drinks most evenings in his truck cabin before sleeping.

David estimates he has gained about 8 kilograms over the past year and has noticed that his jeans are tighter around the waist. He sometimes uses energy drinks to stay alert during long drives.

He mentions that his younger brother was recently diagnosed with elevated cholesterol and started on medication. David wonders if he might have a similar issue.

Examination findings

- BMI 31.2 kg/m²
- BP 138/86 mmHg
- WC 110 cm

Recent pathology

Test	Result	Normal Range
Triglycerides (fasting)	4.9 mmol/L	<1.7 mmol/L
Total cholesterol	5.2 mmol/L	<5.5 mmol/L
HDL cholesterol	0.9 mmol/L	>1.0 mmol/L
LDL cholesterol	2.6 mmol/L	<3.5 mmol/L
HbA1c	6.2 %	≤6.0 %
ALT	48 U/L	<45 U/L
Fasting glucose	6.1 mmol/L	3.9–5.5 mmol/L

In the given history and examination, which features **MOST** likely have contributed to this patient’s abnormal investigation results? Select four (4) from the list below:

A. Central adiposity

B. Moderate alcohol intake

C. Elevated LDL cholesterol

- D. High dietary saturated fat
- E. Consumption of processed foods
- F. Irregular meal timing
- G. Sedentary lifestyle
- H. Low HDL cholesterol
- I. Excess intake of energy drinks
- J. HbA1c 6.2 %
- K. Elevated ALT
- L. Familial hypercholesterolaemia
- M. Male gender
- N. Age

Rationale

David Somerville, aged 54 years, presents for review of routine fasting blood tests arranged during a general health check. He feels generally well and has no specific complaints.

He has worked as a long-haul truck driver for more than two decades. He says he rarely has time for structured exercise and eats “whatever’s available” while on the road—usually servo food, takeaway meals, and snack bars. His meal schedule varies depending on his route, and he often skips breakfast and eats a large dinner once parked for the night. He drinks 3 to 4 standard alcoholic drinks most evenings in his truck cabin before sleeping.

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Examination findings

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- Waist circumference 110 cm

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Problem Representation

54-year-old male long-haul driver with central obesity, alcohol and processed-food intake, presenting with marked hypertriglyceridaemia, low HDL and impaired glycaemia on routine screening—findings consistent with lifestyle-driven dyslipidaemia.

Symptoms

- **Progressive central weight gain (~8 kg, waist 110 cm)** → Visceral adiposity is a major modifiable component of absolute ASCVD risk; it commonly presents with atherogenic dyslipidaemia (\uparrow TG, \downarrow HDL, mildly \uparrow ALT) and pre-diabetes.
 - Waist size showing increased risk of chronic disease
 - Male: ≥ 94 cm (increased risk); ≥ 102 cm (greatly increased risk)
 - Female: ≥ 80 cm (increased risk); ≥ 88 cm (greatly increased risk)
- **3-4 standard drinks most nights** → Regular alcohol adds hepatic free-fatty-acid flux and raises VLDL-TG; alcohol excess is secondary cause of hyper-triglyceridaemia needing modification before pharmacotherapy.
- **Whatever's available on the road (servo / takeaway / snack bars)** → energy-dense, saturated-fat & refined-carbohydrate diets worsen triglycerides and HDL
- **Irregular meal patterns** → poor glycaemic patterns & high glycaemic-load snacks are contributors to both TG rise and HbA1c drift.
- **Energy-drink use** → Sugar-sweetened beverages (high fructose) accelerate hepatic TG synthesis

Signs

- **BMI 31 kg/m² & large waist** → Classified as *overweight/obesity* in Australian SNAP; adds points to the Aus CVD Risk Calculator, reinforcing need for risk-stratified intervention rather than isolated lipid targets
- **BP 138/86 mmHg** → High-normal; contributes to 5-year absolute CVD risk score; borderline BP plus dyslipidaemia supports early lifestyle + consider statin if overall risk intermediate
- **Laboratory pattern:**

- **TG 4.9 mmol/L** – moderately elevated (>4 mmol/L); triggers combined lifestyle modification \pm statin plus fish oil if not corrected
- **HDL 0.9 mmol/L** – below ETG target ≥ 1.0 mmol/L
- **HbA1c 6.2 % & FBG 6.1 mmol/L** – impaired glucose regulation; diabetes is a high-risk modulator
- **ALT 48 U/L** – mild elevation consistent with NAFLD (common with metabolic risk cluster)

Context

- **54-year-old male** → Age > 45 triggers routine fasting lipid screen every 5 years (Red Book Ch 8.3). Central to absolute CVD risk assessment.
- **Sedentary long-haul truck driver / shift-work physiology** → Prolonged sitting, disrupted circadian rhythm and limited exercise elevate ASCVD risk independent of BMI
- **Family history (brother on lipid-lowering therapy)** → Raises suspicion but LDL, stigmata and Dutch criteria not met; risk remains lifestyle-driven → reinforces need for risk score rather than automatic statin for FH.
- **No regular medications** → Excludes iatrogenic hyper-TG causes (i.e. steroids, antipsychotics) which are flagged as secondary-cause

Question

- **Action:** features from history or examination
- **Qualifier:** most likely contributing to this patient's abnormal fasting lipid and glycaemic results
- This case explicitly tests your ability to prioritise the four contributors with the greatest guideline-supported impact; do not simply note every plausible factor

● **P**Exclude laboratory values already provided; focus on lifestyle and anthropometric contributors.

