check

Independent learning program for GPs

Unit 501 December 2013

Integrative therapies

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The five domains of general practice

- Communication skills and the patient-doctor relationship
- Applied professional knowledge and skills
- Population health and the context of general practice
- Professional and ethical role
- Organisational and legal dimensions

RACGP

Recent estimates suggest Australians spend over $4 billion per year on complementary medicines and visit complementary therapy practitioners almost to the same extent as GPs.[1] Many Australians regard natural therapies as safe,[2,3] but around half of those using complementary medicines do not tell their GP.[1–3]

Analysis of the Australian National Health Survey database (2004–05) suggests that 24% of adults with a chronic illness use complementary medicine/therapy in isolation or in combination with pharmaceutical drugs.[4] A survey published in 2012 investigating 2915 people with type 2 diabetes and cardiovascular disease, indicated 43% had used complementary/alternative products or therapists in the previous 12 months,[5] while another survey reported 87% of Australians aged 50 years and over had taken one or more products in the previous 24 hours.[6]

A 2008 research report indicates that around 90% of GPs had recommended one or more complementary therapy in the previous 12 months, yet only 38% said they were confident discussing complementary therapies.[7] Approximately half of surveyed GPs 'always' or 'often' ask questions about the use of complementary therapies when taking a medication history.[7]

There are significant challenges in appraising complementary therapies[8] and not all products have good quality evidence to support their use. While GPs are divided on the ethics of prescribing complementary therapies, many promote their use in conjunction with orthodox medicine.[9,10] It is therefore important that GPs have an understanding of the evidence base supporting the safety and efficacy of commonly used therapies.

This unit of *check* examines a range of commonly used complementary medicines and therapies for the management of menopausal symptoms, back and knee pain, reflux and type 2 diabetes.

Learning objectives

At the completion of this unit, participants will be able to:

- outline appropriate examinations and investigations for a mid-life woman presenting with symptoms of the menopause
- describe the evidence for the efficacy of acupuncture in low pain back
- prepare a checklist of possible investigations that could be considered for someone presenting with reflux
- suggest complementary medicines that may be of value in the management of people with type 2 diabetes
- describe how herbal medicine products are regulated in Australia.

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GUIDE TO ABBREVIATIONS AND ACRONYMS IN THIS UNIT OF *CHECK*

AHPRA	Australian Health Practitioner Regulation Agency	FODMAP	Fermentable oligosaccharides, disaccharides, monosaccharides and polyols	PPIs	Proton pump inhibitors
AIMA	Australasian Integrative Medicine Association	FSH	Follicle stimulating hormone	RACGP	Royal Australasian College of General Practitioners
ANPA	Australian Naturopathic Practitioners Association	GERD	Gastroesophageal reflux disease	SIBO	Small intestinal bacterial overgrowth
ANTA	Australian Natural Therapies Association	GPMP/TCA	General Practice Management Plan/Team Care Arrangements	SNAP	Quit smoking, better nutrition, moderate alcohol, more physical activity
ARONAH	Australian Register of Naturopaths and Herbalists	H pylori	Helicobacter pylori	TCAs	Tricyclic antidepressants
ARTG	Australian Register of Therapeutic Goods	HbA1c	Glycated haemoglobin	TDS	Three times a day
ATMS	Australian Traditional Medicines Association	HDL-C	High density lipoprotein cholesterol	TG	Triglycerides
AUSDRISK	The Australian type 2 diabetes risk assessment tool	HRT	Hormone replacement therapy	TGA	Therapeutic Goods Administration
BMI	Body mass index	LBP	Low back pain	tTg-IgA	tissue transglutaminase-immunnoglobulin A
CT	Computed tomography	LDL-C	Low density lipoprotein cholesterol		
		NHAA	National Herbalists Association of Australia		
		NSAIDs	Non-steroidal anti-inflammatory drugs		

CASE 1

MARY PRESENTS WITH HOT FLUSHES

Mary, a new patient, is 52 years old and presents with a 2-month history of hot flushes. They are increasingly bothersome at night and she often wakes up throughout the night due to overheating. The hot flushes also occur during the day but she is able to deal with them by going outside to cool down. She has learnt to layer her clothing so she can quickly remove a layer to cool down. The lack of sleep makes her feel tired and irritable at times. Apart from hot flushes and interrupted sleep, she has no other presenting symptoms. Mary does not take any regular prescribed or over the counter medications and has no allergies.

QUESTION 1

What questions would you ask Mary?

FURTHER INFORMATION

Mary has no significant past history and is generally well. Her periods became irregular 18 months ago and her last period was 14 months ago. There are no other current stressors in her life. She sleeps well when not affected by hot flushes. She is a non-smoker and drinks 2–3 standard glasses of wine per day. She lives with her husband and works part time as a primary school teacher. Her father died 5 years ago from a stroke. Her mother, who has dyslipidaemia and high blood pressure, is 76 years old and is living at home with support.

QUESTION 2

What examinations, if any, would you undertake?

QUESTION 3

What investigations, if any, would you perform?

QUESTION 4

What is the most likely cause of Mary's presenting problems?

QUESTION 5

How would you manage Mary?

FURTHER INFORMATION

Mary returns for her follow-up appointment a month later. She reports no change in either the frequency or severity of her hot flushes, even though she has made lifestyle changes. She has reduced her use of alcohol to no more than one drink a few times per week and she takes a 30-minute walk with her husband most nights of the week after dinner.

You attempt to engage Mary in a discussion about the risk and benefits of hormone replacement therapy (HRT) and other prescription products for management of menopausal symptoms, should her symptoms get worse. Mary indicates a strong preference to manage her symptoms without prescription medication.

QUESTION 6

What advice would you give about over-the-counter medications?

QUESTION 7

Would you suggest any complementary therapies for Mary?

CASE 1 ANSWERS

ANSWER 1

As Mary is a new patient, a comprehensive medical history and a history of the presenting complaints should be taken. You should discuss the following:

- History of presenting complaint – explore the hot flushes fully, taking into account the frequency and severity. Identify Mary's perception as to the cause of the hot flushes. Exclude other causes of hot flushes and night sweats.[1] Ensure no significant weight loss has occurred in recent times. Exclude other causes to suggest further assessment of a secondary cause of amenorrhoea. Ensure there has been no abnormal vaginal bleeding or other bleeding that may need further assessment.
- Past medical history.
- Family medical history.
- Social history – most women at this age have issues with elderly parents and/or children which can add to stress and exacerbate sleep disturbance.
- Lifestyle – enquire about alcohol use, physical activity, smoking and nutrition. The SNAP framework might be useful.[2]
- Psychological history – including current stressors.
- Sexual history – explore what Mary has been using for contraception and her understanding of the ongoing need for this. You may also wish to enquire about vaginal dryness at this stage.
- Other menopausal symptoms – even though Mary has not reported any other symptoms it is important to ask specifically about uro-genital symptoms, other vasomotor symptoms, musculoskeletal and general symptoms, such as dry skin and headaches. Enquire about any integrative therapies used for symptom relief.
- Preventive risk assessments – assess risk of cardiovascular disease, diabetes using AUSDRISK,[3] fracture risk factors associated with osteoporosis and risk factors for skin cancer as a general preventive opportunity.

It is important to ensure that appropriate questions are asked to facilitate a risk assessment about potential treatment options that might be considered. For example, is there a personal or family history of cancer or thrombophilia?[4]

ANSWER 2

Examination should cover features related to menopause and preventive health more generally:

- blood pressure
- signs of anaemia
- body mass index (BMI) and waist circumference
- breast check
- skin cancer examination
- thyroid examination
- abdominal examination
- vaginal examination
- mental state examination
- urinalysis for protein.

ANSWER 3

The cause of the hot flushes can be readily ascertained from the history. Menopause can be diagnosed once periods have ceased for more than 12 months.[5] If the diagnosis is in doubt (such as a patient in perimenopause, a patient <45 years old or a patient who has undergone a hysterectomy) a serum follicle stimulating hormone (FSH) and oestradiol are diagnostic.[6] In Mary's case, therefore, investigations to confirm menopause are not necessary.

Investigations with a focus on preventive health are important. Postmenopausal women have an increased cardiovascular risk. Given Mary's family history, it would be important to assess all cardiovascular risk factors. The following investigations would be recommended for Mary at this time:[2]

- Pap test
- fasting lipids
- mammography
- bone mineral density (***note:*** Mary is at increased risk of osteoporosis due to her alcohol intake)
- fasting blood sugar level
- absolute cardiovascular risk[7]
- colorectal cancer screening with faecal occult blood testing.

ANSWER 4

The most likely diagnosis is vasomotor symptoms associated with menopause. The differential diagnosis includes depression, anaemia and thyroid dysfunction.[1]

In Australian women, menopause occurs between the ages of 48 and 55 years, with an average age of 51–52 years. Twenty per cent of women have no symptoms, 60% have mild symptoms and 20% have severe symptoms.[5] Contraception is required until there have been no natural periods for 1 year; however, in patients under 50 years of age the recommendation is for 2 years.[5]

ANSWER 5

Mary's management should focus on education regarding the menopause and modification of lifestyle factors, taking into account her personal preferences and wishes regarding the use of hormonal therapies if these are deemed necessary.

Exploration of what Mary currently understands regarding menopause, and her attitudes and beliefs about menopause and its treatment, are important first steps. Working from her baseline knowledge, Mary can be educated about menopause and its management.

Discussion of how you will collaboratively manage her symptoms is then required, focusing on lifestyle modification. Alcohol can trigger

hot flushes and reductions in alcohol may improve symptoms.[8] Given Mary is currently drinking above the recommended alcohol guidelines, she should be counselled on her alcohol use for both her general health and to manage her hot flushes. Increased BMI is also considered a risk factor for hot flushes.[9] Ensuring Mary has a BMI in the normal range and is engaging in regular physical activity is important for her long-term wellbeing.

Providing written information and useful evidence-based websites about the menopausal transition is also important.

Finally, a follow-up appointment to review Mary's ongoing management plan should be arranged.

ANSWER 6

Over-the-counter medications are in widespread use in Australia.[10] Current evidence, including systematic reviews, does not conclusively support the use of over-the-counter complementary therapies (including phytoestrogens, black cohosh, hops, vitamin E, evening primrose oil, ginseng, wild yam, gingko or dong quai) for menopausal symptoms.[8, 11, 12, 13,14] It is worth noting there are variations in the quality and extracts of herbs, which may explain the mixed findings reported in trials. These variations may also explain why some women benefit from herbs such as black cohosh and St John's wort, while others do not.

It is important to highlight to Mary that many over-the-counter products available for management of menopausal symptoms lack good quality efficacy and safety data[12] and may carry risks. For example, the use of black cohosh has been implicated in liver failure.[15,16]

ANSWER 7

There is evidence from a systematic review for the benefit of relaxation therapies for symptom improvement in menopause,[16] although higher level evidence is needed to demonstrate definitive symptom improvement. Given the relative potential benefit with minimal side effects and risks, relaxation therapies could be recommended for menopausal women wanting symptom management. Trials of yoga and acupuncture reveal mixed results.[11, 17, 18]

RESOURCES FOR PATIENTS

- The Jean Hailes Foundation: www.jeanhailes.org.au

RESOURCES FOR DOCTORS

- The Jean Hailes Foundation: www.jeanhailes.org.au
- Australasian Menopause Society: www.menopause.org.au

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CASE 2

JOE PRESENTS WITH BACK PAIN

Joe, a 35-year-old married carpenter, presents with a 10-day history of severe low back pain (LBP). He is quite distressed, slightly pale and has difficulty standing upright. You observe him getting up from the waiting room chair slowly, bent forward and holding himself carefully in fear of pain and muscle spasm. He is with his family who are distressed at his situation.

Joe had been carrying window frames, which pulled down on one side. This is the likely cause of his pain. You examine him and his neurological examination is normal, there are no features suggestive of serious pathology and he is otherwise well. Joe thought he might have a 'bulging disc' although this is not supported by a normal CT scan faxed from the emergency department last night. He was given non-steroidal anti-inflammatory drugs (NSAIDS) and tramadol, which 'helped him sleep'. He came to you because he was not improving.

QUESTION 1

What is your provisional diagnosis?

QUESTION 2

What is the role of imaging in LBP?

QUESTION 3

What is the role of analgesia in LBP management?

FURTHER INFORMATION

Joe is not keen to continue with his analgesic medications. His father had a gastrointestinal bleed while on long-term NSAID therapy and he is concerned about tramadol's addiction potential. He is interested in non-drug approaches to LBP and asks your views on acupuncture. Joe notes that another doctor in your practice, Dr Smith, offers acupuncture for pain management.

QUESTION 4

What non-pharmacological treatments would you recommend?

QUESTION 5

Is there any scientific evidence for acupuncture in general and for use in managing LBP?

FURTHER INFORMATION

You discuss the benefits of total daily doses of paracetamol with Joe and refer him to your colleague for acupuncture. Dr Smith informs you that back pain can be assessed easily with a 'hands on' medical acupuncture examination. Soft tissue oedema, tenderness and muscle tension are simple and easy road maps in acupuncture, and are just as important as the history, particularly in chronic injuries. In Joe's case, medical acupuncture examination revealed the absence of skin and soft tissue sensitivity, which are present in chronic pain syndromes and fibromyalgia. The tight muscles in spasm were easily evident on palpation. In acute back pain and other injuries, acupuncture points also become tender in recognisable patterns. In this patient these are present in the low back and segmentally down the lower limbs, as well as in the hand, ear and scalp that relate to LBP. They guide treatment.

CASE 2 ANSWERS

ANSWER 1

This appears to be an uncomplicated acute LBP case with increased muscle spasm on one side due to carrying an object in an awkward position. It is probably a muscle strain with continuing muscle spasm. In the absence of additional symptoms, serious causes of back pain, such as cancer, vertebral infection, cauda equine syndrome and/or vertebral fracture, can be excluded. The presence of recent weight loss, recent infection and/or fever should raise suspicion for more serious underlying pathology.[1, 2]

ANSWER 2

Although Joe had a CT performed at the emergency department, imaging and pathology tests are not routinely recommended in non-specific back pain of less than 6 weeks duration. Findings rarely correlate with pain levels and do not assist with establishing a diagnosis.[1– 3]

ANSWER 3

Simple analgesia using paracetamol and/or NSAIDs is recommended as first-line pharmacotherapy for LBP. [2, 4] Total daily doses of paracetamol are often preferred to NSAIDs as first line, given the adverse event profile of NSAIDs.[1,3] A 'step-up approach' to analgesia is recommended, incorporating paracetamol, which may assist to reduce the doses of other agents such as NSAIDs and stronger analgesics.[2, 3] Depending on the response achieved with simple analgesia, addition of a short-term opioid (tramadol, oxycodone) could be considered.

Decisions about the use of analgesia in LBP should take into account patient preferences, potential adverse drug events and drug interactions, if patients are taking other medications.

Joe appears to have muscle strain with continuing muscle spasm, which is not likely to be a primary problem associated with inflammation. It is unlikely that NSAIDs will make a long-term difference to this problem[5] and continued use may carry unintended risks.

There is conflicting evidence regarding the use of muscle relaxants, such as diazepam, in both acute and persistent LBP.[2, 4]

ANSWER 4

Patients with LBP should be advised to avoid bed rest as it is not recommended.[2, 4] Patients should be encouraged to remain active, as this has been shown to improve outcomes such as time to recovery and time off work.[1–3]

While evidence for some non-pharmacological approaches is inconclusive, limited or lacking,[4] the following could be discussed:

- use of heat or cold packs, for example a wheat pack, cold pack or hot water bottle[3]

- structured exercise programs[1, 2] may be effective in decreasing recurrences of back pain
- massage, yoga, spinal manipulative therapy[1, 2, 6]
- acupuncture.[2, 5]

ANSWER 5

Acupuncture reduces pain, improves movement, has long-term effects, is cost effective and is extremely safe in medical hands.[7] Level 1 evidence was reported for acupuncture in a 2012 meta-analysis, which reported a significant overall effectiveness ($p<0.01$) for acupuncture in over 17,000 patients, including those with LBP, compared with non-acupuncture treatment.[8] Be aware that many systematic reviews, including Cochrane, erroneously include trials with needle 'placebo' treatments that render these reviews unscientific.[9]

Therapeutic Guidelines Rheumatology 2010 suggests that 10 sessions of acupuncture over 12 weeks or less, may provide small improvements in pain and function in persistent back pain.[2]

While a 2009 systematic review and meta-analysis reported that acupuncture using laser therapy is very effective in acute and chronic musculoskeletal conditions,[10] Australian guidelines do not support a role for laser therapy in acute or subacute LBP.[2]

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CASE 3

LOUISE PRESENTS WITH ONGOING REFLUX

Louise, 34 years of age, has had ongoing reflux for the past 6 months. She was prescribed omeprazole 40 mg which helped slightly, however, she still complains of reflux every second day. She has trialled other proton pump inhibitors (PPIs) with no effect.

Louise is otherwise well. She takes no other regular medications and has no known drug allergies. Over the last 3 months, she has developed daily abdominal bloating and discomfort, excess burping and flatulence, and post-prandial fullness which has not been helped by omeprazole. She has become prone to constipation and her energy levels have decreased significantly.

As an infant, Louise suffered with frequent bouts of colic and infantile eczema. She was breast fed until 9 months and became more settled when her formula was changed to a goats milk based formula. As a child, she missed a significant amount of schooling, secondary to recurrent tonsillitis/otitis media and abdominal pain, for which no cause was found.

QUESTION 1

What are possible causes for Louise's ongoing reflux?

QUESTION 2

What investigations would you consider?

FURTHER INFORMATION

You have ordered appropriate pathology and other investigations, including an endoscopy, all of which showed no significant abnormalities. Although Louise's full blood count was within normal ranges, you note that her ferritin and vitamin B12 levels are at the lower end of normal: ferritin 18 µg/L (15–165 µg/L); vitamin B12 180 pmol/L (>180 pmol/L).

QUESTION 3

What further history would you like to elicit to explain why her iron and vitamin B12 levels are at the lower end of normal?

QUESTION 4

How would you manage Louise's ongoing reflux in view of her current results? Why?

QUESTION 5

Why is taking a detailed childhood history important in this instance?

QUESTION 6

Are there any other dietary modifications that could be considered in order to improve Louise's symptoms?

CASE 3 ANSWERS

ANSWER 1

Possible causes of Louise's reflux include:

- *Helicobacter pylori* (*H pylori*)
- food intolerances
- structural abnormalities
- sub-acute bowel obstruction
- gastrointestinal malignancy
- intestinal dysbiosis.

There are many possible causes for the presence of ongoing reflux in Louise, the majority of which are listed above. A differential diagnosis should consider both functional and structural causes of reflux. *H pylori* is a Gram-negative spiral-shaped bacterium, specifically colonising the gastric epithelium of humans. It causes one of the most common infections worldwide, affecting about half of the world's population.[1,2] Structural causes include hiatus hernia, gastric/duodenal ulceration, subacute bowel obstruction and malignancy.[3, 4]

Food intolerances may be a complaint among patients with functional gastrointestinal disorders, including those with irritable bowel syndrome, functional dyspepsia and gastroesophageal reflux disease (GERD). Food intolerances, or sensitivities, are reactions to foods that are not due to immunological mechanisms. Lactose intolerance can mimic symptoms of functional gastrointestinal disorders or coexist with them.[5] Although there are anecdotal reports that probiotics improve reflux, a better knowledge of the mechanisms through which changes in microbiota composition (dysbiosis) promote disease states is still needed to improve our understanding of the causal relationship between the gut microbiota and disease.[6]

ANSWER 2

The following investigations could be considered:

- *H pylori* breath test
- *H pylori* serology
- coeliac testing
- pathology tests regarding energy levels (full blood count, iron, vitamin B12; also consider thyroid tests given Louise's constipation and low energy)
- haemoccult
- breath hydrogen and methane testing (fructose, lactulose, sorbitol, glucose and lactose)
- endoscopy.

As always, a thorough history and detailed clinical examination are essential and can be used in guiding the selection of subsequent diagnostic tests.[3]

H pylori must always be excluded when a patient presents with symptoms of reflux.[1–3] An *H pylori* breath test could be considered; however as Louise is already on PPIs, in order to minimise false negative results, the PPIs should be ceased for at least one week and preferably two weeks before testing.[7] *H pylori* serology could also be considered as this does not require cessation of PPIs prior to testing. [7, 8]

While blood tests are often used to screen for coeliac disease, the gold standard for diagnosis is a small bowel biopsy. Although controversial and not 100% accurate, another pathology test worth considering is tissue transglutaminase-immunoglobulin A (tTg-IgA) antibodies to exclude coeliac disease, as several studies have shown an increased prevalence of reflux with coeliac disease.[9–11]

As Louise has also presented with symptoms of tiredness, other pathology tests, including a full blood count, ferritin and vitamin B12 level may be helpful.[12–14] An individual may still be iron deficient even if they are not anaemic.[15, 16] Furthermore, as she is complaining of constipation (change in bowel habit) as well as increasing lethargy, thyroid function tests and a haemoccult should be considered.[17] Hypothyroidism affects approximately 4–10% of women, the incidence increasing with age. [18, 19]

Once the above have been considered, further comprehensive tests, including breath tests for fructose, lactulose and lactose may be ordered. These short-chain carbohydrates can cause symptoms of bloating, pain and altered bowel habit in functional gut disorders. [20]

To exclude structural gut disorders and serious pathology, consider referral to a gastroenterologist for endoscopy.

ANSWER 3

Questions regarding the following additional areas could be asked:

- diet (is she a vegetarian, vegan, etc.)
- family history of pernicious anaemia
- other bowel disease (eg. Crohn's disease, ulcerative colitis, Coeliac disease).

Four primary reasons may explain underlying nutrient deficiencies:

- not eating enough food containing these nutrients in the diet
- malabsorption of these foods
- higher requirements of certain nutrients due to specific conditions or stages of life
- loss of nutrients through particular body processes such as diarrhoea or drug/nutrient interactions.

A comprehensive history detailing the specifics of Louise's diet is very important. Iron and vitamin B12 are found primarily in animal products, in particular red meat. Therefore, it is useful to know if Louise is a vegetarian.[20] It is also important to elicit a family history to exclude pernicious anaemia.[21, 22] Other bowel diseases such as coeliac, ulcerative colitis and Crohn's disease may also result in vitamin B12 and iron deficiency.[23–27]

Current data suggest that PPIs are safe for long-term use; however, safety beyond 20 years has not been investigated. While guidelines suggest that PPIs do not have clinically significant effects on dietary nutrient absorption, decreased vitamin B12 absorption has been reported as an infrequent adverse effect associated with long-term use of PPIs,[28, 29] and a 2013 review reported that long-term use of PPIs was associated with iron and vitamin B12 deficiency.[28]

ANSWER 4

The following management options could be considered:

- a trial of probiotics (given the recurrent courses of antibiotics)
- a trial of digestive enzymes
- a trial of a dairy-free diet for 1 month
- a trial without omeprazole (perhaps PPIs not necessary once underlying aetiology of reflux is managed).

A recent review [30] suggests that a trial of tricyclic antidepressants (TCAs) should be considered for 'functional dyspepsia' if PPIs fail. Note, TCAs are not indicated for this use.

Probiotics and digestive enzymes have been used for the treatment of functional gastrointestinal symptoms, although current evidence for their efficacy is still limited.[31–33] It is proposed that probiotics may profoundly affect the brain-gut interactions ('microbiome-gut-brain axis') and help attenuate the development of functional gastrointestinal disorders.[34]

As mentioned previously, lactose intolerance can mimic symptoms of functional gastrointestinal disorders or coexist with them. A 1-month trial of a dairy-free (cow's milk) diet may be conducted and assessed for any improvement in symptoms.[5]

Lastly, if not trialled already, exclusion of common irritants such as spicy foods, alcohol and caffeine could be tried. Advice to avoid overeating/big meals, increase chewing time, relax before meals, avoid rushing meals or eating too close to bedtime could be provided.

If symptoms improve, reduced dosage or perhaps cessation of PPIs could be subsequently trialled as there is mounting evidence that long-term use of these drugs is associated with serious adverse effects.[28, 29]

ANSWER 5

There are several clues from Louise's childhood that can help with the current differential diagnosis and management. Lactose intolerance was diagnosed as the cause of infantile colic as Louise's symptoms settled when her formula was changed from cow's milk to goat's milk. [35, 36] It should be noted that cow milk allergy affects 2–3% of children and is the most prevalent food allergy in infancy.[37] Cow's milk allergy is immunologically mediated, in contrast to cow's milk intolerance, which is non-immunological in origin. The most common cause of cow's milk intolerance is lactase deficiency, which is mostly acquired during late childhood or adulthood.[38, 39] Associations have also been made with cow's milk intolerance/allergy, infantile eczema and vague abdominal discomfort.[40]

A comprehensive childhood history can therefore provide valuable clues as to the underlying causes of disease symptoms in adulthood.

ANSWER 6

Depending on the outcomes of the investigations and management strategies used to manage Louise's reflux and other gastric symptoms, the FODMAP diet might be considered.

The FODMAP diet restricts potentially poorly absorbed, fermentable short-chain carbohydrates, which can be responsible for functional gastrointestinal symptoms as well as the exacerbation of symptoms of inflammatory bowel disease.[41–43]

Potential triggers include fructose, lactose, sorbitol, mannitol and the oligosaccharides fructans and galacto-oligosaccharides. Poor intestinal absorption of these carbohydrates causes gastrointestinal upset through their osmotic effect and fermentation by intestinal microbiota. [44, 45] The primary short-chain carbohydrates tested for in hydrogen breath testing are fructose, lactose and lactulose. Glucose breath testing can also be tested, particularly if small intestinal bacterial overgrowth (SIBO) is suspected.[20] Assistance from a specialist dietician or nutritionist is strongly advised for dietary modification if breath testing suggests a FODMAP diet may be warranted in addition to a possible referral to an allergist.

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CASE 4

INTEGRATIVE CARE OF TYPE 2 DIABETES

Judy is new to your practice. She is 52 years old and has had diabetes for 7 years. She has no known cardiovascular disease. Judy weighs 93 kg and is 170 cm tall. Her BMI is 32.2 kg/m^2. Her current medications include metformin XR 1 g taken twice daily (2 g total daily dose), gliclazide 120 g daily taken in the morning and perindopril 10 mg daily.

QUESTION 1

Judy has come in with a copy of her most recent blood tests (*Table 1)* and would like to discuss a few things with you. What can Judy do to assist her diabetes without changing her medications?

Table 1. Judy's blood results

Parameter	Judy	Reference range[1–3]
HbA1c	7.9% (63 mmol/mol)	≤7.0% (≤53 mmol/mol)*
Total cholesterol	5.2 mmol/L	<4.0 mmol/L
Triglycerides (TG)	2.4 mmol/L	<2.0 mmol/L
High density lipoprotein (HDL-C)	1.1 mmol/l	≥1.0 mmol/L
Low density lipoprotein (LDL-C)	3.2 mmol/L	<2.0 mmol/L

*While a general HbA1c target of ≤7% (≤53 mmol/mol) is recommended, current guidelines recommend individualising HbA1c targets based on patient features.[1,2]

FURTHER INFORMATION

Judy wants to lose weight and has heard of different diets for diabetes including a high-protein, low-carbohydrate diet used by her neighbour Joan to lose weight. She is motivated to engage in this approach with a local dietician.

QUESTION 2

What dietary advice would you give Judy?

QUESTION 3

What advice would you give Judy about physical activity?

FURTHER INFORMATION

Judy's lipid levels are not within target. However, she has refused to take statin medication and wants to take fish oils instead.

QUESTION 4

What advice can you give her about lipid levels and fish oils in people with diabetes?

FURTHER INFORMATION

Judy has read that chromium and cinnamon may help her diabetes and would like to discuss their use with you.

QUESTION 5

What advice would you give her about cinnamon and chromium use in diabetes?

FURTHER INFORMATION

Judy states she has some numbness in her toes. On examination, there are signs of a classical symmetrical peripheral neuropathy. Her dorsalis pedis pulses remain intact.

QUESTION 6

Judy wants to know if there are any 'natural therapies' that may assist her numbness. What would you advise her?

CASE 4 ANSWERS

ANSWER 1

There is strong evidence that assisting people with type 2 diabetes to lose weight and to undertake lifestyle modifications should be actively encouraged, not just at diagnosis, but throughout the course of the illness and certainly before escalation of medical therapies. On the basis of her motivation to seek a change, Judy is a good candidate to proceed with goal-oriented lifestyle planning, as she states she is ready.

ANSWER 2

Dietary advice should be tailored to each patient's dietary preferences and cultural settings. Recent findings confirm that structured meals and meal replacements help people to achieve greater weight loss.[4, 5] Recent publications reviewing different diets, for example high protein, Paleolithic, low carbohydrate, low fat, low glycaemic index or Mediterranean diets,[6–10] suggest that these diets reduce HbA1c in short-term studies. Current evidence suggests that the 'style' of eating with concepts of variety and balance is less important than achieving overall calorie reduction.[5, 6, 8] A low glycaemic index diet appears to have specific ability to achieve better glycaemic effect without increasing hypoglycaemia in type 2 diabetes.[9]

Dietary interventions for weight loss should be calculated to produce a 600 kcal/day (2500 Kilojoule) energy deficit.[11] Sustained weight reduction of approximately 5 kg is associated with a reduction in HbA1c of approximately 0.5–1%.[11] In adults with a BMI <35 kg/m^2 or with prediabetes or hypertension, weight loss of at least 2–3 kg achieved with lifestyle interventions may result in a clinically meaningful reduction in systolic blood pressure.[11]

ANSWER 3

You explain to Judy that a structured exercise program, with support from a dietician and an exercise specialist, would be ideal for her, as people with diabetes achieve better outcomes on supported programs.[12] Physical activity combined with calorie restriction improves parameters of well being and prevention of major morbidity, and embeds longer term weight maintenance.[13,14] The health benefits from increased activity include improved quality of life, enhanced fitness, reduction in the use of diabetes-related medications, blood pressure measures and cholesterol-lowering medications.[4]

A minimum of 30 minutes of moderate intensity exercise most days, and preferably every day, is recommended.[3] Moderate exercise has been shown to improve mortality, and cardiovascular and cancer risks.[15] To achieve weight loss through physical activity alone, substantial increases in daily activity are needed, aiming for at least 60 minutes of moderate-intensity physical activity (such as brisk walking) every day. This activity can be accumulated over several separate bouts within a daily framework.[16] Activities that

the participant can do in their own home or work environment (such as walking or cycling to work) are more likely to be maintained, especially if family is also involved, than out-of-home activities, such as after-school programs or gym work, which can be more easily missed when inconvenient.[5]

Given the intensive nature of the program being suggested, you review her feet and advise her to include her podiatrist in the program so that her feet and choice of shoes are looked after, and you provide her with a referral. You tell her that if she develops any unexpected chest pain, unusual breathlessness or odd palpitations that she must stop exercising and seek medical advice.

ANSWER 4

You explain that the fish oils she refers to are essentially omega-3 fatty acids, which are present in fish such as salmon, sardines and tuna. Taking fish oils as a supplement rather than in food has not definitively been shown to have an advantage in the primary prevention of cardiac disease.[17]

Omega-3 fatty acid supplementation has been shown to lower triglycerides.[18] However, in primary prevention of cardiovascular disease, apart from encouraging increased intake of omega-3 fatty acids through dietary sources, there is still no firm evidence that any level of supplementation will improve a person's cardiovascular risk profile, or lower total cholesterol or LDL-C and impact on overall mortality.[18, 19–22] In fact, taking some fish oil supplements has been shown to raise LDL-C in patients with diabetes, which may possibly be harmful.[17, 23, 24] In secondary prevention, in the presence of comorbidity and poor diet, supplementation may have a role.[17] Lastly, you also explain that fish oils do not alter glucose control.[17]

You advise that if she increased her intake of oat bran containing beta glucan she may achieve a 5–10% reduction in her total cholesterol, as increasing beta glucan by 3 g a day has been shown to reduce total cholesterol by 5–10%.[25]

At this point you explain to her that her risks of cardiac disease can be calculated with a risk calculator and explain that the number generated shows the possibility of a cardiac event in the next 5 years. Using the cardiovascular risk calculator recommended for use in Australia (www.cvd.check.org.au), Judy's 5-year absolute cardiovascular risk is assessed as being 'low' (5–9%).[3]

You explain to Judy that she has a 91–95% chance of not developing heart disease over the next 5 years but this risk is higher than you would like.

In encouraging her lifestyle program, you explain that you will keep monitoring her risk to see if there is a positive change within the next 6 months. If the need arises, you encourage her to be open to considering medications that might assist her to achieve her overall goals. You explain to her that of all the risks, cholesterol and blood pressure are the most important to control, followed by glucose control, in that order, in order to prevent coronary events (fatal and non-fatal myocardial infarct and sudden death) and stroke.[26]

ANSWER 5

It has been suggested that cinnamon may reduce blood sugar levels and be a useful adjunct therapy in diabetes. It is postulated that this may occur by increasing insulin action or stimulating cellular glucose metabolism.[27] Two recent reviews report conflicting evidence regarding the efficacy of cinnamon. A 2012 Cochrane review of cinnamon in people with type 1 and type 2 diabetes (10 trials; 577 patients) found no statistically significant difference in cinnamon's effect on glycaemic control over placebo and concluded that there was insufficient evidence to recommend use of cinnamon in people with diabetes.[28] However, a more recent meta-analysis[29] published in Nov 2013 considered the Cochrane review and more recent data. The researchers found that cinnamon did not affect HbA1c levels, but did statistically decrease fasting plasma glucose, total cholesterol and LDL-C and increased HDL-C.[29]

Chromium is an essential trace element. It is believed to be involved in carbohydrate, lipid and protein metabolism, and is thought to potentiate the actions of insulin.[30] As with many over-the-counter supplements, analysis of the use of chromium supplementation in type 2 diabetes is confounded by poor quality studies. A 2007 systematic review of 41 studies in people with and without diabetes indicated that chromium significantly improved glycaemia in people with diabetes.[31] A 2013 meta-analysis of seven randomised controlled trials reported that while chromium lowered fasting blood sugar levels, HbA1c levels were unaffected and chromium had no effect on lipids and BMI.[32] Better designed prospective trials to elucidate chromium's effect(s) in the setting of diabetes are required before chromium supplementation can be recommended.

You advise Judy that there is not enough evidence to support the use of cinnamon or chromium in the management of type 2 diabetes and advise her to focus on her new health and lifestyle program.

ANSWER 6

Examination is important to exclude large vessel causes of diabetic foot disease and to identify microvascular disease such as peripheral vascular disease and neuropathy. You explain that her numbness may be a result of her longer standing diabetes and emphasise the need for podiatry assessment and review.

You note Judy has been on metformin for some years, so you arrange a vitamin B12 blood investigation and arrange a follow-up appointment. Clinical and biochemical vitamin B12 deficiency is highly prevalent among patients with types 1 and 2 diabetes mellitus.[33] It is especially prevalent in high-dose metformin users, even in those at highest risk (≥10 years of therapy), or in those with potential manifestations of vitamin B(12) deficiency (neuropathy).[34–37]

Current guidelines support vitamin B12 supplementation in people with peripheral neuropathy.[38] There is also accumulating evidence that intravenous lipoic acid may have additive and additional benefits with methylcobalamin in the management of neuropathy.[39,40] Methylcobalamin is a form of vitamin B12. It differs from cyanocobalamin in that the cyanide is replaced by a methyl group.

FEEDBACK

Judy is motivated to commence a lifestyle program that needs coordinated and supportive care. Giving supportive and accurate advice will assist her focus on the most important aspects of her goals and support her wish to trial more 'natural' approaches. Team-based care using allied health professionals has been shown to improve outcomes in people with type 2 diabetes.[12]

Weight management, however complex, has many myths associated with it and it is worth reading the Casazza et al article[5] before advising patients. Combining approaches using the best evidence will assist Judy, and at times this may span pharmacotherapeutic approaches (which have many guidelines[3] to assist practitioners and is not the focus of this case study) and lifestyle as an integrative model of care. Table 2 outlines current guideline-based goals or targets for people with type 2 diabetes.

Table 2. Current goals in type 2 diabetes

Parameter	Recommendations
Blood pressure[3]	≤130/80 mmHg
Glycaemic goals[1,2]	HbA1c <7% (53 mmol/mol) as a general goal and for a person requiring any anti-diabetic agents other than metformin or insulin without cardiovascular disease the goal may be reduced to ≤6.5% (48 mmol/mol)
Lipid goals[3]	Total cholesterol <4.0 mmol/L HDL-C ≥1.0 mmol/L LDL-C <2.0 mmol/ TG <2.0 mmol/L
Weight goals[3]	Ideal weight should be BMI <25 kg/m^2 and waist circumference <94 cm in men (<90 cm in Asian men) or <80 cm in women (including Asian women)

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CASE 5

JOHN PRESENTS WITH BACK AND KNEE PAIN

John, a 50-year-old farmer, presents to your rural general practice. He complained several months ago of chronic low back pain and bilateral knee pain. He denies any previous significant injuries. He says his pain is from a life of heavy lifting and shearing. The pain is worse after activity and at the end of the work day. When bad, the pain limits his activities of daily living and often reduces his productivity on the farm. There are no red flag findings on further history.

John is slightly overweight (BMI of 28 kg/m^2) and has mild hypertension (145/92). Physical examination shows generalised reduced range of motion of the lumbar spine with some tenderness on palpation over the lateral processes of L3–L5. There are no neurological findings in the lower limbs, bilateral crepitation on flexion/extension of the knees; his McMurray's test is negative and his gait is normal.

Lower back imaging a year ago shows mild degenerative disc changes and facet joint arthropathy, especially at L4 and L5/S1. There is slight generalised disc bulging at L3 and L4 but no compression of the exiting nerve roots. Bilateral knee X-rays show degenerative changes and some joint narrowing and osteophyte formation.

John's general practice management plan/team care arrangements (GPMP/TCA) included referral to a physiotherapist and a chiropractor, which was of little benefit. Acupuncture helped for a few days but he cannot regularly drive 50 km for acupuncture treatment.

Friends have suggested herbal medicines might be beneficial. He is not keen on taking stronger pain medication and asks if you can recommend any effective herbal products to help his pain.

QUESTION 1

What is the RACGP recommended approach to communication with patients about the use of complementary medicines or therapeutic techniques?

FURTHER INFORMATION

Recent blood test results reveal a slightly raised total cholesterol of 6.1 mmol/L with an LDL-C of 4.3 mmol/L. Inflammatory markers are within normal limits and fasting glucose is 5.5 mmol/L.

Current medications include ramipril 2.5 mg mane, artovastatin 10 mg nocte, long-acting paracetamol TDS, glucosamine 1500 mg daily and 5 ml of high strength fish oil daily. He has been taking long-acting paracetamol for years and states that it does nothing for his pain. Occasionally he takes a prescription paracetamol/codeine preparation when the pain is bad. He has tried tramadol but doesn't react well to it. He tries to avoid use of NSAIDs as he has been told that they may worsen his blood pressure and give him an ulcer, but occasionally he takes meloxicam in the morning.

QUESTION 2

Which herbal medicines could be used in the treatment of mechanical/degenerative joint pain?

FURTHER INFORMATION

After discussing the use of herbal medicinal products John is keen to give them a go. Family members obtain products from overseas as they are cheaper and a wider range is available than in the local pharmacies or health food shops. He doesn't think the pharmacy in town keeps many herbal products. John asks about the safety of herbal products given that he is already using several medications.

QUESTION 3

How are herbal medicine products regulated in Australia?

QUESTION 4

What is the state of regulation/registration for herbal medicine practitioners in Australia? Which major associations represent them?

CASE 5 ANSWERS

ANSWER 1

'Communication skills and the doctor–patient relationship' is the first domain of general practice outlined by the RACGP. The 2011 RACGP curriculum statement describes the following objectives within this domain:

- communicate effectively with patients about integrative medicine, including taking a non-judgmental history about the use of complementary medicines and self-care issues, while responding to a patient's context in terms of history, culture, gender, race, spirituality and personal choices
- assist patients to make decisions about their philosophy of health care and what treatment modality is best for them
- be able to refuse unreasonable requests and set limits for patients
- effectively communicate some integrative medicine skills, for example, relaxation techniques.[1]

ANSWER 2

An exhaustive review of the literature for all herbal medicines that might have a role in the treatment of pain associated with degenerative joint disease is beyond the scope of this module. Instead key herbal therapeutic interventions that contemporary herbalists may utilise, are briefly outlined in *Table 1*. Further information is provided in the 'Resources for doctors' section.

As with any therapy, patient suitability, contraindications and potential herb–drug interactions should be considered before prescribing.

Table 1. Commonly used herbal products for treatment of pain associated with degenerative joint disease

Herbal product	Details
Curcuma longa (turmeric)	root and rhizome of turmeric is used medicinally traditionally used as an anti-inflammatory agent as the curcuminoid (curcumin) is a dual inhibitor of arachidonic acid metabolism [2]
Boswellia serata (boswellia)	medical part is the dried oleo-gum resin standardised for boswellic acids has been used traditionally in Ayurvedic medicine as an anti-inflammatory agent for rheumatic disorders[2]
Harpagophytum procumbens (devil's claw)	used in traditional South African medicine little is known about traditional indications more recently used for rheumatic and arthritic conditions[2]
Salix alba (white willow bark)	traditionally used as an anti-inflammatory agent for rheumatism and gout plant is known to contain salicylic acid[3]

ANSWER 3

Herbal medicines are regulated by the Therapeutic Goods Administration (TGA) under the Therapeutic Goods Act 1989. There is a two-tier system where low-risk medicines, which includes most herbal medicines, are listed with the TGA and display an AUST L number. Listed herbal products are assessed for quality and safety but not efficacy in the pre-market period. Sponsors of listed herbal products are required to hold substantiation of any therapeutic claims that are made. Most of the evidence is based on traditional usage; however there is a growing trend towards use of scientific evidence as more becomes available. Sponsors are only allowed to claim indications for health maintenance and health enhancement or certain indications for non-serious, self-limiting conditions with a listed medication.[4]

Higher risk medicines or those wanting to make higher-level claims, are registered with the TGA and display an AUST R number. These products are evaluated for quality, safety and efficacy before marketing. There are only a few herbal medicine products with an AUST R listing. Examples include an extract of the root of *Pelargonium sidoides* that has a Cochrane review supporting some evidence for use in acute bronchitis and acute sinusitis, especially in children,[5] St John's wort extract of hypericum for depression and Iberogast for irritable bowel syndrome. A full list of registered AUSTR CM products are available on the TGA http://www.tga.gov.au/industry/cm-basics-regulation-evaluation.htm.

It is important to note that it is illegal for any practitioner to supply any product for therapeutic purposes that is not included on the Australian Register of Therapeutic Goods (ARTG) and therefore does not contain an AUST L or AUST R number. A searchable function for the ARTG is available at www.ebs.tga.gov.au/

ANSWER 4

Currently there is no official government regulation around the practice of herbal medicine in Australia. Herbal medicine practitioners are not registered under the Australian Health Practitioner Regulation Agency (AHPRA).

The Australian Register of Naturopaths and Herbalists (ARONAH) has recently been established in an attempt to provide a self-regulatory model of registration and to provide minimum standards of education and practice for naturopathy and herbal medicine in Australia (see www.aronah.org). There are numerous associations in Australia that represent herbal medicine and naturopathic medicine practitioners. Some have strict entry criteria and require members to adhere to a code of ethics and meet continuing professional education requirements. In this way they act as a quasi-registration system. See 'Resources for doctors' for names of key associations.

FEEDBACK

John thanks you for your time. He has decided to try herbal medicines. He understands this is not an area that you are overly familiar with and asks if you could recommend a herbal medicine practitioner or a website for further information. You refer John to the sources below and advise him to always discuss his use of herbal medicines with you.

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RESOURCES FOR DOCTORS

The following are some of the key Australian texts and resources available to GPs to improve knowledge of herbal medicine prescribing. This is by no means intended to be an exhaustive list and focuses only on those texts with western herbal medicine content especially relevant to the Australian context.