Answers	Rationale
A. Central adiposity	Correct. Central obesity is among the major risk factors for ASCVD. Losing weight (if overweight or obese) improves lipid concentrations and is most effective for increasing HDL-C. David's waist 110 cm and BMI 31.2 kg/m ² fulfil this modifiable, guideline-highlighted cause of high TG / low HDL, making it a top-priority contributor
B. Moderate alcohol intake	Correct. Restriction of alcohol in all patients; they can significantly reduce TG concentrations. David's nightly 3–4 standard drinks represent a textbook secondary cause; guidelines place it alongside weight and fat quality as first-line targets, hence its selection.
C. Elevated LDL cholesterol	Incorrect. LDL-C 2.6 mmol/L is an outcome, not a causal behaviour.
D. High dietary saturated fat	Correct. Reducing intake of fats, particularly saturated and trans fats (reduction to $<15\%$ energy) is beneficial for lowering TG. David's servo/take-away meals plausibly contain high saturated fat, giving this factor strong, guideline-endorsed causality and priority.
E. Consumption of processed foods	Acceptable but less prioritised. Processed foods are high in refined carbs and sugars. ETG advises cutting out soft drinks and reducing intake of other added sugars" for TG reduction. However, saturated fat and alcohol have larger, directly quantified effects; this is plausible but outranked.
F. Irregular meal timing	Acceptable but less prioritised. Current Australian guidelines focus on macro-nutrient quality, weight and alcohol; they do not explicitly list meal-timing as a leading modifiable factor. Evidence is emerging, so it remains lower priority

	than options A/B/D/G.
G. Sedentary lifestyle	Correct. Increasing physical activity and losing weight are the most effective interventions for increasing HDL-C and improving TG . David's long-haul driving implies marked inactivity; guidelines rank physical activity on par with weight and diet, justifying inclusion.
H. Low HDL cholesterol	Incorrect. Low HDL is a result, not a causative behaviour. It is listed as a lipid target, not a contributor to raised TG
I. Excess intake of energy drinks	Acceptable but less prioritised. Sugar-sweetened beverages fall under soft drinks / added sugars clause. Contribution exists, yet guidelines highlight alcohol, saturated fat and inactivity as higher-impact levers, so this ranks below the selected four.
J. HbA1c 6.2%	Incorrect. This reflects impaired glycaemia and insulin resistance. Guidelines use it for CVD risk stratification, not as a cause of hypertriglyceridaemia
K. Elevated ALT	Incorrect. ALT signals NAFLD secondary to obesity/alcohol. It is not a lipid-modifying target and does not directly influence TG levels
L. Familial hypercholesterolaemia	Incorrect. FH is typically considered when LDL-C >4 mmol/L or xanthomata are present. FH elevates LDL, not triglycerides, and is not suggested by this David's profile
M. Male	Incorrect. Gender is not listed as a modifiable contributor to TG or HDL abnormalities
N. Age	Incorrect. Age affects absolute CVD risk but is not a modifiable mechanism for TG/HDL changes

Case Learning Points

- **Prioritise weight loss, alcohol reduction, fat-quality swap, regular exercise** – these four produce the largest TG/HDL improvements.
- **Central waist circumference > 94 cm (men) is a metabolic trigger** – Visceral fat drives insulin resistance, hypertriglyceridaemia and low HDL. A sustained 5-10 % weight-loss can lower fasting TG by ≈ 20 %
- **Limit alcohol to ≤ 2 standard drinks per day** – Regular intake ≥ 3 drinks/night is a textbook secondary cause of high TG; every drink removed drops TG by ~5 %
- **Accumulate ≥ 150 min of moderate activity each week** – physical activity + weight loss as most effective for raising HDL and lowering TG; even brisk walking breaks on long-haul routes count
- **Persisting TG ≥ 4 mmol/L after 1–3 months lifestyle → add drug therapy** – commence statin first; add high-dose EPA/DHA (4 g daily) or consider fibrate if TG remains ≥ 4 mmol/L
- **Impaired glycaemia (HbA1c 6.2 %) amplifies CVD risk** – combined lipid & diabetes risk-factor control; early lifestyle change can normalise HbA1c
- **Screen fasting lipids 5-yearly from 45 y (35 y for ATSI)** – abnormal results warrant earlier repeat (12–24 m) and absolute CVD-risk calculation

References

Lipid modification

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Smoking, nutrition, alcohol, physical activity (SNAP) - RACGP

Preventive activities over the lifecycle – Adults

Guideline for the diagnosis and management of hypertension in adults - 2016 - Contentstack