Texts and journal articles

- Madhu K, Chanda K, Saji MJ. Safety and efficacy of Curcuma longa extract in the treatment of painful knee osteoarthritis: a randomized placebo-controlled trial. Inflammopharmacology 2013;21:129–36.
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Peer-reviewed Australian journals

- Advances in Integrative Medicine Journal – www.elsevier.com/journals/advances-in-integrative-medicine/2212-9626
- Australian College of Nutritional and Environmental Medicine Journal – www.acnem.org/modules/mastop_publish/?tac=19
- Australian Family Physician – www.racgp.org.au/publications/afp/
- Australian Journal of Herbal Medicine – hwww.nhaa.org.au/publications/australian-journal-of-herbal-medicine

Research sites

- The Cochrane library – www.thecochranelibrary.com/view/0/index.html
- Australian Research Centre in Complementary and Integrative Medicine – www.health.uts.edu.au/arccim
- Primary Health Care Research and Information Service – www.phcris.org.au
- Network of researchers in the public health of complementary and alternative medicine – www.norphcam.org
- National Institute of Complementary Medicine – www.nicm.edu.au
- The Australasian Integrative Medicine Association (AIMA) – www.aima.net.au

Herbal medicine and naturopathic medicine practitioners associations

- National Herbalists Association of Australia (NHAA) – The oldest association (formed in 1920) in Australia representing herbal and naturopathic medicine practitioners. Visit www.nhaa.org.au
- Australian Traditional Medicine Society (ATMS) – Founded in 1984 ATMS represents a wide range of herbal, naturopathic and practitioners of other natural medicine modalities. Visit www.atms.com.au
- Australian Naturopathic Practitioners Association (ANPA) – Established in 1975, ANPA predominantly represents practitioners of naturopathy in Australia. Visit www.anpa.asn.au
- Australian Natural Therapists Association (ANTA) – Founded in 1955, ANTA represents a wide range of natural therapy practitioners in Australia. Visit www.australiannaturaltherapistsassociation.com.au

Integrative therapies

In order to qualify for 6 Category 2 points for the QI&CPD activity associated with this unit:

- read and complete the unit of *check* in hard copy or online at the *gplearning* website at www.gplearning.com.au, and
- log onto the *gplearning* website at www.gplearning.com.au and answer the following 10 multiple choice questions (MCQs) online, and
- complete the online evaluation.

If you are not an RACGP member, please contact the *gplearning* helpdesk on 1800 284 789 to register in the first instance. You will be provided with a username and password that will enable you access to the test.

The expected time to complete this activity is 3 hours.

Do not send answers to the MCQs into the *check* office. This activity can only be completed online at www.gplearning.com.au.

If you have any queries or technical issues accessing the test online, please contact the *gplearning* helpdesk on 1800 284 789.

FOR A FULL LIST OF ABBREVIATIONS AND ACRONYMS USED IN THESE QUESTIONS PLEASE GO TO PAGE 4

FOR EACH QUESTION BELOW SELECT ONE OPTION ONLY.

QUESTION 1

Janet, 51 years of age, presents with mild-to-moderate hot flushes, sleep disturbance and occasional night sweats. She is still menstruating. You discuss the risk and benefits of HRT and Janet indicates that she is not keen to use HRT, unless her symptoms get much worse. She asks whether a popular preparation of black cohosh, which does not contain any phytoestrogens, might be useful for her. Which of the following statements is the most correct?

A. Janet should be encouraged to undertake a trial of black cohosh as there are some data in support of its efficacy.

B. A product with phytoestrogens should be recommended.

C. Black cohosh should not be recommended as guidelines do not support the use of over-the-counter complementary therapies for management of menopausal symptoms.

D. Evening primrose oil should be recommended as Janet is still menstruating.

E. Bio-identical hormones, which mimic the effects of conventional HRT, should be recommended.

QUESTION 2

Which of the following statements regarding the management of mid-life women presenting with signs and symptoms of the menopause is INCORRECT?

A. A consultation at mid-life regarding menopause could be used opportunistically to discuss general wellbeing and preventive care.

B. Provision of written information and referral to evidenced-based websites should ideally be incorporated into a consultation.

C. Appropriate risk assessments for midlife women include assessing the risk of diabetes using AUSDRISK, assessing fracture risk associated with osteoporosis, assessing risk factors for skin cancer and calculation of absolute cardiovascular risk.

D. Discussions about contraception are not that relevant for women of menopausal age.

E. Alcohol is thought to be a trigger for hot flushes.

QUESTION 3

Which of the following statements about acupuncture in the setting of low back pain is NOT true?

A. Acupuncture may reduce pain.

B. Acupuncture may improve movement.

C. Acupuncture is safe in medical hands.

D. Acupuncture may be performed using needles or laser therapy.

E. There is no evidence that acupuncture works.

QUESTION 4

Susan, 41 years of age, has a long-standing history of low back pain. She has several episodes each year, each lasting around 6 weeks. She does not mind taking long-acting paracetamol to manage her pain, but dislikes using NSAIDs as they upset her stomach. She would like to discuss non-pharmacological management options with you. Which of the following would you NOT recommend?

A. Bed rest

B. Acupuncture

C. A structured exercise program (preferably involving a physiotherapist)

D. Massage

E. Use of heat or cold packs.

QUESTION 5

Which of the following is NOT true regarding *H pylori* testing in people using PPI therapy?

A. PPIs should be ceased prior to undergoing an *H pylori* breath test to minimise false negative results.

B. PPI therapy should be ceased for at least 1 week and preferably 2 weeks in people undergoing *H pylori* serology testing.

C. PPI therapy should be ceased for at least 1 week and preferably 2 weeks in people having an *H pylori* breath test.

D. PPI therapy does not need to be ceased in people undergoing *H pylori* serology testing.

E. *H pylori* should always be excluded in people with symptoms of reflux.

QUESTION 6

Which of the statements below regarding the FODMAP diet is NOT true?

A. The FODMAP diet may be useful in people with inflammatory bowel disease and food allergies.

B. The FODMAP diet restricts potentially poorly absorbed, fermentable short-chain carbohydrates.

C. The FODMAP diet restricts consumption of foods containing certain carbohydrates such as fructose, lactose, sorbitol, mannitol and others.

D. Poor intestinal absorption of carbohydrates causes gastrointestinal upset through their osmotic effect and fermentation by intestinal microbiota.

E. If breath testing suggests that a FODMAP diet is appropriate, assistance from FODMAP experts (eg. a nutritionist or specialist dietician) is strongly recommend.

QUESTION 7

Lifestyle modification has a key role in the long-term management of people with and without with type 2 diabetes. Which of the following statements about diet is NOT true?

A. Dietary advice should be tailored to the patient's dietary preferences and cultural settings.

B. Recent short-term studies suggest that any diet will reduce HbA1c levels.

C. Dietary interventions for weight loss should aim to produce a 600 kcal/day (2500 kilojoule) deficit.

D. A sustained weight loss of around 5 kg is associated with a reduction HbA1c of 0.5–1.0%.

E. Weight loss of around 5 kg or more is required to produce meaningful blood pressure reductions.

QUESTION 8

Elspeth, 56 years of age, was diagnosed with type 2 diabetes earlier this year. Metformin 500 mg twice daily was prescribed 2 weeks ago. She takes 10 mg daily of ramipril to manage her blood pressure, which is within target today. She weighs 78 kg and is 160 cm tall (BMI is 30.5 kg/m^2). Her total cholesterol is slightly elevated but her other lipids are within range. Her calculated cardiovascular risk score is low. She claims that she has a healthy diet but perhaps eats too much 'good food'. She plays tennis once a week but does no other exercise. Which of the following statements is INCORRECT?

A. As Elspeth's BMI is in the obese range she should be advised to try to lose at least 3–5 kg, which may benefit her blood sugar levels and/or her blood pressure.

B. Structured meals and meal replacement products may help her weight loss efforts.

C. Cinnamon sprinkled on foods may reduce HbA1c levels and should be recommended.

D. Fish oil supplementation is unlikely to be of benefit for Elspeth.

E. Elspeth should be provided with advice about the benefits of (more) regular physical activity.

QUESTION 9

Which of the following has NOT been investigated in people with type 2 diabetes?

A. Cinnamon

B. Chromium

C. Fish oils

D. The FODMAP diet

E. Vitamin B12.

QUESTION 10

Which of the following statements regarding the regulation of herbal medicines in Australia is NOT true?

A. Herbal medicines are regulated by the TGA under a two-tier system.

B. Higher risk products are evaluated for quality, safety and efficacy before marketing.

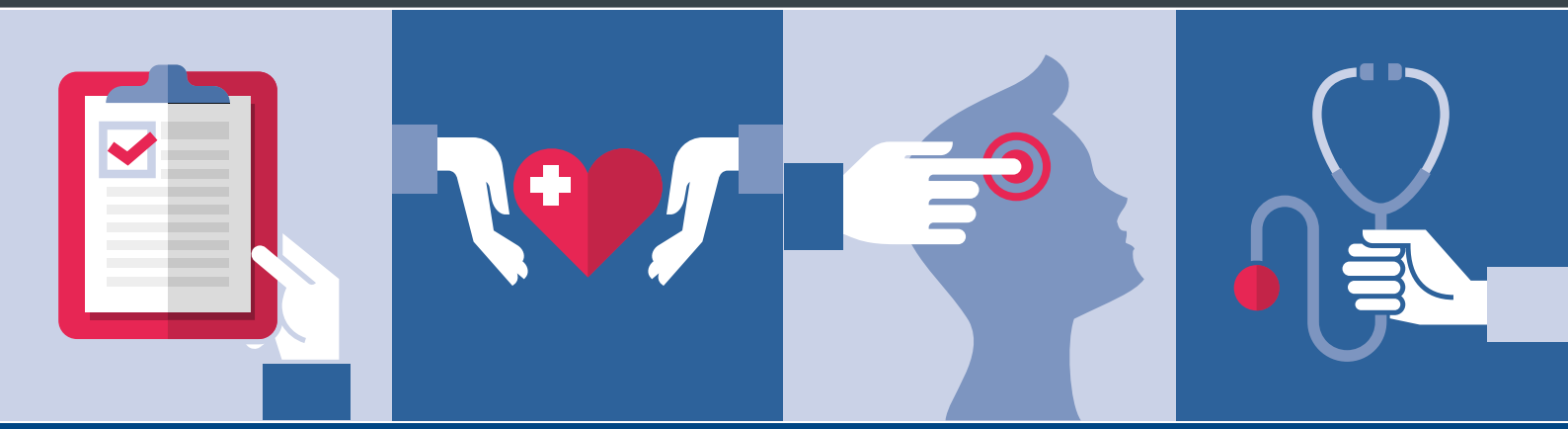
C. Low risk products display an AUST L number, while higher risk products display an AUST R number.

D. Herbal practitioners can supply products for therapeutic purposes which are not listed on the ARTG.

E. Not all commercially available preparations of herbal products have scientific evidence to support safety and efficacy claims.

check

Independent learning program for GPs



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Sleep

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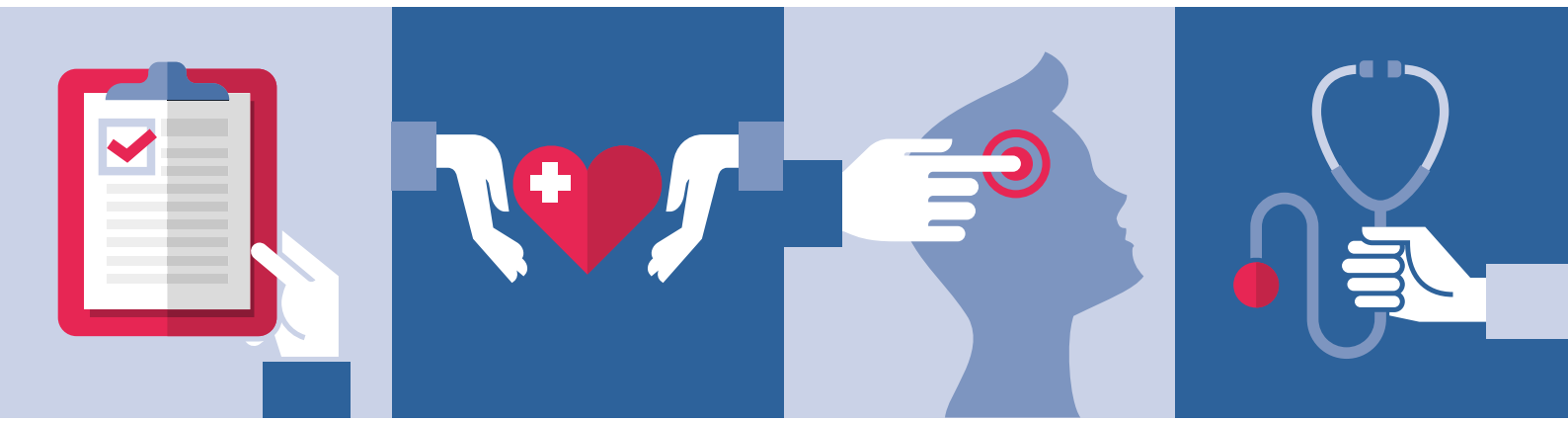

Sleep

Unit 513 January – February 2015

The five domains of general practice

- Communication skills and the patient-doctor relationship
- Applied professional knowledge and skills
- Population health and the context of general practice
- Professional and ethical role
- Organisational and legal dimensions

RACGP

ABOUT THIS ACTIVITY

The *International Classification of Sleep Disorders* 3rd edition (2013)[1] lists 70 clinically diagnosable sleep disorders. Examples of sleep problems include obstructive sleep apnoea, narcolepsy, restless legs syndrome, periodic limb movement disorder, insomnia, parasomnias and circadian rhythm disorders. Sleep disturbances were among the most frequently managed problems in general practice in Australia in the period 2013–14, accounting for 1% of problems most frequently managed. In the same period, sleep disturbance was the sixth most common problem frequently referred to a specialist.[2] A 2010 report[3] estimated that 500,000 Australians have sleep disorders and there is evidence for a causal relationship between sleep disorders and other illnesses and injuries, such as workplace injuries, car accidents, depression and cardiovascular disease.[3] This edition of *check* considers a variety of sleep disturbance problems encountered in general practice.

LEARNING OUTCOMES

At the end of this activity, participants will be able to:

- describe the diagnosis and management of delayed sleep phase disorder
- list the diagnostic criteria for persistent (chronic) insomnia and outline its management
- discuss the approach to diagnosis and management of restless legs syndrome
- summarise key considerations in the management of a sleep disorder presenting with depression
- outline the current management of obstructive sleep apnoea.

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Dorothy Bruck BA (Hons), PhD, MAPS is a professor of psychology at Victoria University in Melbourne, a sleep psychologist in private practice and a director of the Sleep Health Foundation. Dorothy's main research interests are in sleep/wake behaviour, sleep disorders and emergency arousal from sleep. She has published over 75 papers in peer-reviewed journals.

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Emma Manifold BHSc, BMBS (Hons), FRACGP is a general practitioner working in a group practice in the Adelaide Hills and treats a wide variety of patients and presentations.

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ACRONYMS

ADHD	attention deficit hyperactivity disorder	**DASS**	Depression Anxiety Stress Scale	**RLS**	restless legs syndrome
AHI	apnoea hypopnoea index	**DSPD**	delayed sleep phase disorder	**SSRI**	selective serotonin reuptake inhibitor
ASPD	advanced sleep phase disorder	**EEG**	electroencephalogram	**TGA**	Therapeutic Goods Administration
BMI	body mass index	**ESS**	Epworth Sleepiness Scale	**TIB**	time in bed
BP	blood pressure	**MS**	multiple sclerosis	**TST**	total sleep time
CBT	cognitive behaviour therapy	**MVA**	motor vehicle accident	**WED**	Willis-Ekbom disease
CBTi	cognitive behaviour therapy for insomnia	**OSA**	obstructive sleep apnoea	**WHI**	waist-to-hip ratio
CPAP	continuous positive airway pressure	**PBS**	Pharmaceutical Benefits Scheme		
		PLM	periodic limb movement		
		PLMT	painful legs and moving toes		

CASE 1

MAX CAN'T GET UP IN THE MORNING

Max is 19 years of age and is nearing the end of a gap year. He has come to see you with his mother. She has a lot of trouble waking him in the morning for his part-time job. His mother says he is 'like a zombie' when he gets out of bed. Max is tired all morning when he is at work and only starts to feel alert later in the day and evening. Max's mother is concerned because soon he will start full-time study again, which will involve early morning commitments.

QUESTION 1

What are the possible reasons for Max's morning tiredness?

QUESTION 2

Would you assess Max for anxiety and/or depression first, before assessing him for a sleep disorder?

QUESTION 3

How would you assess Max for a possible sleep disorder?

FURTHER INFORMATION

Max tells you he is sometimes a bit down and bored, and feels a bit isolated from his peers, many of whom are now in full-time study. His social contact is mainly via the computer and he plays indoor soccer twice a week. He is not anxious. He enjoys the activities he undertakes, is looking forward to a forthcoming holiday and is keen to get back to study. Through questioning and history taking you rule out significant clinical depression or anxiety.

You learn that Max has sleep-onset problems. He cannot fall asleep until 2 or 3 am and so he doesn't want to go to bed earlier. He stays in his room playing computer games and goes to bed when he feels sleepy. He has tried to go to bed earlier, especially when he has to work the next day, but he just tosses and turns, and worries about not being able to work well in the morning. He often sleeps all the way on the 20-minute bus ride to work. His mother notes that he is very irritable in the morning.

There are no indications of sleep apnoea, periodic limb movements, narcolepsy or nightmares. Furthermore, questioning reveals there were no immediate signs of a physical or substance abuse disorder.

Discussion reveals that on the three nights per week before his part-time job, Max may go to bed at midnight, fall asleep at 2–3 am and is then awoken by his mother at 9 am. On non-work nights he stays up playing computer games until about 3 am. His sleep quality is good once he is asleep and he wakes up naturally at 11 am or noon. He tends to stay in his room during the day, playing on the computer. His dinner times are quite variable. Sometimes he will have a short nap at work in the mornings if things are quiet.

QUESTION 4

What is your working diagnosis at this stage?

QUESTION 5

What are your next steps?

QUESTION 6

How would you treat Max's DSPD?

QUESTION 7

If Max's DSPD is comorbid with depression, which antidepressant would be appropriate?

CASE 1 ANSWERS

ANSWER 1

There are many possible causes of morning tiredness, some of which may co-exist. These include:[1,2]

- mental health concerns such as anxiety and depression causing sleep-onset problems and/or sleep maintenance problems
- stimulant intake during the evening (eg caffeine, nicotine, illicit stimulants) delaying sleep onset
- sleep disorder that fragments sleep (eg insomnia, sleep apnoea, periodic limb movements and nightmares)
- disorder of excessive daytime sleepiness (eg narcolepsy)
- sleeping at the wrong time because of a body clock phase shift called delayed sleep phase disorder (DSPD)
- physical disorders such as thyroid dysfunction, fibromyalgia or diabetes.

ANSWER 2

You could assess Max for anxiety and depression initially. Depression and anxiety are often comorbid with a range of presenting sleep difficulties and sleep disorders[3] and it is important to identify and understand all the potential contributors to the presenting symptoms.

The suggestion of mental health/mood problems should **NOT** stop you from seeking further information about a possible sleep disorder. Treating sleep disorders can prevent the later onset of clinical depression and, to a lesser extent, anxiety disorders in young people.[4,5]

If there is evidence of significant clinical depression or anxiety these should be treated at the same time as a sleep disorder (refer to Answer 6). Mild depression can be a consequence of sleep loss,[6] whereas sleep anxiety is commonly associated with long periods of lying in bed waiting for sleep onset.[7]

ANSWER 3

The assessment of a possible sleep disorder involves taking a detailed history and performing an examination to identify any co-existing medical or psychiatric illness, as well as other possible contributors (eg psychosocial, physical and environmental stressors, poor sleep practices, medication use, substance abuse). Evaluation may also include interviews with a family member, partner or care giver.[2,8]

A good starting point is to ask Max to describe his sleep/wake timing (ie clock times) and key activities across a 24-hour period, commencing with his waking time. Do this for his work days and his non-work days. Establish Max's typical times of falling asleep (and how long this may be after going to bed), the quality of his sleep once asleep, and waking times. Seek information about the extent of sleep/wake timing variability across a typical 7-day period. Ask Max about his late night intake of stimulants, especially drinking coffee, cola, energy drinks or alcohol and smoking, and obtain details about his activities in the 2-hour window before bedtime (eg computer, phone, television use).

Ask Max's mother about loud snoring and/or breathing pauses during Max's sleep to check for possible sleep apnoea, which is present in about 2.2% of Australians aged 18–24 years.[9] Has anyone observed Max having frequent jerking of the limbs throughout sleep? If so, this might suggest periodic limb movement disorder. The presence of any sleep-onset difficulties would rule out narcolepsy, which has median age of onset at 17 years and occurs in about 0.05% of the population.[10] Narcolepsy typically presents as an overwhelming urge to fall asleep in inappropriate circumstances and/or unusual times of the day, despite adequate opportunity for nocturnal sleep. If any of these disorders are suggested, refer Max to a sleep clinic for assessment.

ANSWER 4

A working diagnosis could be that Max has DSPD.

DSPD is a circadian rhythm disorder with a resultant late-timed sleep pattern. In DSPD, sleep onset and wake-up times are delayed by 3–6 hours, compared with conventional times,[11] which meets the *International Classification of Sleep Disorders* 3rd edition (2013) diagnostic criteria[1] for DSPD. It occurs in 1.1% of Australian teenagers and young adults[12] and develops through an interaction of:

- a delay in the intrinsic circadian rhythm (a biological factor commonly associated with puberty)[13]
- poor sleep habits (eg staying up increasingly late and being exposed to computer screens).

According to the *The International Classification of Sleep Disorders*, 3rd edition (2013), for a diagnosis of DSPD, the following criteria must all be met:[1]

- There is a significant delay in the phase of the major sleep episode in relation to the desired or required sleep time and waking time, as evidenced by a chronic or recurrent complaint by the patient or a caregiver of inability to fall asleep and difficulty awakening at a desired or required clock time.
- The symptoms are present for at least 3 months.
- When patients are allowed to choose their own schedule, they show improved sleep quality and duration for age and maintain a delayed phase of the 24-hour sleep/wake pattern.
- Sleep log monitoring for at least 7 days (preferably 14 days) demonstrates a delay in the timing of the habitual sleep period. Work/school days and free days must be included in this monitoring.
- The sleep disturbance is not better explained by another current sleep disorder, medical or neurological disorder, mental disorder, medication use, or substance use disorder.

ANSWER 5

The next step is to discuss the nature of Max's suspected sleep disorder with him and his mother. Explain the possibility that he has a sleep disorder where his body clock is set at the wrong time.

Max's family might be living on Melbourne time, for example, but Max's sleep/wake timing resembles New Delhi time. In most cases, behavioural changes alone will treat the problem but it requires motivation on Max's part and support from his family.[14] He will find that he needs to get up in the morning when he would rather stay in bed. You will first need a careful 1–2-week record of his current sleep/wake times. Max should use a sleep log (diary) in which he shades boxes to indicate sleep times every night for a minimum of 7 nights. A 2-week sleep diary produced by the American Academy of Sleep Medicine can be downloaded from Google Images. While Max is completing the sleep log, ask him to try to be as regular as possible in his sleep and eating habits and to avoid daytime naps.

If the sleep log shows fragmented sleep, rather than a consolidated sleep period once sleep has been initiated, then consider a diagnosis of insomnia (sleep onset and sleep maintenance) instead of DSPD.[15]

Typically, a patient with DSPD will be going to sleep several hours after midnight. In Max's DSPD log you should see shorter total sleep durations on the nights before he goes to work and extended sleep through the mornings on non-work days. On such days his recovery sleep may be extended up to about 10 hours. Daytime naps may complicate the picture and may delay sleep onset even more. The most important point to be derived from the sleep log is his estimated average wake time if he is allowed to wake up naturally after a few non-work days (eg a weekend morning). The time difference between this wake time and his desired wake time is the extent to which Max's sleep phase is delayed (eg 3–6 hours).

ANSWER 6

Figure 1 illustrates the key steps in the behavioural management of DSPD using both morning bright light and evening behavioural changes. If Max's sleep phase is delayed by more than 5 hours consider referral to a sleep specialist clinic. During treatment, Max should continue to keep a daily sleep diary.

Morning bright light

Outdoor morning bright light is usually the most effective form of lighting. In most cases exposure to morning outdoor light levels for at least 1–2 hours at the times indicated will be enough to gradually change the circadian phase to an earlier time.[16] One-third of patients diagnosed with DSPD are unable to wake in response to loud tones.[17] It is important, therefore, to involve a parent in rescheduling sleep/wake times and morning light exposure rather than relying solely on an alarm clock. For example, bedroom blinds can be opened at the scheduled wake-up time (*Figure 1*) and breakfast can be eaten outside or by a sunny window.[16] The light needs to be able to enter the eyes.[16] Compliance to morning wak-up time should be rigorously adhered to – it is the 'anchor' of DSPD management. If the desired, target wake-up time is before the sun has fully risen consider the purchase of a bright light box.

Evening behavioural changes

As computer screens contain blue light they act to suppress the normal evening rise of melatonin, a hormone that regulates the body clock and facilitates sleep onset.[7] Late night computer use has been linked to suppression of melatonin and increased subjective and objective alertness.[18] During the 2 hours before the desired sleep-onset time, exposure to blue light from computer screens should cease. A 1–2 hour buffer zone of relaxing activities in overall dim ambient light before sleep should be encouraged. This could include quiet reading, watching TV in the living room (ie not on a computer screen) and/or having a warm bath or shower. Be sure that caffeinated drinks (including 'energy' drinks) are not consumed in the evening and that vigorous exercise within a few hours of the planned sleep-onset time is avoided.[7]

ANSWER 7

There are no reports recommending the use of one antidepressant or antidepressant class over another for the treatment of DSPD in people with depression. The same holds true for the use of antidepressants in people with insomnia and depression.[19] In cases where depression co-exists with DSPD, current depression management guidelines,[20,21] including recommendations for first-line prescribing should be followed.

RESOURCES FOR PATIENTS

- The Sleep Health Foundation has an extensive library of over 70 fact sheets, including fact sheets on DSPD, melatonin, teenage sleep and the Body Clock, www.sleephealthfoundation.org.au
- Paediatric sleep services can be located through the 'Find a sleep service' link on the Sleep Health Foundation home page, www.sleephealthfoundation.org.au

RESOURCES FOR DOCTORS

- Bartlett D, Biggs SN, Armstrong SM. Circadian rhythm disorders among adolescents: assessment and treatment options. Med J Aust 2013;199:S16–20.
- Morgenthaler TI, Lee-Chiong T, Alessi C, et al. Practice parameters for the clinical evaluation and treatment of circadian rhythm sleep disorders: an American Academy of Sleep Medicine report. Sleep 2007;30:1445, www.aasmnet.org/Resources/PracticeParameters/PP_CircadianRhythm.pdf
- Australasian Sleep Association. Delayed sleep phase syndrome – for health professionals. This publication gives a brief overview of the DSPD its diagnosis and treatment, www.sleep.org.au/information/health-professionals-information/circadian-rhythm-sleep-disorders-and-delayed-sleep-phase-syndrome

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Figure 1. DSPD behavioural treatment[7,16]

Step 1: Establish Max's average baseline sleep onset (A) and wake-up (B) times from the sleep log.

			Baseline bed time									Baseline wake-up time
			A. 2.30 am									B. 11 am

Step 2: Subtract 2.5 hours from Max's current wake up time. This is the approximate time when core body temperature is at a minimum (C), which is 2–3 hours before wake-up time. This is important because light exposure must NOT occur before the time of core body temperature minimum (use sunglasses if the patient sometimes has an early commitment).

			Baseline bed time						Body temp min			Baseline wake-up time
			A. 2.30 am						C. 8.30 am			B. 11 am

Step 3: Negotiate a new target time of waking up (D, 7.30 am, shown in red below). This should be based on the normal time needed to get up for commitments. If the days vary, choose the earliest time. From the sleep diary and discussions with Max and his mother estimate Max's average sleep need (eg 8.5 hours) and work backwards from the target getting up time to set a new target sleep onset time (E, 11 pm, in red). Choose a 1–2 week period to implement the changes in sleep/wake times, ensuring that morning bright light exposure can be implemented. School holidays are an ideal time.

Target bed time			Baseline bed time					Target wake-up time	Body temp min			Baseline wake-up time
E. 11 pm			A. 2.30 am					D. 7.30 am	C. 8.30 am			B. 11 am

Step 4: On Day 1 start morning bright light exposure (see Q5 text) at F (10.30 am, shaded yellow below) for a minimum of one hour and preferably for 2–3 hours. Exposure commences about 2 hours **after** the core body temperature minimum and 30 minutes before Max's baseline (current) wake-up time (B, 11 am). Also move his Day 1 bedtime to 30 minutes earlier (G, 2 am) so that he still has the agreed 8.5-hour sleep window. Implement the evening behavioural changes (pre-bed buffer zone, see Q5 text) at the same time for the 2 hours before bed, shown in green.

Target bed time		Day 1 new bed time	Baseline bed time					Target wake-up time	Body temp min		Day 1 Bright light	Baseline wake-up time
Pre-bed buffer zone												
E. 11 pm		G. 2.00 am	A. 2.30 am					D. 7.30 am	C. 8.30 am		F. 10.30 am	B. 11 am

Step 5: Move the wake-up time and bright light exposure to 30 minutes earlier every day, **provided** that Max is adhering to the earlier wake-up time. At the same time move bedtime 30 minutes earlier so that the agreed 8.5-hour window for sleep is maintained. The difficult part will be maintaining the agreed wake-up time. Max's plan aims for a 3.5-hour phase shift (from a current wake up time of 11 am to one of 7.30 am). This should be achieved within 2 weeks. Once this has been achieved, encourage the family to review Max's current total sleep time and increase in small steps by an earlier bedtime if required. Once a new time schedule has been established allow only 1 hour of extended morning sleep once a week (eg on a Saturday morning).

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CASE 2

DAVID SNORES

David is a truck driver, aged 52 years, who comes to see you accompanied by his wife, to discuss his snoring. She reports loud snoring and pauses in his breathing during the night, which she is concerned about. He is unaware of these events and is not sure that he really needs to see you.

QUESTION 1

How can simple snoring be differentiated from obstructive sleep apnoea (OSA)?

QUESTION 2

As well as symptoms of OSA, what additional history is important?

FURTHER INFORMATION

David tells you that he falls asleep regularly in front of the television and often feels sleepy when driving his truck. He fell asleep at the wheel on a recent interstate trip and awoke when he hit the 'ripple strip' on the side of the road.

QUESTION 3

What are the risk factors for motor vehicle accidents in people with OSA? What advice would you give David?

QUESTION 4

What features are important to assess on clinical examination?

FURTHER INFORMATION

On examination, David's BMI is 35 kg/m^2, BP is elevated at 150/90 mmHg and his Mallampati score is D, indicating significant narrowing of the upper airway. His ESS is elevated at 17, consistent with severe daytime sleepiness. You refer him to a sleep physician for an urgent overnight sleep study, which reveals an apnoea hypopnoea index (AHI) of 50 events per hour, profound oxygen desaturation to a minimum of 65% and frequent electroencephalogram (EEG) arousals.

QUESTION 5

What do these results indicate?

QUESTION 6

How should David be managed?

CASE 2 ANSWERS

ANSWER 1

Simple snoring is common, affecting 40% of the adult population.[1] It is caused by vibration of the tissues in the nasal passages or upper airway.[2] There is little evidence that snoring has harmful effects other than social disruption, although recent research may implicate vibrations from snoring in carotid artery disease.[3]

Features that should raise suspicion for OSA include witnessed apnoeas (pauses in breathing), gasping or choking, fragmented sleep, daytime sleepiness, morning headaches, decreased memory or concentration, irritability and lowered mood.[4] The Epworth Sleepiness Scale (ESS) can be used to measure subjective daytime sleepiness; a score of ≥10 is significant (*Figure 1*).[5]

Recent weight gain, nasal obstruction (eg seasonal rhinitis) and alcohol intake before bedtime may worsen simple snoring and OSA.[6]

ANSWER 2

Additional history that is important includes information about the patient's usual sleep pattern, including bedtime, sleep-onset latency (time to fall asleep), nocturnal awakenings, wake-up time and total sleep time. Reduced total sleep time may contribute to daytime sleepiness. Every patient with suspected OSA should be asked about sleepiness when driving and motor vehicle or industrial accidents.[6,7]

Risk factors for OSA include male gender, middle-age, obesity[8] (ask about recent weight gain) and upper airway obstruction due to tonsillar hypertrophy (ask about recurrent tonsillitis).[9] Features associated with obesity, such as increased body mass index (BMI), neck circumference and waist-to-hip ratio, are associated with increased prevalence of OSA.[8,10] Weight loss leads to improvement in OSA.[10,11]

Assessment for consequences of OSA, including hypertension, ischaemic heart disease, congestive heart failure and cerebrovascular accidents, as well as conditions associated with OSA including atrial fibrillation and diabetes should be undertaken.[12]

Other causes of daytime sleepiness should be excluded such as suboptimal sleep hygiene, restless legs syndrome, lowered mood and sedative medications.[4] Sedative medications and alcohol may worsen OSA by reducing upper aiway muscle tone and respiratory drive.

ANSWER 3

OSA increases crash risk by up to sevenfold, particularly in people with severe disease.[13] The following features indicate a 15-fold increase in the risk of a motor vehicle accident:[14]

- ESS >16
- previous history of falling asleep at the wheel
- a motor vehicle accident (MVA) due to falling asleep.

If any of these features are present, an urgent sleep physician referral for assessment and sleep study should be organised.

In the interim, David should be advised not to drive whilst sleepy. He should avoid higher-risk situations (night driving, sleep deprivation, alcohol). State laws require individuals to notify their driver licensing authority of any long-term illness that is likely to affect their ability to drive safely, including OSA. In particular, given he is a commercial driver, he must notify his licensing authority and refrain from driving whilst sleepy. He could be subject to legal action if involved in accident due to sleepiness.[14] National guidelines for assessing fitness to drive, medical notification forms and patient information sheets are available on the Austroads website (refer to Resources section).

ANSWER 4

The following features should be assessed:[15]

- BMI (weight kg/m^2) should be calculated. Large cohort studies indicate a 10% increase in body weight is associated with a sixfold increase in the risk of developing OSA.[7]
- Blood pressure (BP) should be measured, as up to 50% of OSA patients will have hypertension.[16]
- Increased neck circumference (>42 cm men, >41 cm women) is also a risk factor for OSA.
- Nasal patency, which may contribute to snoring, should be assessed.
- The upper airway should be inspected for tonsillar hypertrophy and the Mallampati score calculated (*Figure 2*).
- Retrognathia, rarer craniofacial abnormalities (eg maxillary and mandibular hypoplasia) and endocrine disturbances (acromegaly, hypothyroidism) should be excluded.[17]
- Cardiovascular examination should be performed, including looking for atrial fibrillation and congestive heart failure.[18,19]

Figure 1. Epworth Sleepiness Score

The following questions refer to sleepiness or the tendency to doze off when relaxed.

How likely are you to doze off or fall asleep in the following situations, in contrast to just feeling tired? This refers to your usual way of life in the past 3 months. Even if you haven't done some of these things recently, try to work out how they would have affected you.

Choose the most appropriate number for each situation by putting an X in one box for each question.

Situation	(0) Would never doze	(1) Slight chance of dozing	(2) Moderate chance of dozing	(3) High chance of dozing
1. Sitting and reading	☐	☐	☐	☐
2. Watching TV	☐	☐	☐	☐
3. Sitting, inactive in a public place (eg. at the theatre or a meeting)	☐	☐	☐	☐
4. As a passenger in a car for an hour without a break	☐	☐	☐	☐
5. Lying down to rest in the afternoon when circumstances permit	☐	☐	☐	☐
6. Sitting and talking to someone	☐	☐	☐	☐
7. Sitting quietly after a lunch (without having had alcohol)	☐	☐	☐	☐
8. In a car, while stopped for a few minutes in traffic	☐	☐	☐	☐

Total = _____/24_____

Score: 1–6 = adequate sleep; 7–8 = average sleep; >9 = abnormal sleep

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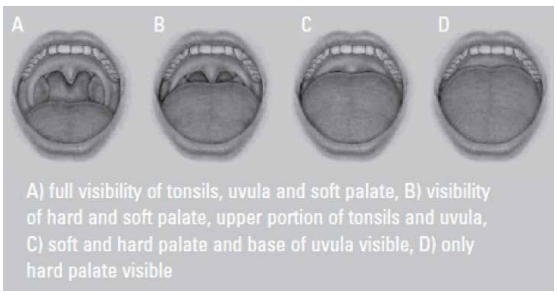
Figure 2. The Mallampati scale, originally used to predict ease of intubation



A) full visibility of tonsils, uvula and soft palate, B) visibility of hard and soft palate, upper portion of tonsils and uvula, C) soft and hard palate and base of uvula visible, D) only hard palate visible

Higher scores (C–D) are associated with an increased incidence of sleep apnoea. Scoring is performed without phonation.

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ANSWER 5

David's results indicate severe OSA. The AHI is the sum of apnoeas (cessation of breathing) and hypopnoeas (reduction in breathing) per hour; an AHI of 5–15 indicates mild OSA, 16–30 is moderate and >30 is severe OSA.[20] Severe OSA results in daytime sleepiness, neurocognitive dysfunction and impaired quality of life. It is associated with increased risk of current and future hypertension, motor vehicle and occupational accidents, ischaemic heart disease, congestive heart failure, cerebrovascular disease, atrial fibrillation, diabetes, anxiety, depression, impotence in men[15,21,22] and a threefold increase in mortality.[20]

ANSWER 6

In addition to appropriate driving advice (refer to Answer 3), David should be educated about the potential effects and consequences of severe OSA. Patient fact sheets are available on the Sleep Health Foundation website (refer to Resources section). He should allow enough time for adequate sleep (individualise the information given, but generally a minimum of 7 hours per night should be recommended) and minimise shiftwork where possible.

The diagnosis of OSA allows the clinician to review adverse lifestyle factors such as excessive weight, excessive alcohol use and/or smoking, which may be contributing to OSA and amplifying cardiometabolic risk.[2] Given David's high BMI and the contribution of obesity to OSA as discussed in Answer 2, he should be given weight loss advice regarding diet and exercise, in accordance with current

Australian guidelines.[23] As alcohol relaxes the muscles of the upper respiratory tact, ceasing alcohol ingestion may reduce snoring.[2]

Blood pressure monitoring should be instituted and his hypertension should be treated appropriately using current guidelines.

David should have an urgent trial of continuous positive airway pressure (CPAP) therapy, which has been shown to be effective in managing moderate-to-severe OSA,[15] to improve his daytime sleepiness, quality of life, BP and return his risk of cardiovascular and cerebrovascular events, driving risk and life expectancy[4,24] back to normal. His CPAP adherence should be monitored objectively, using data printouts from his machine. Longer-term adherence has been reported to be 50–70%.[25] If he is unable to tolerate CPAP therapy his driving risk should be re-evaluated and other options for treatment such as a mandibular advancement splint, which is designed to hold the mandible in a protruded position, could be considered; however, this approach is less likely to control severe OSA in an obese patient.[26]

He may require an annual sleep report if a conditional licence has been issued.[14] David's management will require ongoing input from his sleep physician.

RESOURCES FOR DOCTORS

- Assessing Fitness to Drive 2012, See 'Assessing fitness to drive' and 'Health professional resources' sections, www.austroads.com.au
- Australasian Sleep Association. OSA information sheet for health professionals (see Information tab), www.sleep.org.au/
- Sleep Health Foundation. OSA information sheets for patients (see Information library), www.sleephealthfoundation.org.au/informationhome.html
- Access Economics report. Re-awakening Australia The economic cost of sleep disorders in Australia. 2011. Sleep Health Foundation, www.sleephealthfoundation.org.au
- Eat for health provides information about Australian dietary guidelines, www.eatforhealth.gov.au

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CASE 3

SUE FEELS TIRED

Sue is 36 years of age and complains of chronic tiredness. She has two children, aged 3 years and 6 years. Sue had postnatal depression after each of her pregnancies and since her second pregnancy has continued on an antidepressant, currently fluoxetine 20 mg mane. Her health otherwise has been good, apart from heavy menstrual periods. Recently, she has been adhering to a low-carbohydrate diet in an effort to lose weight. When asked about sleep, she tells you that she does not sleep well and that her husband complains about her moving in bed, which disturbs him. The marriage is already under strain.

QUESTION 1

What aspects of Sue's history suggest a cause for her tiredness?

QUESTION 2

What further questions would you ask about her sleep?

FURTHER INFORMATION

Sue tells you that her problems are longstanding and were worse when she was pregnant. She describes discomfort in both legs, not usually a pain, which she can temporarily ease by moving. These feelings tend to start when she sits down to rest after the children have gone to bed and often make it hard for her to settle at night. When she does finally get to sleep, her leg movements in bed may disturb both her and her husband. He has begun sleeping in the spare room, partly because of Sue's restlessness and partly because she has also started snoring.

Sue is not aware of any family history of sleep disorders and says she has not been told she stops breathing at night. She has had no gasping or choking and no morning headaches, but is tired during the day.

QUESTION 3

What specific examination and initial tests would you carry out given Sue's sleep history?

FURTHER INFORMATION

Sue is Caucasian. Her BMI is 29 kg/m^2 and her WHI is 0.8. Examination reveals a retrognathic jaw and a crowded oropharynx. Lower limb examination is unremarkable. Her serum ferritin level is 22 µg/L (normal range 15–200 µg/L) and she does not have anaemia. Her ESS score is 11/24, indicating mild daytime sleepiness.

QUESTION 4

What sleep disorder(s) may be contributing to Sue's tiredness?

QUESTION 5

How would you confirm your diagnosis?

FURTHER INFORMATION

Sue is referred for a sleep study, which shows mild OSA. Her apnoea hypopnoea index (AHI) is 9, mainly in the supine position, and periodic limb movements (PLMs) are seen. She would like to manage her OSA initially with weight loss and by sleeping on her side. She wonders what she can do about her leg movements.

QUESTION 6

What may be contributing to Sue's RLS/WED?

QUESTION 7

What non-pharmacological options are available for the management and treatment of RLS/WED?

QUESTION 8

What pharmacological options are available for RLS/WED?

CASE 3 ANSWERS

ANSWER 1

Tiredness is a common complaint in general practice. It may have a wide variety of underlying causes and may be multifactorial. The aspects of Sue's history that may suggest a cause for her tiredness include:

- heavy menstrual periods, which may lead to iron deficiency
- history of depression
- being under stress in an unhappy marriage
- disturbed sleep
- low carbohydrate diet.

You may wish to refer to *check* Unit 506 (Fatigue, June 2014) for case studies on managing tiredness in general practice.

ANSWER 2

To elucidate her sleep problem, you should enquire about difficulties initiating and maintaining sleep (insomnia), and about snoring, witnessed apnoeas, waking gasping or choking, morning headache and daytime tiredness, which are symptoms of obstructive sleep apnoea (OSA) syndrome. You should also ask about the reports of her moving in bed.[1]

ANSWER 3

Body mass index (BMI) and waist–hip ratio (WHI) are risk factors for OSA.[2,3] Craniofacial and oropharyngeal structure ethnicity should also be noted as risk factors for OSA.[4,5] In suspected OSA the following should be assessed as a minimum:[6]

- Epworth Sleepiness Scale (ESS) score
- BMI (weight kg/ height m^2)[3]
- neck circumference (>42 cm men and >41 cm women is a risk factor for OSA)[7]
- nasal patency and the presence of sinus disease
- upper airway examination and a Mallampati score calculated[8]
- cardiovascular examination, including checking blood pressure (BP)
- review of medications being used, as some pharmacological agents may contribute to OSA.

A neurological examination of the lower limbs should be undertaken to exclude peripheral neuropathy[9] and serum ferritin test ordered to assess for an underlying iron deficiency, which may cause or contribute to Sue's tiredness and may also cause or aggravate her movements in bed.[10]

ANSWER 4

It is very common for more than one sleep disorder to be present.[11,12] In Sue's case, the evidence so far suggests her primary condition is restless legs syndrome (RLS), but OSA also needs exclusion. RLS has been recently renamed Willis-Ekbom disease (WED) in an attempt to overcome what is seen as a trivialisation of the condition by the word 'restless'. RLS/WED was first described by Willis in 1685.[13] RLS/WED significantly reduces quality of life and productivity for patients and has been associated with coronary artery disease and increased mortality.[14] A study of about 15,000 adults reported that RLS/WED affects approximately 7% of the population; the mean age of onset is 34 years and for 3% of patients it is a chronic and persistent condition.[15]

ANSWER 5

The diagnosis of RLS/WED is made on clinical criteria.[16,17] Note that a sleep study will help confirm the presence of concomitant OSA.[6] RLS/WED is underdiagnosed and one study showed that only 6% of those who reported symptoms of RLS/WED to their primary care physician received the correct diagnosis. Misdiagnoses included venous insufficiency, spinal and arthritic problems and poor circulation.[15]

The diagnostic criteria for RLS/WED can be summarised by the acronym URGES:[18]

- **U** urge to move limbs – occurs suddenly and is usually accompanied by uncomfortable and unpleasant sensations
- **R** rest or inactivity precipitates or worsens symptoms
- **G** getting up or moving improves the situation
- **E** evening or nighttime appearance or worsening of symptoms
- **S** not solely accounted for by another medical or behavioural condition.

The sensations commonly affect the legs, from thigh to ankle, and sometimes the arms. Occasionally, only one leg is affected. They may be painful and, in some people, are also present during the day but worsen in the evening or in periods of stillness (eg in a theatre, on a plane flight, or sitting down to read). A family history is noted in at least two-thirds of patients so the presence of RLS/WED in a first-degree relative supports the diagnosis.[19]

RLS/WED can be classified as follows:[10]

- Primary: no identifiable predisposing factor, positive family history
- Secondary: ferritin <50 ng/ml
- Pregnancy: prevalence of 11–27% in pregnancy, especially in the third trimester[20]
- End-stage renal failure: RLS/WED is reduced in about 40% of dialysis patients following renal transplantation[21]
- Drug-induced: tricyclics, selective serotonin reuptake inhibitors (SSRIs), lithium, dopamine agonists (eg metoclopramide and prochlorperazine) and antihistamines.

Differential diagnoses and associations include:

- akathisia: typically occurs throughout the body and lacks the strong circadian pattern of RLS/WED
- painful legs and moving toes (PLMT)[22] and leg cramps: PLMT usually lacks the urge to move and is not relieved by movement; leg cramps have an acute onset and there is palpable muscle contraction

- psychogenic: uncommon, but may be difficult to distinguish on symptoms reported
- growing pains in children and adolescents: these are not usually characterised by the urge to move; those with attention deficit hyperactivity disorder (ADHD) have a higher incidence of RLS/WED – fidgeting and poor attention may be a symptom of both ADHD and RLS/WED in the young
- neuropathy: more likely to involve the feet and not alleviated by movement
- multiple sclerosis (MS): there is a higher rate of RLS/WED among patients with MS, particularly in primary progressive MS, in older patients with longer duration of MS and more disabling symptoms of MS[23]
- Parkinson's disease: RLS/WED symptoms more common in Parkinson's disease, but there is no evidence that having RLS/WED symptoms predicts later onset of Parkinson's disease.[19]

ANSWER 6

Reduced ferritin levels and her antidepressant medication are likely contributors.[10] Her OSAS is not considered to be a cause of RLS/WED and the presence of PLMs on her sleep study is a common association but is not the same condition. About 80% of patients with RLS/WED have PLMs[24] but the majority of those with PLMs do not have RLS/WED. Sue's heavy periods and current diet may be contributing to her low iron stores.

ANSWER 7

Most cases of RLSS/WED are mild and do not require treatment.[10] Patients with mild, infrequent symptoms may respond to lifestyle changes alone (eg good sleep hygiene practices); however, where this is ineffective medication could be considered.[10]

Other non-pharmacological options include:[10]

- stretches, compression stockings, exercise
- abstinence from alcohol, caffeine, nicotine
- engaging in mentally distracting activities
- review of medications (in Sue's case, her SSRI may be a factor)
- assess for iron deficiency and institute iron therapy for appropriate patients.

The iron story in RLS/WED is evolving and brain iron levels can be low, even in those whose ferritin levels are in the normal range. Iron is an important part of dopamine production in brain tissue. Iron supplementation has been shown to improve RLS/WED symptoms even in patients with a ferritin level of 75 ng/ml.[25] It has been suggested that ferritin levels should maintained at a level at which maximal symptomatic benefit is noted, up to 300 ng/ml.[26] It may take 4–6 weeks of iron therapy before improvement is noted. Iron may be given by infusion or orally, depending on the severity of deficiency.[25–28]

ANSWER 8

Pharmacological options for RLS/WED include dopaminergic therapy. Three medications, pramipexole, ropinirole and rotigotine, are indicated for RLS/WED.[10] Levodopa+benserizide (100+25–200+50 mg orally) or levodopa+carbidopa (100+25–200+50 mg orally), which are listed on the Pharmaceutical Benefits Scheme (PBS) under the general schedule, may be used if intermittent therapy is required for infrequent limb movements at the time of sleep onset.10 For patients with more severe symptoms, pramipexole (125–750 µg/day; PBS, restricted benefit) and ropinirole (up to 4 mg/day; not PBS listed) may be indicated[5,29,30] Rotigotine as a transdermal patch (4 mg/day; not PBS listed)[10] may be more useful for those who have daytime symptoms.[31] Note that pramipexole is PBS-listed as a restricted benefit for Parkinson's disease and if used the RLS/WED rating score must be recorded in the patient's medical record; ropinirole and rotigotine are not available on the PBS.

Side effects of pramipexole, ropinirole and rotigotine include augmentation (an exacerbation of symptoms), which occurs in >20% of patients using these agents in the long term.[32] Pramipexole, ropinirole and rotigotine have also been associated with impulse control disorders (eating, shopping, gambling, sexual activity) and hypersomnolence, often referred to a sudden sleep attacks.[10,33] Patients should be asked about these issues at every review.

Some studies have shown a prevalence of up to 25% in pregnancy.[20] Initial treatment should be in avoiding triggers (caffeine, smoking, dopamine antagonists such as metoclopramide) and optimising iron levels. There is a scarcity of pregnancy safety information on first-line medications used in the non-pregnant patient, and medication should be reserved for severe cases. Specialist advice is preferable in these cases.

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CASE 4

MARY IS HAVING TROUBLE FALLING ASLEEP

Mary is 38 years of age and has two children. She comes to see you about her sleeping difficulties. For the past 2 years she has been finding it hard to fall asleep. She feels exhausted in the morning and is concerned that her sleeping problems may be affecting her work performance. She asks whether sleeping tablets will help the situation.

QUESTION 1

How will you assess Mary?

FURTHER INFORMATION

Mary tells you she has always had a tendency to overthink things. Up to 2 years ago she would fall asleep within 15 minutes. Two years ago, work was particularly stressful and she started taking longer to fall asleep. Things gradually worsened and she now takes up to 1 hour to fall asleep. She also awakens 2–3 times during the night and can take 30 minutes to fall asleep again. She often has 2–3 glasses of wine after dinner to help her fall asleep. She estimates her total sleep time at 5.5 hours and spends 8 hours in bed each night.

QUESTION 2

What is the most likely diagnosis?

QUESTION 3

How common is this condition? What comorbidities are important?

QUESTION 4

What other conditions need to be excluded?

QUESTION 5

What assessment options are available to investigate Mary's insomnia?

QUESTION 6

What treatment options would you consider for Mary?

CASE 4 ANSWERS

ANSWER 1

A sleep history should be undertaken to assess Mary's sleep disturbance.[1] It is important to ask about her current and previous sleep patterns:

- Does she have difficulty falling asleep or maintaining sleep during the night?
- Is her sleep restorative?
- How do her sleep problems affect her during the daytime?
- Were there initial triggering factors?
- Is there a prior history of sleep disturbance?
- How long does it take to fall asleep after lights out (sleep onset latency)?
- What is the number and duration of nocturnal awakenings (wakefulness after sleep onset)?
- What is her waking up time, total sleep time (TST) and time in bed (TIB)? Calculate 'sleep efficiency' (%) using TST/TIB.

In addition, assess Mary's sleep hygiene, including her routine before bedtime, daytime napping and caffeine intake (see Resources section).

ANSWER 2

The most likely diagnosis is that Mary has persistent (chronic) insomnia. The diagnostic criteria include:[2,3]

- difficulty initiating and/or maintaining sleep (being awake for longer than 30 minutes)
- dissatisfaction with sleep quality (non-restorative sleep) or quantity
- impairment in daytime functioning (eg work, study, social).

The symptoms occur at least three times per week for longer than 3 months.[2] There may be a prior history of insomnia with a pattern of recurrence. Insomnia commonly co-exists with medical or psychiatric disorders but may occur independently.[1] Cognitive and physiological arousal with negative conditioned responses to the bedroom and falling asleep are often present[4] ('wired and tired').

Common daytime symptoms include:

- fatigue
- decreased energy
- neurocognitive impairment (memory, attention, concentration)
- irritability
- mood disturbance
- anxiety.[5]

When assessing insomnia ask about predisposing, precipitating and perpetuating factors (the 3Ps).[4]

Predisposing factors include:

- female gender
- advancing age
- anxious personality traits.

Precipitating factors include:

- stress
- medical illness (eg pain)
- life events (eg separation)
- environment (eg temperature, light, noise).

Perpetuating factors may include:

- sedative or alcohol dependence.

ANSWER 3

An estimated 6–10% of the general population have symptoms consistent with insomnia disorder.[5] In primary care, 10–20% of patients complain of insomnia symptoms.[6] Insomnia is the most common sleep disorder encountered in general practice in Australia.[7,8] In 2013–2014, sleep disturbance accounted for 1% of the most frequent problems encountered in general practice in Australia, at a rate of 1.5 per 100 patient encounters.[9] Additionally, sleep disturbance was among the top 10 problems most frequently referred to a medical specialist; 10.9% of patients were referred.[9] Insomnia occurs more often in women (gender ratio 1.5:1) but the prevalence is still high in men.[2] Comorbidities (eg pain, fibromyalgia, arthritis, diabetes, COPD, coronary artery disease, depression, anxiety, bipolar disorder) are often present.[10] Insomnia doubles the risk of depression developing in the future[11] and is associated with impaired quality of life, work absenteeism and hypertension.[12] The current paradigm is that insomnia co-exists with these disorders rather than being a primary or secondary phenomenon.[1]

ANSWER 4

A number of conditions need to be excluded (possible differential diagnoses):[1,5]

- 'Short sleepers' are those who regularly have less sleep than an average person of their age group, have no problems falling asleep or maintaining sleep and have no functional impairment during the day. This pattern can be considered as a variant of normal sleep duration.
- Acute situational insomnia lasts days to weeks and is triggered by a precipitating event (eg recent bereavement) or change in sleep schedule (eg overseas trip).
- Delayed sleep phase syndrome is a circadian rhythm disorder that is characterised by a late bedtime and getting up time with no daytime dysfunction if the individual is able to sleep in later. A sleep diary can assist with the diagnosis.
- Daytime sleepiness and napping are atypical for insomnia and should raise suspicion for other sleep disorders including obstructive sleep apnoea (OSA).
- Restless legs syndrome (RLS), now called Willis-Ekbom Disease (WED), is characterised by an unusual feeling in the legs that is relieved by movement during wakefulness and is often associated with periodic limb movements during sleep.

- Chronic alcohol dependence, stimulant usage (eg amphetamines) and caffeine can lead to sleep disruption or poor quality sleep.
- Comorbid conditions may present with insomnia.

ANSWER 5

A sleep diary can be used to record Mary's sleep patterns over a 2-week period (see Resources section).[1] The insomnia severity index, which is a validated questionnaire that can screen for insomnia in a community and clinic setting,[13] could be used to assess Mary. Routine polysomnography is not indicated for the assessment of chronic insomnia unless an alternative diagnosis is considered (eg OSA).[1]

ANSWER 6

Non-pharmacological treatments are first-line options for the management of insomnia.[14–16] Cognitive behaviour therapy for insomnia (CBTi) is an evidence-based, effective therapy that should be used as a first-line treatment for Mary's chronic insomnia.[1,15] It produces significant improvements in sleep that are sustained at 12 months.[16,17] Components include stimulus control, sleep restriction, relaxation techniques, cognitive therapy and sleep hygiene education (*Table 1*). A clinical psychologist trained in the management of insomnia provides individual or group therapy over 4–6 sessions (see Resources section). Online resources are also available as part of a 'stepped-care' approach.[18] A Medicare rebate is available under the Chronic Disease Management or Better Access to Mental Health Care schemes.[1,19]

Despite the benefits of CBTi, over 90% of patients seeing a GP with sleeping difficulties are prescribed a benzodiazepine.[8] The Bettering the Evaluation and Care of Health (BEACH) 2013/14 publication reported that two of the top 30 drugs prescribed overall during the study period were benzodiazepines (diazepam accounted for 1.5% of prescriptions and temazepam for 1.2%).[9] Benzodiazepines can improve insomnia in the short term[17] but long-term efficacy is lacking and dependence and tolerance may develop.[13] The benzodiazepine-receptor agonist zolpidem is an alternative option and has longer-term efficacy data and less risk of dependence, but parasomnias are a side effect.[1,15] Melatonin is approved for use in the short-term treatment of insomnia for those aged over 55 years,[15] but has a modest sedative effect. A trial of sedating antidepressants (eg doxepin, amitriptyline, mirtazapine, agomelatine)[1,15,20] may be considered where insomnia and depression co-exist. Valerian is a complementary therapy promoted for improving sleep, but data for its efficacy is limited.[1,14] Current guidelines recommend short-term use of hypnotics or melatonin for acute or chronic insomnia, where non-pharmacological strategies have been ineffective. A preference for intermittent dosing and overall use for less than 2 weeks is cited.[15]

Mary should be given advice on good sleep practices and counselled about the risks of using alcohol as a sedative, including detrimental effects on slow wave (deep) sleep.[13] Mary will require regular follow-up, particularly monitoring for relapse of her insomnia, which commonly occurs in the setting of new environmental stressors.

Table 1. Cognitive behaviour therapy for insomnia[1]

Intervention	Description	Patient instructions
Stimulus control	Bed used for sleep only (and sexual activity) to condition a positive association between bedroom and sleepiness	Go to bed when feeling sleepy. If unable to sleep after approximately 15 minutes (avoid watching clock) change rooms and perform a non-stimulating activity (eg reading). Avoid stimulating activities in bed (eg TV, electronic devices)
Sleep restriction	Restrict time in bed to increase sleep drive and sleep efficiency, then gradually increase time in bed as sleep efficiency improves	Set bed and rising time to match average reported sleep time. When sleep efficiency reaches 85% advance bedtime by 15 minutes. Avoid daytime napping
Relaxation techniques	Breathing techniques, visual imagery, meditation	Practise progressive muscle relaxation daily and use prior to bedtime
Cognitive therapy	Identifies unhelpful and negative beliefs about sleep and alters them	Challenge negative or incorrect beliefs about sleep (eg 'if I don't sleep tonight tomorrow will be a disaster', 'I need 8 hours sleep every night to function properly')
Sleep hygiene	Emphasises environmental and physiological factors, behaviours and habits that promote sleep	Avoid long daytime naps. Maintain regular sleep-wake times. Avoid stimulants (caffeine, nicotine). Limit alcohol intake. Hide clock. Sleep in a dark, quiet, comfortable bedroom

RESOURCES FOR PATIENTS AND DOCTORS

- Sleep Health Foundation provides fact sheets and information about sleep hygiene (good sleep habits for patients), www.sleephealthfoundation.org.au/fact-sheets-a-z/187-good-sleep-habits.html
- South Australia Health provides an insomnia management toolkit for GPs, including sleep diary, www.sahealth.sa.gov.au/wps/wcm/connect/Public+Content/SA+Health+Internet/Clinical+resources/Clinical+topics/Substance+misuse+and+dependence/Sleep+problems+-+Insomnia+Management+Kit
- The Australian Psychological Society provides information about CBTi and a 'find a psychologist service', www.psychology.org.au/Default.aspx
- The Australasian Sleep Association provide insomnia information sheets for health professionals, www.sleep.org.au/information/health-professionals-information/insomnia

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CASE 5

TIM HAS DAYTIME SLEEPINESS

Tim, 43 years of age, is an IT consultant of Chinese ethnicity. He presents with a 3-month history of daytime sleepiness, and loss of interest in his work and home life. He is frequently irritable and agitated and finds it hard to concentrate, particularly at work. His wife, who has accompanied him to the appointment, reports he goes to bed at 8.00–8.30 pm or falls asleep in front of the television. His wife says Tim snores frequently. Tim wakes up early in the morning and is rarely able to return to sleep. His wife says they used to have a very good relationship but lately he has not wanted to do anything but sleep. He has also stopped being involved in his children's activities. He is slim of build and you estimate his body mass index (BMI) to be approximately 23 kg/m^2.

QUESTION 1

From Tim's history what seems to be the most likely diagnosis?

QUESTION 2

How would you investigate Tim?

FURTHER INFORMATION

Tim scores high on the Depression Anxiety Stress Scale (DASS) for depression and stress. An initial diagnosis of moderate major depression is made. Further questioning reveals that Tim has not always gone to bed early and awoken early, and there is no familial predisposition to this sleep pattern. Tim's calculated BMI is 23.6 kg/m^2 and his ESS is >8, which is high. You refer Tim for an overnight sleep study to investigate a diagnosis of OSA.

QUESTION 3

How would you treat Tim's depression?

FURTHER INFORMATION

The results of Tim's sleep study show an apnoea hypopnoea index (AHI) of 89 events per hour, reductions in blood oxygen levels (desaturation) to a minimum of 81%, and moderate EEG arousals.

QUESTION 4

What do these results mean? How would you manage Tim now?

QUESTION 5

What other condition could be contributing to Tim's presentation?

QUESTION 6

How would you manage Tim's sleep problems?

CASE 5 ANSWERS

ANSWER 1

Tim's presenting symptoms are suggestive of depression and/or a sleep disorder. Both of these diagnostic possibilities need to be appropriately explored and assessed. If Tim has depression and a sleep disorder, both disorders can be treated at the same time.

Many individuals with depression will use sleep as a means of escaping, at least temporarily, their emotional pain or having to be involved and participate in family time. A large prospective study[1] has found that there is a bidirectional relationship between depression and disturbed sleep, particularly untreated insomnia. Early morning waking is traditionally seen as symptom of depression, and hypersomnia and insomnia are associated with depression.[2] A recent study found that hypersomnia was more commonly identified in major depressive episodes.[3]

Alternatively, Tim's symptoms could be explained by a sleep disorder. In particular, his snoring could indicate obstructive sleep apnoea (OSA).

ANSWER 2

Given that Tim's presenting symptoms have persisted for more that 2 weeks, he should be assessed for depression.

To be diagnosed with major depression, the person needs to have a pervasively depressed mood and/or marked loss of interest or pleasure unexplained by personal circumstances (eg grief) plus four or more of the following, persisting for at least 2 weeks:[4]

- marked change in weight or appetite
- insomnia/hypersomnia nearly every day
- psychomotor agitation/retardation nearly every day
- fatigue/loss of energy nearly every day
- feelings of worthlessness, excessive/inappropriate guilt
- indecisiveness or diminished concentration
- feelings of hopelessness
- thoughts of death, suicidal ideation/attempt.

Use of a structured depression assessment tool, such as the Hamilton Depression Rating Scale, is useful for documenting baseline signs and symptoms and allows for assessment of a treatment response at a later stage.[4]

When assessing a patient for depression and before starting treatment consideration should be given to other physical conditions and treatable causes (eg hypothyroidism) that might be contributing to the depression. If present, these conditions should be assessed and treated appropriately.[4,5]

Assessment of suicide risk is imperative when assessing a person suspected to have depression. Readers might find it useful to refer to the section on depression in the *Therapeutic Guidelines*[5] for more information on assessing suicide risk.

Tim's Epworth Sleepiness Score (ESS) should be assessed. A high score could reflect his depression but may also be a symptom of another

sleep disorder such as OSA, Willis-Ekbom Disease (WED), formerly known as restless legs syndrome, or periodic limb movements (PLM), which may explain his presenting symptoms.

Tim's snoring requires further investigation for possible OSA. An overnight sleep study (polysomnography) would be required to confirm a diagnosis of OSA. Simple snoring is common but when accompanied by apnoeas or hypopnoeas (complete or partial closure of the airway) is highly indicative of OSA, which does not just occur in obese middle-aged men.[6,7] OSA can also be present in people with a small or narrow oropharynx. This presentation is common in Asian populations and is thought to be associated with cranial base dimensions where the upper airway is more prone to collapse.[8] The consequences of OSA include cardiovascular events, including stroke.[9,10] People from South Asian, Chinese and Japanese population groups may have more body fat at lower weights and the World Health Organization has defined overweight/obesity as a BMI of 23–25 kg/m^2 for these groups, whereas the BMI cut-off is 25–30 kg/m^2 for other groups.[11] More recent research suggests there is little difference in the prevalence of sleep disordered breathing in Japanese populations, compared with other populations;[12] however, it important to consider craniofacial anatomy and body composition and not just BMI alone.[13]

The medical literature highlights the prevalent negative relationship that exists with chronic sleep disturbance and depression.[14,15] Depression may result from OSA through increased excessive daytime sleepiness, social isolation and neurocognitive deficits. OSA is increasingly being found to be comorbid with insomnia and there is the strong bi-directional relationship between insomnia and depression.[14,15] Depression and sleep disturbance are common and require equal treatment.

Tim has lost interest in his home life and may be avoiding his wife by going to bed early. His libido may also be low and to find out if this is also a factor direct questioning may be required. Such questioning can be difficult for the health professional, but giving a patient the opportunity to discuss their problems is imperative.

ANSWER 3

Management of depression is determined by the severity of the presentation. Both psychological (or psychotherapy) and/or pharmacological interventions can be considered and patient preferences should be taken into consideration in determining treatment options. Most depression is managed in primary care, predominately by general practitioners.[4] Current guidelines indicate that in mild depression psychological therapies have greater efficacy than antidepressants, whereas in moderate depression psychological therapies and antidepressants are equally effective and initial therapy should be based on the person's preferences.[16]

Initially, a non-pharmacological management approach could be trialled for Tim if that were his preference. Such treatment requires a team effort and the first step is for Tim to acknowledge his depression. Referral to a psychologist for psychotherapy could then be arranged. One psychological approach that has been demonstrated to be effective for depression is cognitive behaviour therapy (CBT).[4] The key components of CBT relate to A – B – C – D. A very simplistic approach relates to dealing with and challenging:

A. Automatic thoughts: 'I am so overwhelmed, I feel so bad!'
B. Beliefs: 'I am never going to feel any better and there is no point!'
C. Consequences of current negative thinking patterns: depression
D. Disputations of the thoughts: how accurate are they, and what is real and what is just a thought?[17]

CBT takes time but it gives individuals different and effective ways of dealing with previous and current mood through changing behaviour and thoughts in the long term. Tim may also respond well to learning mindfulness strategies where he learns to be more comfortable with being in the present or in the moment. This approach allows individuals to be more accepting of the symptoms of depression and how these psychological interventions give options in how they manage their often very uncomfortable feelings (see *Resources* section).[18,19]

If the outcomes of this approach were not satisfactory other treatment options could be considered. For example, Tim could be commenced on an antidepressant by his GP in accordance with current guidelines (eg *Psychotropic Therapeutic Guidelines*) or he could be referred for a psychiatric evaluation.

ANSWER 4

The results of Tim's sleep study indicate moderate OSA. The AHI is the sum of apnoeas (cessation of breathing) and hypopnoeas (reduction in breathing) per hour – or complete and partial closure of the airway; an AHI of 5–15 indicates mild OSA, 16–30 is moderate and >30 is severe OSA.[20]

Investigation of the consequences of OSA (eg hypertension), safety issues in relation to driving, cardiovascular disease risk factors and treatment interventions for OSA, such as use of continuous positive airway pressure (CPAP) and mandibular advancement splints, have been discussed in detail in Case 2.

ANSWER 5

Tim is sleepy and going to bed very early at night and waking early. He has not always had this sleep pattern and there does not seem to be any familial predisposition. Logically this pattern would seem to be related to his depression. However, the early morning waking may also be an indication of a learned advanced sleep phase disorder (ASPD) where an individual has a normal length of sleep but one that is out of synchronisation with the environment.[21] He has been going to bed early and waking early but has been achieving 6–8 hours of sleep. Consideration needs to be given to whether this is a mood or a behavioural shift or both. Behavioural ASPD may occur in older adults who live alone (lost a partner) or are socially isolated and start going to bed earlier and earlier. The duration of sleep is adequate but with early onset of sleep there is a resultant early offset of waking between 3 and 4 am. Depression is less clear in ASPD, compared with other circadian sleep phase disorders, but if it is suspected and there is a shift in the timing of sleep it may have preceded the sleep disorder.

Assessment would include a sleep diary to explore exceptions of when Tim is able to go to bed later and sleep later, but also to show patterns of sleep and wake periods with the number of hours spent in bed and perceived sleep. If actigraphy is available, a 2-week assessment would give an objective measurement of sleep patterns to support a diagnosis of a behaviourally and mood-induced ASPD.[15] A true ASPD is a rare presentation in a sleep clinic but a person may still require appropriate treatment for a possible tendency for ASPD.

ANSWER 6

Sleep behavioural interventions may be more effective when appropriate therapy for depression has been instigated and his condition stabilised.[22] All aspects of healthy sleep practices should be explored and discussed, which will help Tim to have better overall sleep. This may require instigating a number of behavioural treatments[23,24] including sleep/bed restriction, stimulus control therapy (conditioning the patient to think that bed is only for sleep/sex and not other stimulating activities including thinking and worrying), paradoxical intention (this is better described as 'putting the effort into staying awake', compared with putting effort into making sleep happen, which has been ineffective for the individual. It usually involves changing body position to sitting up straight instead of lying down and waiting for sleep to happen), relaxation strategies and assessment of caffeine and alcohol consumption, and smoking.[24] The same waking-up time during the working week with light exposure to suppress melatonin and morning exercise are also key components in CBT for management of a sleep disturbance. Referral to a sleep clinic or sleep psychologist could also be beneficial. Tim should also be given written materials to support any discussions, or referred to appropriate websites (see Resources section).[23–25]

If Tim has a persisting sleep disorder despite appropriate treatments, and an advanced sleep phase disorder tendency is suspected, a trial of evening bright light treatment (being outside for 40 minutes or longer) and exercise would be recommended to delay sleep onset.[21] The use of light glasses (eg 're-timer' glasses) or a blue light box or other stimulating bright light (eg from a computer screen), particularly in winter when it gets dark early, might also be helpful. Tim could also be encouraged to be more involved in social activities, where possible. It is equally important to avoid morning light (wear sunglasses for the first 2 hours each day) as this would again advance the sleep cycle. Late afternoon or evening bright light can be encouraged as 'time out time' for the individual; engaging him in exercise may be more difficult but an important component of this process.[21]

RESOURCES FOR PATIENTS AND DOCTORS

- Black Dog Institute, www.blackdoginstitute.org.au
- beyondblue has information about depression at www.beyondblue.org.au/the facts/depression, a 24/7 phone line (1300 22 4636), a tab to obtain 'immediate help' and a section for Man Therapy
- www.headspace.org.au
- Lifeline, 13 11 14
- The Australian Sleep Association website has information for patients and health professionals, www.sleep.org.au

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SLEEP (ACTIVITY ID 18137)

This unit of check is approved for 6 Category 2 points in the RACGP QI&CPD program. The expected time to complete this activity is 3 hours and consists of:

- reading and completing the questions for each case study
- you can do this on hard copy or by logging on to the gplearning website, http://gplearning.racgp.org.au
- answering the following multiple choice questions (MCQs) by logging on to the gplearning website, http://gplearning.racgp.org.au
- you must score ≥80% before you can mark the activity as 'Complete'
- completing the online evaluation form.
- You can only qualify for QI&CPD points by completing the MCQs online; we cannot process hard copy answers.

If you have any technical issues accessing this activity online, please contact the gplearning helpdesk on 1800 284 789.

If you are not an RACGP member and would like to access the check program, please contact the gplearning helpdesk on 1800 284 789 to purchase access to the program.

CASE 1 – BILL

Bill, a high school student aged 17 years, presents with his mother. She says he struggles to attend school on time because he has problems falling asleep at night and waking up in the morning. He experiences morning tiredness on school days but usually feels more alert by the afternoon. He is otherwise healthy. Bill is a keen chess player and enjoys playing chess with his friends or via the internet. Following detailed history taking and examination, you deduce that Bill most probably has a delayed sleep phase disorder (DSPD).

QUESTION 1

Which one of the following statements is an International Classification of Sleep Disorders, 3rd edition (2013) criterion for the diagnosis of DSPD?

A. Symptoms are present for at least 1 month.

B. Depression and anxiety are comorbid with the sleep disturbance.

C. Sleep log monitoring for up to 7 days on school/work days demonstrates a delay in the timing of sleep.

D. A family member or caregiver reports that the patient experiences restlessness during the night.

E. When patients are allowed to choose their own schedule, they will exhibit improved sleep quality and duration for age, and maintain a delayed phase of the 24-hour sleep/wake pattern.

QUESTION 2

Which of the following is the best option for treatment of Bill's DSPD?

A. Encourage Bill to play internet chess for 1–2 hours before sleep.

B. Encourage Bill to watch television or read a book before going to bed.

C. Advise Bill to use an alarm clock to wake him up in the morning.

D. Advise Bill's mother to open his bedroom blinds 2–3 hours before his scheduled wake-up time to allow morning light exposure.

E. Prescribe slow-release melatonin.

CASE 2 – WILLIAM

William, an accountant aged 53 years, attends your practice with his wife. She complains that his snoring keeps her awake at night. She thinks that he stops breathing in his sleep and has heard alarming gasping and choking noises. On questioning, William confesses to feeling irritable and moody most mornings and often has headaches which interfere with his ability to work.

QUESTION 3

What is the most likely diagnosis for William?

A. Insomnia

B. Restless legs syndrome (RLS), also known as Willis-Ekbom disease (WED)

C. Depression

D. DSPD

E. Obstructive sleep apnoea (OSA)

QUESTION 4

You refer William to a sleep physician and results from an overnight sleep study are consistent with moderate OSA. How should William be optimally managed?

A. He should be prescribed a hypnotic or melatonin.

B. He should be prescribed an antidepressant.

C. He should trial continuous positive airway pressure (CPAP) therapy.

D. He should be prescribed alpha-2 delta ligands (eg gabapentin, pregabalin)

E. He should be prescribed dopaminergic therapy (eg pramipexole, ropinirole)

CASE 3 – BETTY

Betty is 69 years of age. Since her husband's death 2 weeks ago she is finding it hard to fall asleep and stay asleep, and wakes up feeling tired. During the day she has problems concentrating and often feels irritable and moody. She was diagnosed with depression 38 years ago, after the accidental death of her youngest son, and made a full recovery. She has had no further episodes of depression.

QUESTION 5

What is the most likely diagnosis?

A. Chronic insomnia
B. Acute insomnia
C. Major depression
D. RLS/WED
E. DPSD

QUESTION 6

How would you best manage Betty's sleep problems?

A. Prescribe cognitive behaviour therapy for insomnia (CBTi)
B. Prescribe gabapentin
C. Prescribe pramipexole
D. Prescribe an antidepressant
E. Prescribe a sedating antidepressant

CASE 4 – PHILIP

Philip, 42 years of age, is a plumber and has come to see you with his wife. She is concerned about Philip's movements in bed and his occasional snoring, which interrupt her sleep. He has trouble falling asleep and staying asleep. He feels tired most days and finds it hard to concentrate. He says his legs feel often feel strange and he describes throbbing, creeping and pulling sensations, while trying to sleep.

QUESTION 7

Which of the following aspects of Phillip's presentation is suggestive of RLS/WED?

A. Trouble falling asleep, staying asleep
B. Occasional snoring
C. Difficulty concentrating
D. Strange feelings in legs
E. Tiredness

QUESTION 8

You discuss your initial thoughts regarding the sleep problems with Philip and his wife. Which of the following options correctly describes the appropriate next steps?

A. Refer Phillip for a sleep study.
B. Take a thorough history, including a family history, to confirm the diagnosis.
C. Commence pharmacological treatment for RLS/WED.
D. Answers A and B are correct.
E. Answers A, B and C are correct.

CASE 5 – MILLIE

Millie, 44 years of age, presents with a 2-month history of daytime sleepiness, lack of energy and diminished concentration. She has lost interest in her usual activities and says, 'It's all too difficult. I have no energy for anything anymore'. She goes to bed at around 10.00 pm but wakes up early and is unable to go back to sleep. Her appetite has decreased and she reports losing 4 kg.

QUESTION 9

Which of the following is the best approach to managing Millie?

A. Assess her for depression and an underlying physical disorder.
B. Commence treatment for depression.
C. Assess her for depression, a sleep disorder and an underlying physical disorder.
D. Commence treatment for depression and assess her for a sleep disorder.
E. Commence treatment for insomnia and an underlying physical disorder.

QUESTION 10

You confirm that Millie has depression and recommend cognitive behaviour therapy (CBT). A key component of CBT relates to dealing with and challenging the patient's A-B-C-Ds. Which of the following is correct?

A. Apathy, beliefs, confounding negative thoughts and disputations of thoughts
B. Anxiety, beliefs, confounding negative thoughts and disputation of thoughts
C. Anxiety, behaviour, consequences of behaviour and disputation of thoughts
D. Automatic thoughts, behaviour, consequences of negative thinking patterns and disputation of thoughts
E. Automatic thoughts, beliefs, consequences of negative thinking patterns and disputation of thoughts

check

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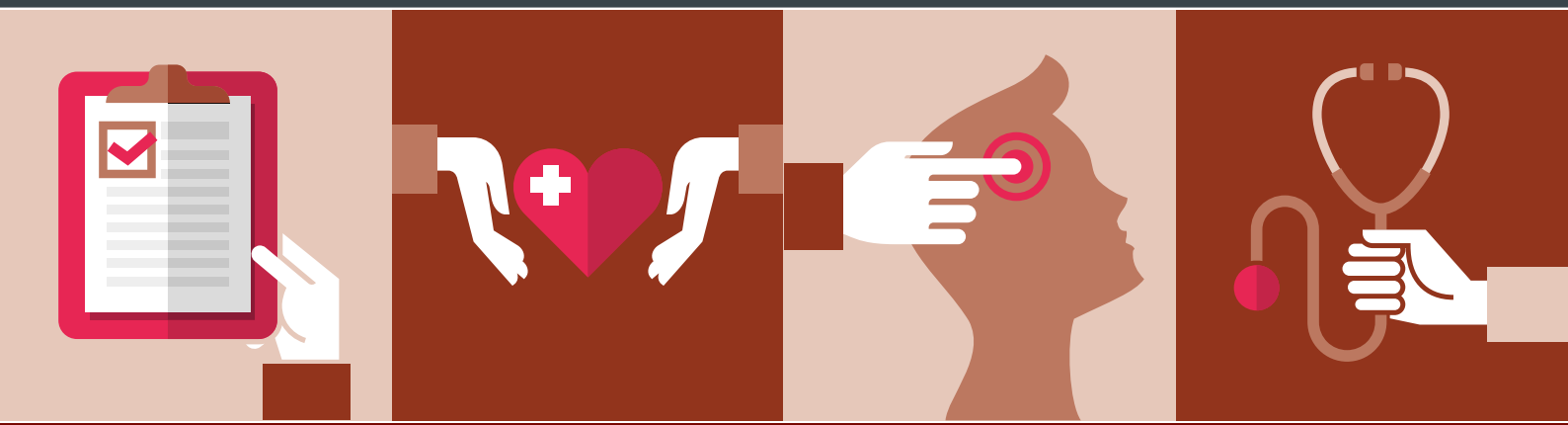

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Pain management

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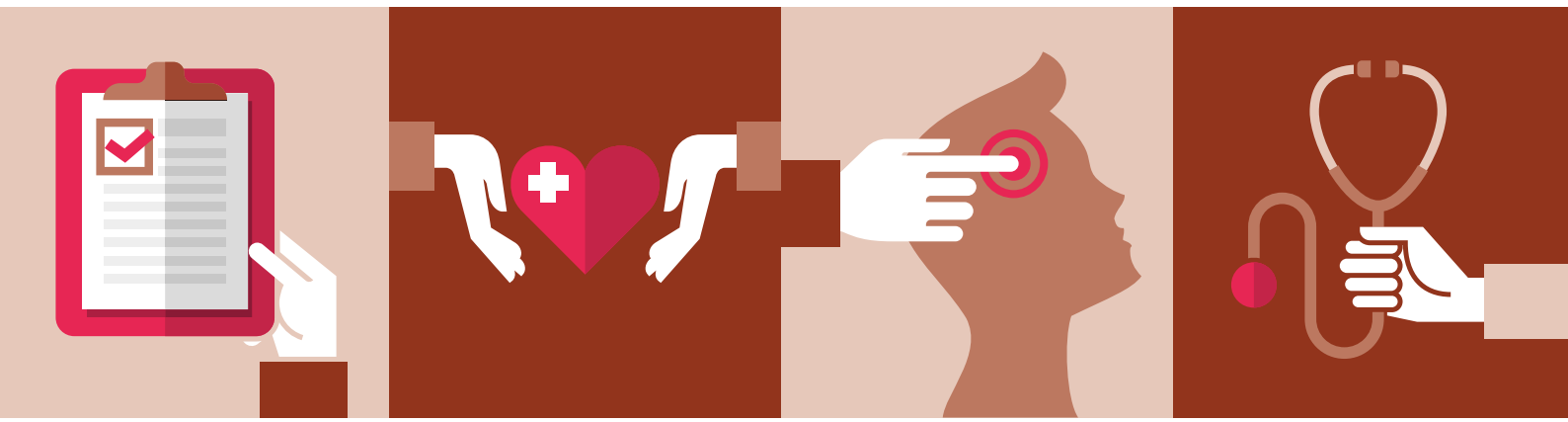

Pain management

Unit 514 March 2015

The five domains of general practice

- Communication skills and the patient-doctor relationship
- Applied professional knowledge and skills
- Population health and the context of general practice
- Professional and ethical role
- Organisational and legal dimensions

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ABOUT THIS ACTIVITY

Pain is a common medical condition and it is estimated that about one in five Australians experience chronic pain and about 5% (around 1 million) report that their pain has a significantly adverse impact on their quality of life.[1] Pain presentations were among the most frequent reasons for all patient encounters cited in a report on general practice activity in Australia in 2013–2014.[2] As the demand for Australia's multidisciplinary pain clinic services exceeds their capacity, the major burden for managing chronic pain falls on GPs.[1]

This edition of *check* considers common scenarios of pain management in general practice.

LEARNING OUTCOMES

At the end of this activity, participants will be able to:

- outline the management of fibromyalgia
- list criteria required to make a diagnosis of chronic regional pain syndrome and chronic post-surgical pain syndrome
- explain the assessment of a person presenting with abdominal pain
- describe appropriate practices for prescribing opioids in pain management
- discuss the importance of assessing red and yellow flags in chronic back pain presentations.

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ACRONYMS

ADL	activities of daily living
ANA	anti-nuclear antibody
ATP	adenosine triphosphate
BMI	body mass index
BP	blood pressure
BPI	brief pain inventory
CBT	cognitive behaviour therapy
CGRP	calcitonin gene-related protein
CNCP	chronic non-cancer pain
CPIP	chronic post-herniorrhaphy inguinal pain
CPSP	chronic post-surgical pain
CRP	C-reactive protein
CRPS	complex regional pain syndrome
CT	computed tomography
DGP	deamidated gliadin peptide
DN4	Douleur Neuropathique 4
ESR	erythrocyte sedimentation rate
FBE	full blood evaluation
FSH	follicle stimulating hormone
ß-hCG	beta human chorionic gonadotropin
HLA	human leukocyte antigen
IASP	International Association for the Study of Pain
LANSS	Leeds Assessment of Neuropathic Symptoms and Signs
LFT	liver function test
LH	luteinizing hormone
MCS	microscopy, culture, sensitivity
MRI	magnetic resonance imaging
NPQ	Neuropathic Pain Questionnaire
NSAID	non-steroidal anti-inflammatory drug
PBS	Pharmaceutical Benefits Scheme
PCR	polymerase chain reaction
PDPN	painful diabetic peripheral neuropathy
PHN	post-herpetic neuralgia
PNFS	peripheral nerve field stimulation
PRF	pulsed radiofrequency
RSD	reflex sympathetic dystrophy syndrome
SCS	spinal cord stimulation
SLE	systemic lupus erythmatosus
SNRI	serotonin and noradrenaline reuptake inhibitor
SSRI	selective serotonin reuptake inhibitor
SSS	symptom severity score
STI	sexually transmissible infection
TCA	tricyclic antidepressant
tTG	tissue transglutaminase
TFT	thyroid function test
TSH	thyroid stimulating hormone
VAS	visual analogue scale
WPI	widespread pain index

CASE 1

MARGARET'S BACK HURTS

Margaret, an office worker aged 53 years, presents to you for the first time with a history of lower back pain following a work-related incident. She currently takes oxycodone controlled release 80 mg (twice daily), diazepam 5 mg (2 tablets, three times a day), tramadol 200 mg (twice daily) and paracetamol 500 mg (2 tablets, four times a day) for her pain. She is unhappy that despite the use of these medications she has ongoing pain and is seeing you because she wants to change GPs.

QUESTION 1

What aspects of this presentation are concerning?

FURTHER INFORMATION

After questioning, you discover Margaret's back pain started after she slipped and fell at work about 2 years ago. She was seen in hospital at the time and X-rays of her back were reported as 'normal'. She was prescribed paracetamol/codeine and diazepam, to help her back spasms. Over the next 2 months, however, her condition did not improve, so she visited her GP who ordered computed tomography (CT) scans, which showed bulging discs. She was also referred for physiotherapy, which she found was of no benefit. The pain continued to worsen, despite rest, and she has been becoming increasingly disabled and unable to perform most household tasks. The pain is described as a 'dull ache' that goes down both legs and is made worse by movement.

She has visited several GPs in the past 1.5 years and 6 months ago a new GP referred her to a surgeon. She says the surgeon is not doing much. She thinks an operation will fix her bulging discs and the surgeon is 'just procrastinating'. She has not worked since the accident and has been on workers' compensation. She worries that they may finalise her claim but her payout may be small, as she feels that they don't take her pain seriously and they feel she is procrastinating. She expresses concern that she will never go back to work, that she and her husband will not be able to pay their mortgage and they will end up living on the street. She says she would rather be dead than have that happen. She says 'only the oxycodone has offered any benefit but the dose is too small'. She also mentions that she has been feeling hot and cold, and has lost a few kilos in the last 6 months. Her husband is supportive and he quit his job to look after her. She says, 'He makes sure that I am able to rest'.

QUESTION 2

What red and yellow flags are present in this patient? How would you manage these?

QUESTION 3

On the basis of Margaret's CT scan results, do you think she has neuropathic pain? What are the criteria for diagnosing neuropathic pain?

QUESTION 4

How will you determine if Margaret has neuropathic pain?

FURTHER INFORMATION

On examination, Margaret seems thin and sacropaenic (having age-related loss of muscle mass), and is acutely tender around the region of lumbar segments L4/5. She ambulates slowly and holds her back with her right hand. Her movement is restricted in all directions in the back. Reflexes and straight leg-raising are normal. Her sensations (Von Frey filament, hot, cold and 128 Hz tuning fork) are symmetrical and normal. Margaret's body mass index (BMI) is 22 kg/m^2, and temperature and blood pressure (BP) are in the normal range.

QUESTION 5

What investigations would you consider? Why?

FURTHER INFORMATION

A number of tests are ordered. Investigation results show:

- CT scan remains unchanged
- follicle stimulating hormone (FSH) is raised and oestradiol reduced
- erythrocytes and liver function tests are all within normal ranges
- a clinical breast exam is normal
- erythrocyte sedimentation rate (ESR) is 12 mm/hour, which is within normal range
- thyroid stimulating hormone (TSH) is normal.

QUESTION 6

Given the investigation results, together with the history and examination, what is the likely diagnosis?

QUESTION 7

How would you manage Margaret? How would you further assess and monitor her pain?

QUESTION 8

Is it appropriate to prescribe an opioid in Margaret's case? What precautions need to be undertaken prior to prescribing an opioid?

QUESTION 9

Should Margaret continue to use an opioid for pain management?

CASE 1 ANSWERS

ANSWER 1

This presentation is worrying in a few aspects. First, the dose of opioid being used is large; 160 mg oxycodone is equivalent to 240 mg of morphine daily. In addition, the combination of an opioid and a benzodiazepine presents problems. The questions must be asked, 'Is she doctor shopping?' and 'Is she addicted to opioids and benzodiazepines?'

The answer can be found through questioning the patient further to ascertain the full history of her medication and injury.

ANSWER 2

Red flags are clinical indictors of potentially serious underlying medical conditions and can present with a spinal pain presentation. They include:

- infection
- inflammation (eg ankylosing spondylitis)
- acute vertebral fracture
- tumours
- metabolic bone disease (eg Paget's disease).

Red flags are often considered non-mechanical in nature and can progress if missed or not identified early. Identification of red flags in a patient signals the need for further investigation and possible treatment or referral to a specialist.[1–3]

Red flags in this presentation include:

- **weight loss**: this may signal an occult malignancy
- **fevers or rigors**: this could mean infection (eg spinal infection) or malignancy.

Yellow flags are psychosocial factors, such as the patient's attitudes and beliefs, emotions, behaviours, family and workplace, as well as the attitude of health professionals, and may contribute to the overall clinical picture. Yellow flags are suggestive of progression to long-term distress, disability and pain.[2,3]

Yellow flags in this presentation include:

- **workers compensation**: Margaret fell at work
- **fixation on disease**: Margaret's perception that the bulging discs are the cause of all her problems
- **looking for a medical cure**: Margaret's perception that the operation will fix the bulging discs
- **passive approach to treatment** (ie non-proactive, not initiating or taking the lead in treatment and merely being directed in the treatment process): Margaret's perception that physiotherapy is of no benefit; no evidence of an active approach to rehabilitation
- **overprotective spouse**: Margaret's husband has quit his job to look after her and is keeping her rested and inactive
- **catastrophising**: never going to go back to work, losing her house, living on the street, being dead.

Investigating the red flags would include a physical examination, including looking for signs of infection (eg looking for areas of swelling, redness and tenderness), and investigation (eg blood tests to check if raised white cell count and/or erythrocyte sedimentation rate (ESR) are elevated).

The yellow flags may require referral to a psychologist specialising in pain, or addressing them directly by challenging the patient's beliefs, or a multidiscipliniary pain management program that includes cognitive behavioural approaches, education and graduated physical reconditioning. These measures may sometimes prove difficult as patients often react adversely to any suggestion that 'you think the pain is in my head'. Being on any system involving pecuniary gain is a risk factor for developing chronic pain in itself. In addition, there may be factors that may present a barrier to returning to work, such as poor workplace relationships.

Past history may also be useful. This includes developmental history and any history of abuse, substance abuse disorder and childhood illness.

ANSWER 3

The lack of hard evidence of a lesion in the nervous system consistent with appropriate signs and symptoms, would make a diagnosis of neuropathic pain unlikely. Neuropathic pain originates from a lesion or disease affecting the somatosensory nervous system.[4,5] The pain is typically described as being burning, painful, cold or feeling like electric shocks and can be associated with tingling, pins and needles, itching and numbness.[6]

Given Margaret's presentation so far, it is unlikely that she has neuropathic pain.

The International Association for the Study of Pain (IASP) special interest group on neuropathic pain has diagnostic criteria based on history, examination and diagnostic testing:

- The history has to suggest a nerve lesion.
- It has to be neuroanatomically plausible.
- The examination needs to reveal negative or positive sensory signs in the distribution of the suspected lesion, and/or motor signs of weakness in an anatomical nerve distribution.
- Diagnostic testing should confirm the lesion.

If only history is positive, a diagnosis of neuropathic pain is considered unconfirmed; if history and either examination or testing are positive, it is considered probable; and if all three are positive, it is considered definite.[7]

ANSWER 4

Use of an appropriate screening tool and undertaking a neurological examination will help determine if Margaret has neuropathic pain.

Use of a validated screening tool, such as one of the neuropathic pain questionnaires listed below, can aid in screening and identifying patients with neuropathic pain:[6]

- Leeds Assessment of Neuropathic Symptoms and Signs (LANSS)[8]
- Douleur Neuropathique 4 (DN4)[9]
- Neuropathic Pain Questionnaire (NPQ)[10]
- PainDETECT [11]
- ID Pain.[12]

Neurological examination should consider:[6]

- Lower limb assessment:
  - assess gait, ability to squat and to walk balancing on heels then toes
  - tone
  - strength and coordination
  - specific tests (straight leg-raising).
  - reflexes
  - sensation (pain, light touch, cold and hot and vibration)
  - abnormal sensations (hyperalgesia, allodynia, etc).

ANSWER 5

The following investigations could be considered for Margaret:

- A general blood screen to check her general health and to look for reasons for her weight loss and a possible malignancy (previously identified as possible red flags).
- FSH and oestradiol as she could be perimenopausal and having hot flushes, which might explain her feeling hot and cold.

Repeat CT scans of the lumbar/sacral spine to look for any new pathology (possible red flag) or progression of disc bulges.

ANSWER 6

The history and examination, including the results of Margaret's investigations, suggest the diagnosis is chronic or persistent back pain caused by deconditioning with persisting yellow flags. The yellow flags tend to potentiate pain by increasing central sensitisation, which results in ongoing pain, even though tissue healing has taken place. Pain causes kinesiophobia, or fear of movement, which then leads to prolonged and inappropriate rest, resulting in muscle and soft tissue weakness. The soft tissues are then easily damaged by movement, which results in more pain, completing the vicious circle.

Neuropathic pain is unlikely in Margaret's case. She does not have any examination findings or investigation findings that confirm the presence of neuropathic pain.

Her FSH and oestradiol results are consistent with her being perimenopausal and could explain her description of feeling hot and cold.

Her recent weight loss remains unexplained.

Chronic use of opioids, particularly at high doses, often results in the phenomenon of opioid hyperalgesia, where pain thresholds are paradoxically lowered and more pain is experienced for a given stimulus.

ANSWER 7

Margaret is most suited to the multidisciplinary treatment approach, which would include a pain specialist, psychiatrist, psychologist, physiotherapist and exercise physiologist.[13–15] The principles of treatment would be to tackle the identified yellow flags and consider pain control while embarking on a rehabilitation and strengthening program. After that, Margaret should be weaned off her analgesics. The long-term goal would be for Margaret to re-enter the work force.

A pain assessment tool can be used to assess and monitor the progress of Margaret's pain. Standard pain questionnaires, such as the Brief Pain Inventory (BPI)[16] or the McGill pain assessment questionnaire,[17] can be completed before the patient's visit to quantify their pain, and should be repeated every 2 months. In addition, aids such as the visual analogue scale (VAS) are also useful for assessing pain; however, some measures of functionality should also be used. Such tools allow for baseline pain assessments to be made and allow for monitoring of pain (eg improvement, no improvement) in response to pharmacological and non-pharmacological pain management strategies, such as exercise, physiotherapy and psychology.

ANSWER 8

The Hunter Integrated Pain Service recently produced guidelines[18] recommending that opioid therapy should not be initiated for the management of chronic non-cancer pain (eg chronic back pain), given the current lack of medical evidence for opioid efficacy and safety in the treatment of chronic non-malignant pain. For people already using opioids for management of chronic non-cancer pain, weaning off and cessation of opioids over a reasonable time frame is recommended. Deviations from the guidelines should be discussed with a pain or addiction specialist.[18,19] Currently, evidenced-based indications for opioid therapy include acute pain, cancer pain, palliative care and opioid dependence/addition (opioid substitution therapy).

Before prescribing an opioid, the patient should first have a drug and alcohol history taken and/or be screened using a standard opioid risk tool. This identifies patients who may have problems with addiction or dependence issues.[18] A positive result does not necessarily exclude the use of opioids but may simply signal that precautions need to be taken, such as limited pickups from the pharmacy.[20]

Next, it should be determined whether the pain responds to opioids. This can be best achieved by using a pain management plan or a more formal agreement such an opioid contract (also referred to as an opioid treatment agreement). These tools can be used to outline a plan for starting an opioid, as well as documenting functional goals and timelines. The contract should also determine the 'out' clauses, such aberrant behaviour, when the opioid would be ceased. If this is established at an early stage, it would prevent any disagreements in the future. Lastly, the contract should contain a clause about how the opioid is to be ceased. Generally, a reduction of 5–10% every week or month should allow cessation with minimal withdrawal symptoms. Alternatively, reductions of 10–25% of the starting dose each month may be used to achieve cessation within 3–9 months.[18]

Opioid risk tools and standard treatment contracts are readily available on the internet (refer to the *Resources* section).

ANSWER 9

There is little evidence that long-term opioids offer any benefit in chronic non-cancer pain.[19] Long-term use of opioids results in opioid tolerance and hyperalgesia, which requires the dose of opioid to be continually increased to maintain the same amount of analgesia. Ultimately, the patient would need large doses of opioid, with very little, if any, analgesia.

Margaret's opioid treatment should be gradually tapered off and eventually ceased.[18] Tapering and ceasing opioid use would occur in conjunction with increasing her activity and addressing her yellow flags. This should put her into a positive cycle of increasing activity, strengthening soft tissues, resulting in less pain and decreased need for analgesia.

It should be explained to the patient that, in most cases, opioid treatment is simply a means to an end. Many patients can be apprehensive when their analgesia is withdrawn. They need to be reassured that they are stronger and more resilient against injury and will suffer less pain. In addition, it allows their own pain modulation systems to 'kick in' and their situation is now (since the start of their treatment) very different from when they started.[15]

CONCLUSION

This case illustrates a common scenario in general practice where there is an injury causing pain that does not get better. The case is a reminder of the importance of the psychological yellow flags in the progression of acute pain to chronic pain. The patient in this case would have been, most probably, unsuitable for opioid therapy and this illustrates some common challenges in pain management in general practice. It is important not to start an opioid or escalate dosage when the nature of the pain is not fully understood. These patients often search for answers to their problems and move from GP to GP, progressively getting worse, and becoming more difficult to treat. However, with the recognition of the problem and the cooperation of the patient, the situation can be reversed. The importance of patient education cannot be over-emphasised and resources such as the excellent video *Understanding pain* (available on YouTube) from the Hunter Integrated Pain Service are useful (refer to the *Resources* section).

RESOURCES FOR DOCTORS

- The National Prescriber Service provide useful tool for GPs to assist with the diagnosis and management of lower back pain, and information sheets tailored to the individual needs of a given patient, www.nps.org.au/health-professionals/resources-and-tools/decision-and-management-tools/back-pain-choices
- The Hunter Integrated Pain Service website provides a detailed discussion of red and yellow flags, www.hnehealth.nsw.gov.au/__data/assets/pdf_file/0003/28164/Guideline_flags.pdf

- The Hunter Integrated Pain Service videos available on YouTube for patient education, including:
  - *Understanding pain*, www.youtube.com/watch?v=4b8oB757DKc
  - *Brainman chooses*, www.youtube.com/watch?v=jlwn9rC3r0I
  - *Brainman stops his opioids*, www.youtube.com/watch?v=MI1myFQPdCE
- The Hunter Integrated Pain Service provides sample opioid agreements, www.hnehealth.nsw.gov.au/__data/assets/pdf_file/0017/108701/Opioid_treatment_agreement_Mar_2013.pdf

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CASE 2

CLAIRE HAS ABDOMINAL PAIN

Claire, 34 years of age, is seeing you for the first time. She would like a second opinion regarding recurrent vague lower abdominal pains that she has had for the past 18 months. She initially consulted a GP colleague at your practice who arranged abdominal and pelvic computed tomography (CT) scans, which were normal.

Claire does not take any regular medications, other than an iron supplement for iron deficiency anaemia, and does not have any chronic medical conditions. To her knowledge, she is not allergic to any drugs. She is sexually active. There is no family history of cancer or any chronic medical conditions as far as she knows.

QUESTION 1

How will you initially assess Claire?

QUESTION 2

What is your next management step?

FURTHER INFORMATION

Claire's abdominal pains are non-cyclical and are not associated with menses, urination, defecation or sexual activity.

Claire has noted occasional abdominal discomfort after eating certain foods; however, she is unsure about any exact trigger foods. She describes the pain as being 'colicky' in nature or a dull, aching discomfort. The pain is transient but it is always associated with mild bloating and diarrhoea. There are no symptoms of nausea or reflux. There is no associated change in her appetite or weight but she describes weight loss of 3 kg over several months recently.

Claire has been in a stable relationship for 5 years and does not currently experience any genital symptoms. She is using condoms as her only form of contraception. Her past history, sexual history and mental health history do not raise any clinical concerns at this stage.

Her clinical examination was normal and no red flags were identified upon questioning and examination.

QUESTION 3

What investigations will you order?

FURTHER INFORMATION

Claire's results are normal except for coeliac serology, which is positive.

QUESTION 4

What is the significance of this result? What is your next investigation?

FURTHER INFORMATION

Duodenal biopsy confirms Claire's diagnosis.

QUESTION 5

What are symptoms and possible complications of coeliac disease?

QUESTION 6

How will you manage Claire now?

CASE 2 ANSWERS

ANSWER 1

As with any case presentation, detailed history taking is essential. The patient should be asked about the pattern of the pain and its association with other problems (eg psychological, bladder, bowel), as well as how movement and postural changes affect the pain.[1]

In this case, the history should at least cover the following:[1,2]

- pain characteristics (ie pain nature, duration, severity, site, modifying factors, or association with menses [endometrosis or adenomyosis], sexual activity, urination, defecation or diet)
- other associated symptoms
- menstrual history
- gynaecological and obstetric history, if applicable
- red flags (eg fever, rigors, unexplained weight loss, passage of fresh blood through the anus, vaginal bleeding, post-coital bleeding [cervicitis or cervical cancer])
- use of an intrauterine device for contraception
- detailed sexual history
- past history of pelvic surgery or irradiation (pelvic adhesions)
- history of physical or sexual abuse (can be associated with chronic pelvic pain)
- assessment for comorbid factors (eg psychosocial, environmental, dietary)
- cancer screening appropriate for the patient's age and associated risk factors
- family history.

When taking a history note any red flags that may require further investigation and/or specialist referral.[1]

ANSWER 2

The next step should be should be performing a thorough clinical examination. The examination should specifically assess for the presence of focal tenderness, enlargement, distortion or tethering and prolapse in the abdomen and pelvis.[1] Examination should include:[1,2]

- **an abdominal examination:** look for masses or areas of tenderness; check 'Carnett's Sign', which is performed by placing a finger on the painful tender area of abdomen and asking the patient to raise both legs off the bed while lying in supine position; a positive test result is when this manoeuvre increases pain and it indicates a myofascial cause of pain including fibromyalgia
- **an outer pelvis and back palpation:** this may reveal trigger points that indicate a myofascial nature of pain.
- **a bimanual vaginal examination:** cervical motion tenderness, lack of uterus mobility, palpable masses
- **a rectal examination:** rectal or posterior uterine masses, pelvic floor point tenderness.

ANSWER 3

The patient's history and the results of the physical examination will guide which investigations should be ordered, as will the need to exclude relevant differential diagnoses.[1,2]

Appropriate investigations to order for Claire include:

- full blood examination (FBE)
- erythrocyte sedimentation rate (ESR)
- human chorionic gonadotropin blood levels (ß-hCG) (to exclude pregnancy)
- urine microscopy, culture, sensitivity (MCS)
- stool MCS and polymerase chain reaction (PCR) (to exclude parasitic infections)
- coeliac serology on the basis of suspected correlation of symptoms to certain foods, the nature of her symptoms and her iron deficiently anaemia.[3]

Depending on a patient's initial symptoms and clinical findings the following investigations may also be considered:[1,2]

- vaginal swabs for chlamydia and gonorrhoea if pelvic inflammatory disease is suspected, as well as tests for other possible conditions if other sexually transmitted infections (STIs) are suspected or in the presence of genital symptoms[1,2,4,5]
- pelvic ultrasound may be indicated if cyclical pains are suspected
- laparoscopy may be indicated in case of suspected endometriosis.

Pelvic CT or magnetic resonance imaging (MRI) should not be routinely arranged but can aid further assessment of any abnormalities detected on a pelvic ultrasound (note Claire has previously had a CT scan).[2]

ANSWER 4

Positive antibody tests in those with clinical features suggestive of coeliac disease should be followed up by a gastroscopy for duodenal biopsy confirmation, which is the gold standard presently for confirming a diagnosis of coeliac disease).[6–8] Claire should be referred to a gastroenterologist for biopsy confirmation.

Blood tests for coeliac disease include tissue transglutaminase (tTG) antibody and deamidated gliadin peptide (DGP) antibody.[6,7] Antibody tests are also used to monitor a person's response to a gluten-free diet.[3,8,9] Note, coeliac serology can be negative in an undiagnosed coeliac patient if the patient was already following a gluten-free diet.[9]

An Australian serological study reported that at least 1 in 100 people have coeliac disease.[8]

A negative result for human leukocyte antigent (HLA) DQ2/DQ8 genetic testing excludes coeliac disease, given that the majority of people with these antigens do not have evidence of a gut abnormality on small bowel biopsy.[3,8,9]

ANSWER 5

The symptoms of histologically confirmed coeliac disease are extremely variable. The most common symptoms include lethargy, diarrhoea, abdominal pain and indigestion; however, some people present without any gastrointestinal symptoms at all. Instead, these people present with complications associated with the presence of coeliac disease, such as osteoporosis and/or associated diseases (eg dermatitis herpetiformis). The presence of iron, folate, vitamin D or zinc deficiency should prompt a clinician to screen for coeliac disease.[8]

A number of possible complications are associated with coeliac disease. There is an increased incidence of autoimmune thyroid disease among patients with coeliac disease. Hypothyroidism is more frequent than hyperthyroidism.[8,9]

Coeliac disease is closely associated with type 1 diabetes mellitus[8] and polyglandular autoimmune syndrome type III, characterised by autoimmune thyroiditis combined with immune-mediated diabetes.[9] Coeliac disease is reported in about 3% people with type 1 diabetes.[8]

The incidence of eosinophilic esophagitis is increased in children and adults with coeliac disease.[9] A diagnosis of eosinophilic oesophagitis should be considered in patients with coeliac disease and dysphagia or persistent reflux.[9] Coeliac disease may be associated with non-specific mild chronic elevation in serum aminotransferase levels.[3]

ANSWER 6

It is important to provide Claire with information about her diagnosis, including its impact on her long-term health and wellbeing. Initial management of her coeliac disease, ongoing monitoring and the need for regular medical follow-up and annual review should be discussed. Testing of first-degree relatives is also recommended.[3,7,8] Note, first-degree relatives have about a 1 in 10 chance of developing coeliac disease.[8]

The following points are also important:[3,7,8]

- Initial management includes following a gluten-free diet for life. Foods containing wheat, rye, barley and oats need to be avoided, whereas gluten-free foods, including fresh meat, fish, chicken, eggs, seeds, nuts, fruit, vegetables, legumes, most dairy products, oils, margarine and butter may be eaten. Care needs to be taken when eating away from home and or consuming commercially prepared/packaged foods.
- Patients should be referred a dietitian specialising in coeliac disease, for provision of information and support.
- Encourage patients to contact the Coeliac Society of Australia, which provides members with information and support. Before they can join, they need a letter from a medical practitioner stating that they need to follow a gluten-free diet.
- Consumer information on coeliac disease is available from the Gastroenterological Society of Australia website.
- In terms of follow-up and regular review, repeated measurement of anti-transglutaminase or anti-endomysial antibodies is helpful when assessing a person's response and adherence to a gluten-free diet. However, can take it can take 12 months or more for antibody levels to return to normal.[7]

- All medications should be checked for possible gluten content. Ingredients derived from gluten-containing grains (eg wheat starch), are listed on the packaging. Note that maize starch is gluten-free and there is a gluten-free symbol in pharmaceutical reference books such as MIMS. Pharmacists can also provide advice on gluten-free drugs.
- Screen for associated diseases at the time of diagnosis (if not previously screened) particularly thyroid disease and diabetes, as well as micro-nutritional deficiencies (eg iron, folate) and treat or manage any problems identified in accordance with current guidelines.
- Advise use of calcium and vitamin D supplements to protect against further bone loss, as coeliac disease is associated with osteoporosis.

Even after making dietary changes, about 5% of patients respond poorly to a gluten-free diet. These patients may benefit from review by a dietitian, to ensure that all gluten has been removed from the diet. If they continue not to respond to a gluten-free diet, they should be referred to a gastroenterologist for review.[8]

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CASE 3

LINDY ACHES ALL OVER

Lindy, a music teacher aged 45 years, presents with 3 months of persistent aching and discomfort in her arms and neck. She has found it difficult to continue her usual activities because of increasing stiffness in her hands and is concerned she will not meet the deadline for her Graduate Diploma of Education.

Lindy has headaches and poor-quality sleep, waking up unrefreshed most mornings. She is fatigued throughout the day, often having to lie down in the afternoon to gain her energy. She reports diminished concentration and memory. Lindy has had to cut back on her previous exercise program because of muscular discomfort.

She has two children under the age of 10 years, one of whom has Asperger's syndrome. Her husband is very concerned about her wellbeing and has encouraged her to attend for review.

QUESTION 1

What other clinical features need to be assessed?

QUESTION 2

What clinical examination features are relevant?

FURTHER INFORMATION

On examination, Lindy looks well and is not febrile. There is no abnormality in the precordium, lungs or abdomen. Her joints are not tender or swollen but she does have widespread tenderness in muscle areas in all four quadrants of the body. This leads you to a working diagnosis of fibromyalgia.

QUESTION 3

What investigations are relevant?

FURTHER INFORMATION

You order a full blood evaluation (FBE), renal tests and liver function tests (LFTs), erythrocyte sedimentation rate (ESR), C-reactive protein (CRP), creatine kinase, rheumatoid factor, antinuclear antibody (ANA) and a thyroid function test (TFT). Lindy's blood investigations are all normal.

QUESTION 4

How would you explain these normal results? How will you confirm your diagnosis?

FURTHER INFORMATION

A diagnosis of fibromyalgia can be confirmed for Lindy, given that she has characteristic clinical features of fibromyalgia and that there is no alternative explanation for her symptoms and there is no evidence of underlying pathology to support an alternative diagnosis. Lindy can be reassured that she does not have an underlying sinister condition.

QUESTION 5

What is the prognosis of fibromyalgia?

QUESTION 6

How is fibromyalgia treated?

CASE 3 ANSWERS

ANSWER 1

A history of persisting generalised aches and pains in an environment where stress factors are present raises the possibility of fibromyalgia.[1]

Clinical inquiry should be directed towards the possibility of:

- chronic infection
- chronic inflammation
- joint pain and swelling, and morning joint stiffness
- systemic illness
- metabolic or hormonal change.

The best way to approach the history taking is to undertake a full systems review. A psychosocial history should also be taken and Lindy should be asked about her sleep, mental and emotional wellbeing, including her use of alcohol, smoking and use of illicit substances.[2]

The following features are potential red flags for underlying serious pathology:

- older age at new symptom onset
- weight loss
- night pain
- focal pain
- fevers and sweats
- neurological features
- history of malignancy.[3,4]

ANSWER 2

A comprehensive general examination is required to identify systemic illness or infection.[3] For example, inflammatory joint disease might present with swollen and/or tender joints, particularly in the interphalangeal joints of the hands and metacarpophalangeal or metatarsophalangeal joints. Connective tissue disease may show features of rash, alopecia, mouth ulceration or Raynaud's phenomena. There may be signs of hypothyroidism.

Examination should assess spinal and joint movements to identify local musculoskeletal problems.

ANSWER 3

Although the working diagnosis is fibromyalgia, there are a number of conditions that might mimic this disorder. Most of these can be excluded with a number of simple tests.

- An FBE will assess for certain haematological disorders.
- Acute phase reactants such as ESR and CRP would usually be elevated in most inflammatory systemic conditions but not in fibromyalgia.[5]
- Abnormal LFTs would indicate possible underlying general conditions that require further investigation.

- A TFT might show hypothyroidism, which can cause generalised aches and pains.
- Creatine kinase levels are usually elevated in inflammatory muscle disease, although that condition does not usually cause widespread aches and pains.
- Follicle stimulating hormone (FSH), luteinizing hormone (LH) and oestrogen levels may indicate perimenopausal changes.
- ANA is a general screen for systemic lupus erythematosus (SLE) and similar autoimmune diseases but many patients have low titre positivity with this test because of its extreme sensitivity.

ANSWER 4

The results of Lindy's blood investigations are consistent with what might be expected in fibromyalgia, given that no consistently measurable investigational abnormality has been identified for fibromyalgia.[5] The results have also helped to exclude other potential explanations for Lindy's symptoms.

Most patients with fibromyalgia have a long history of pain-related symptoms over some decades. This might include dysmenorrhoea, migraine, irritable bowel syndrome or previous regional pain problems.[1]

Most patients with fibromyalgia have an identifiable trigger that usually has some psychological connotation. Typical examples of triggers include motor vehicle accident or work-related pain. Viral infections, where there is prolonged rest and inactivity, can trigger fibromyalgia. An Australian study of 150 consecutive patients attending a public hospital fibromyalgia clinic reported that 89% of patients described recognisable triggers.[6]

There are usually contextual clues in a patient with fibromyalgia. These include the frequent presence of stress factors in their background and the patient may seem more vulnerable to 'normal' stress because of poor coping skills, catastrophisation or lack of control in any given situation.

The key clinical features of fibromyalgia are widespread pain, unrefreshing sleep and widespread abnormal tenderness to gentle pressure, and previous diagnostic criteria have been based on these features.

More recently derived criteria are the American College of Rheumatology 2011 diagnostic criteria (*Figure 1*). These comprise reporting by the patient of:

- a high number of painful or tender sites in the body
- high levels of symptoms relating to:
  - poor sleep
  - cognitive dysfunction
  - other somatic symptoms such as headache, irritable bowel and depression.[7]
- fatigue.

There must be no other condition present that can explain the symptoms, which should be present for more than 3 months.[7]

ANSWER 5

It must be borne in mind that fibromyalgia is a disorder of function within the pain system whereby there is increased sensitivity of the pain-related pathways.[1] Fibromyalgia is a spectrum disorder and people with this condition have different levels of the characteristic clinical features at any one time. Fluctuations in symptoms are common. In addition, it is commonly present as a comorbid problem with a large number of other chronic illnesses.[1] For instance, patients with rheumatoid arthritis, SLE, inflammatory bowel disease and other chronic illnesses have 10 times the rate of fibromyalgia, compared with the normal 3–5% in the general population.[1]

The prognosis varies. In general, about 80% of patients with fibromyalgia have a mild-to-moderate fluctuating course.[1] Patients who learn to recognise triggers and circumstances that exacerbate their symptoms do best as they learn skills to manage their condition better. This is particularly so for patients who learn simple psychological stress management strategies and exercise regularly. About 20% of patients with fibromyalgia have more severe and persisting symptoms, which may be difficult to treat and often require advice and intervention by a number of specialists, working together.[1]

ANSWER 6

The first step in treating fibromyalgia is making an accurate diagnosis.[8] A North American internet-based study has reported that almost half of the patients consulted 3–6 healthcare professionals before being diagnosed with fibromyalgia.[9]

Treatment of fibromyalgia should consider the items below as well management of any comorbid conditions (eg concurrent depression) identified.

Multidisciplinary approach/patient management plan

The management of fibromyalgia often requires a multidisciplinary approach, although milder forms can usually be managed by the GP alone.[3,8] GPs can provide supportive care by developing patient management plans for patients using the Chronic Disease Management Medicare item numbers. GPs can also assist with the coordination of ongoing patient management, organisation of referral to specialists and/or allied healthcare providers, as well as regular patient reviews. The patient should be a central participant in the development of their management plan. The plan should include provision of patient education, an exercise program, psychological advice/support and often pharmacotherapy for pain management.[3,8]

Education

Once diagnosed, the nature of fibromyalgia needs to be explained to the patient. Background stresses and how the individual deals with these stresses should be explored.[3,8] Ideally, patients should be provided with written materials to support verbal discussions and referral to useful websites.

Exercise

Exercise is a key management strategy and usually involves graduated low impact 'go low-go slow' type programs, building aerobic exercise

over several weeks to months.[3,8] The type of exercise does not matter and may include activities such as walking, dancing, bicycle riding or swimming. Alternative exercise strategies include use of mind–body type programs such as yoga or Tai Chi. Mindfulness meditation strategies can be very effective. Regular exercise has been reported to improve pain, fatigue and sleep problems.[8]

Psychology

Some patients require help with psychological contributors to stress, and psychological review by a therapist who understands fibromyalgia can be extremely helpful.[3,8] The strategy should involve active, positive approaches rather than just 'learning how to deal with the problem'. A 2010 meta-analysis reported that therapies such as cognitive behaviour therapy with relaxation or biofeedback resulted in significant improvements in overall pain, mood and disability.[10]

Many people with fibromyalgia have associated depression, which needs to be assessed and treated independently.[8] The patient needs to understand that depression does not cause fibromyalgia. Many patients with fibromyalgia are anxious and usually respond to psychological management strategies.

Pharmacotherapy

Milnacipran, a serotonin and noradrenaline reuptake inhibitor (SNRI) is the only drug currently licensed for the management of fibromyalgia in Australia; however, it is not available on the Pharmaceutical Benefits Scheme (PBS).

Other medications have shown benefit in improving symptoms of pain, tenderness and sleep function.[1,5,11]

- Low-dose amitriptyline (PBS general schedule, unrestricted), usually 10–25 mg in the mid evening, helps achieve better sleep and has

Figure 1. The American College of Rheumatology 2011 diagnostic criteria for fibromyalgia are useful in clinical practice[7]

To use:

1. Add patient reported pain (or tender regions) present in last week to make up the **widespread pain index** (WPI) score – see left columns.
2. Determine severity score of key common symptoms and add together to make up **symptom severity score (SSS)**
3. Use the guide to determine if patient has fibromyalgia.
4. Add WPI and SSS to make up the **polysymptomatic distress score**. This places the patient on a spectrum from low to high chance of fibromyalgia. If score is over 12 then fibromyalgia is likely. Note that the patient can also have other conditions, as well as fibromyalgia.

PAIN in last week#

Region	Centre	Right	Left
Neck	✔		
		✔	✔
Shoulder girdle		✔	✔
Upper arm		✔	✔
Lower arm		✔	✔
Chest	✔		
Upper back	✔		
Lower back	✔		
Hip		✔	✔
Abdomen	✔		
Upper leg		✔	✔
Lower leg		✔	✔

Widespread pain index score [WPI = 0-19]

☐ = ☐ _____

SYMPTOMS in last week+

Symptom*	Score [0-3] #
Fatigue	☐ 0 ☐ 1 ☐ 2 ☐ 3
Wakening unrefreshed	☐ 0 ☐ 1 ☐ 2 ☐ 3
Cognitive symptoms	☐ 0 ☐ 1 ☐ 2 ☐ 3
Other symptoms**	Headache ☐ 1
	Abdominal pain ☐ 1
	Depression ☐ 1

TOTAL SYMPTOM SEVERITY SCORE [SSS = 0-12]

☐ = ☐ _____

Polysymptomatic distress score = WPI ☐ + SSS ☐ [Fibromyalgianess score]

☐ = ☐ _____

Fibromyalgia diagnosis = WPI ≥ 7 ☐ PLUS SSS ≥ 5 ☐ OR

WPI ≥ 3 ☐ PLUS SSS ≥ 9 ☐

Criteria filled = YES / NO

Comments: _____

_____

_____

+Symptoms present at similar level for 3 months – yes / no
No other explanatory diagnosis – yes / no
Tick appropriate box and count
*0 =no problem,
1 = slight or mild problems, generally mild or intermittent,
2 = moderate, considerable problems, often present and/or at a moderate level,
3 = severe, pervasive, continuous, life disturbing problems

effects on many of the fibromyalgia symptoms in about 40% of patients. Tolerance of the medication may be an issue and morning somnolence can be a particular problem.

- SNRIs such as duloxetine enhance the activity of the pain control pathways between the brain and the spinal cord, which are abnormal in many patients with fibromyalgia. These drugs can be beneficial in about 30–40% of patients. Nausea and sleep disturbance may occur in some patients.[11,12]
- The gabapentinoids such as pregabalin and gabapentin modify the release of excitatory pain chemicals, including glutamate, noradrenaline and substance P in patients with fibromyalgia. These drugs also give good benefits in about 30% of patients. Side effects can include dizziness, drowsiness and, sometimes, low levels of weight gain. There are a few cross-reactions between pregabalin and other medications.

In general, the drugs listed above will give a 50% improvement in pain and related symptoms in 30% of patients, and 30% of improvement in 50% of patients.[1] This means that about 50% of patients will not benefit from these drugs when used as monotherapies. Often, specialists prescribe combinations of these drugs, using low doses of, for example, amitriptyline and pregabalin or duloxetine and pregabalin.[1]

Analgesics for fibromyalgia can be simple drugs such as paracetamol in the usual doses. Anti-inflammatory medication can be beneficial in some patients because of the prolonged half-life of the drugs and their effect as analgesics. In addition, the anti-inflammatory effects can help patients who have concomitant osteoarthritic or spinal osteoarthritic pain.[3,5]

Tramadol can be useful in fibromyalgia in patients with moderate-to-severe pain that does not respond to other therapies,[8] but it has many cross-reactions with other drugs and increased levels of nausea. Tapentadol is a newer synthetic opioid, similar to tramadol. It has low-level opioid effects and inhibits noradrenaline reuptake in the spinal cord. In Australia, tapentadol is indicated for patients with severe pain not responsive to simple analgesics and is available on the PBS as a restricted benefit.[13] It can be useful for short periods in fibromyalgia if pain modulatory medication and simple analgesics fail.

Opioid use should be avoided in fibromyalgia. In general, pure opioids are not very effective in fibromyalgia, possibly because endogenous opioid mechanisms are activated in this disorder.[8,14]

Notably, selective serotonin reuptake inhibitors (SSRIs), which are extremely useful for depression, are not particularly effective in fibromyalgia.[12] Antidepressants that have some effect on the noradrenaline reuptake system, such as duloxetine, are the most beneficial. Some agents such as venlafaxine, at higher dose, will also have some benefit for fibromyalgia pain.[1,12]

CONCLUSION

Lindy improved significantly with provision of patient education, leading to an understanding of the nature of her condition, initiation of a low-impact exercise program, recognition and better management of her life stressors and intermittent use of low-dose amitriptyline.

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CASE 4

ANNA HURT HER ANKLE

Anna, 46 years of age, has come to see you about a fall at home 4 weeks ago. She slipped and fell, inverting her right ankle. She experienced severe sudden pain, which improved a little initially but has continued to trouble her with swelling and bruising. The pain progressively worsened and a few hours later she went to her local emergency department. A plain X-ray showed no fractures and the hospital doctor reassured her that she probably had minor ligament trauma caused by her fall. Anna was advised to rest, use a cold pack if necessary and take paracetamol (modified release) and ibuprofen for a few days. Strapping of her ankle/foot for a few days was also suggested.

Anna says the pain is getting worse. She describes swelling, mottled skin and stiffness in her ankle and toes. She says the entire top of her foot is sensitive to touch and that she is unable to wear closed footwear. Her partner, who has accompanied her, reports that she is not sleeping well (which Anna confirms) and that she has been irritable.

QUESTION 1

What would you look for during your examination?

QUESTION 2

What is the most likely diagnosis? What differential diagnoses should be excluded?

QUESTION 3

What investigations will you request to confirm your tentative diagnosis?

FURTHER INFORMATION

Following your initial assessment you request blood tests for a full blood evaluation (FBE), erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP), and a computed tomography (CT) scan of right foot. You commence Anna on on treatment with a non-steroidal antiflammatory drug (NSAID), paracetamol and, for severe breakthrough, pain oxycodone 5 mg. You refer Anna to a physiotherapist.

Anna returns for a follow-up review 2 weeks later. There are no additional signs or symptoms of fever or weight loss and no evidence of infection. Anna's blood test results are within normal ranges. The CT scan shows some features of tissue oedema but no fracture.

The medication you prescribed has not been effective. Physiotherapy aggravated her condition and Anna discontinued this therapy after 2 visits. Anna believes her condition has worsened and her mood is altered. She has become depressed, angry, lacking sleep and is unable to participate in routine tasks at home.

QUESTION 4

What are the main features of this condition?

FURTHER INFORMATION

Four weeks later, Anna visits you for the third time. She reports that her pain has not settled and you decide to prescribe oxycodone, as she is not responding to the non-narcotic analgesics she is already taking.

At the next follow-up visit at week 6 (her fourth visit), Anna reports that the pain and discomfort are unbearable. Questioning reveals that the physiotherapist Anna visited tried passive therapy (heat and cold packs, ultrasound application and gentle mobilisation), which aggravated Anna's pain. As weight-bearing causes a great deal of difficulty, the physiotherapist provided her with Canadian clutches to assist ambulation. Apart from severe pain, Anna has noticed periodic excessive swelling, a tender foot, increased sweating and a change in the colour of her foot to a dark blue-purple, with smooth, shiny skin over the dorsum of foot. On examination her foot is extremely sensitive, even to light touch. Anna has taken photographs with her smartphone to show these periodic changes. Anna is depressed, fearful her condition is deteriorating rapidly, and requests further answers and possible referral to specialist care.

QUESTION 5

What associated conditions may be present?

QUESTION 6

How will you manage Anna now?

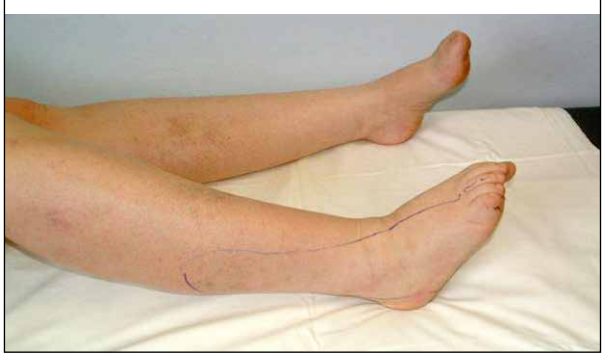
CASE 4 ANSWERS

ANSWER 1

The following should be considered when examining Anna:

- If tolerated, examine the ankle joint for range of movement and instability, to assess for ligament integrity.
- Assess for increased skin sensitivity and demarcate the zone as indicated in *Figure 1*.
- Check for the presence of allodynia or hyperalgesia (ie increased pain response to normal stimulation or increased response to an existing painful area).
- Check for skin trophic changes, oedema, stiffness of joints, moist skin, altered hair growth (hirsutism), change in nail texture, motor wasting, sensory changes, peripheral circulation, gait and posture.
- Assess for mood changes and changes in activities of daily living (ADL). For example, is Anna sad and depressed, crying or irritable, or does she have anger-related issues? Can Anna participate in her routine domestic tasks effectively (eg cooking, cleaning, making beds, ironing, driving, shopping and such other ADL)?

Figure 1. Demarcation of an area of sensitivity



ANSWER 2

The symptoms are suggestive of complex regional pain syndrome (CRPS) type 1, previously called reflex sympathetic dystrophy syndrome (RSD). However, a diagnosis of CRPS requires exclusion of other conditions that could cause similar symptoms.

In the older nomenclature, the condition was divided into sympathetically maintained pain and sympathetically independent pain, as in some patients there may not be any evidence of sympathetic excess. Historically, the lack of appropriately and well-codified clinical diagnostic criteria and confusion over RSD and causalgia (a rare pain syndrome related to peripheral nerve injuries) limited accurate diagnosis, research and therapeutic advice, which created confusion in the clinical setting. The current terminology, as outlined by the Budapest Steering Committee Pain Medicine (2003)[1] and subsequently modified and ratified in 2012 by The International Association for the Study of Pain (IASP)[2], reflects the currently accepted norm for diagnosis. In CRPS type 2 there is peripheral nerve injury in addition to the signs and symptoms of CRPS type 1.[3]

Differential diagnoses that need to be excluded when making a diagnosis of CRPS include, but are not necessarily limited to:[4,5]

- fracture
- infection of skin, muscle, joint or bone
- post-traumatic neuralgia
- associated connective tissue disorders
- acute arthritis, gout
- unilateral vascular disease, vasculitis
- thrombophlebitis
- metabolic, autoimmune or neoplastic disorders
- neuropathies
- psychiatric somatoform disorders.

ANSWER 3

CRPS is primarily a clinical diagnosis made on the basis of presenting symptoms and features, and exclusion of other possible conditions. There are no specific investigations for CRPS.[5] However, useful investigations to support the diagnosis of CRPS are:[5,6]

- Plain radiography: osteoporotic changes may present in the initial few weeks of the condition (Sudeck's atrophy).
- Bone scintigram (three phase) with technetium-99m may show delayed uptake in stages 1 and 2, and delayed, increased or symmetrical uptake in phase 3.[4,5,7]
- Magnetic resonance imaging (MRI) may reveal widespread oedema of deep connective tissues, muscle and peri-articular regions. MRI changes to focal nerve injury may be observed.
- Thermography may show temperature variations between the affected and normal limbs.

According to IASP criteria 26, the following are necessary to make a clinical diagnosis of CRPS:[3,5]

1. Continuing pain that is disproportionate to any inciting event.
2. At least one symptom in three of the four categories below:
   - sensory: hyperalgesia and/or allodynia
   - vasomotor: temperature asymmetry and/or skin colour changes and/or skin colour asymmetry
   - sudomotor/oedema: oedema and/or sweating changes and/or sweating asymmetry
   - motor/trophic: decreased range of motion and/or motor dysfunction (weakness, tremor, dystonia) and/or trophic changes (hair, nail, skin).
3. At least one sign at the time of evaluation in two or more of the following categories:
   - sensory: evidence of hyperalgesia and/or allodynia (to light touch and/or temperature sensation and/or deep somatic pressure and/or joint movement
   - vasomotor: evidence of temperature asymmetry (greater then 1°C) and/or skin colour changes and/or asymmetry
   - sudomotor/oedema: evidence of oedema and/or sweating changes and /or sweating asymmetry
   - motor/trophic: evidence of decreased range of motion and/or motor dysfunction (weakness, tremor, dystonia) and/or trophic changes (hair, nail, skin).
4. No other diagnosis better explains the person's signs and symptoms.

ANSWER 4

CRPS incorporates an array of painful conditions characterised by continuing (evoked and/or spontaneous) regional pain, which is seemingly disproportionate in a spectrum of time or degree to the course of any known trauma or other insult such as surgery. The pain is regional (not limited to a specific nerve distribution or dermatome) and usually has a distal predominance of abnormal sensory, motor, sudomotor, vasomotor, and/or trophic findings.[4,5]

The syndrome shows variable progression over time.[6,8,9] Generally, there is an acute phase, followed by subacute phase and, finally, a stable chronic phase. Generally, the duration of the initial two phases is 3–6 months and thereafter the chronic and stable phase sets in. In this final stage there may be permanent changes such as muscle wasting, ongoing pain in the affected region, dystonia, stiffness of joints, trophic change to cutaneous surfaces, as well as contracture of muscles and features of disuse atrophy.[5,6,8]

The pain is often described as burning, lancinating, shooting, electric-like sensations, tearing, deep ache and stinging, which may vary in type and intensity depending on physical activity or, at times, for no apparent reason.[6] Stress may also be a contributing factor.[8] The central mystery of this condition is why some patients develop symptoms, whereas others with seemingly identical injuries do not.[10,11]

Limbs, in particular, are more vulnerable to this condition, compared with the torso.[12] It has been postulated that microvascular dysregulation may be involved in the aetiology of CRPS. The distal ends of limbs have limited blood flow, requiring anti-gravity venous drainage, as any oedema further impedes circulation. This promotes an inflammatory response. Hypoxia resulting from the limited blood

flow impairs the vitality of the distal axon terminals. There may be a genetic component in the triggering mechanism, but this remains to be confirmed.[10] The inflammatory process triggers release of neuropeptides including substance P and calcitonin gene-related peptide (CGRP), adenosine triphosphate (ATP), neurotrophic factor, cytokines, and reactive oxygen scavengers in peripheral nerve terminals, creating a 'chemical soup' that is poorly responsive to NSAIDs.[13,14] Once peripheral sensitisation mechanisms are set in motion, this in turn activates central sensitisation within the dorsal horn of spinal cord and brain. The net result is sensitisation of the entire nervous system and possible suppression of inhibitory pathways at various levels. These central changes contribute to CRPS features including mechanical and temperature-related allodynia, hyperalgesia, stimulus-induced pain and spread to other anatomical sites outside of the injured zone.[8]

Marinus et al[15] summarised the myriad physiological responses seen in CRPS as an 'aberrant host response to tissue injury with (neurogenic) inflammation, nociceptive sensitisation, vasomotor dysfunction and maladaptive neuroplasticity'. They suggest that this response accounts for most or all of the clinical features of CRPS, and urged us to address all these factors in our treatment approaches.

In community-based studies, the incidence of CRPS is 6–20 per 100,000 population.[16]

ANSWER 5

Associated with the physical findings of CRPS, there may be an accompanying altered mood. A combination of symptoms such as anxiety, depression, abnormal illness behaviour, panic attacks, maladaptive coping skills, catastrophising behaviour, fear/avoidant behaviour, poor sleep hygiene and irritable mood may be present.[17,18]

Previously, psychiatrists, pain medicine physicians and psychologists assumed this condition was associated with certain personality traits (eg deprived and unfortunate developmental history and socioenvironmental factors causing excessive abnormal pre-determined brain activity). We now know this is not the case; rather, the severity and prolonged duration of the pain and suffering leads to unwanted secondary problems.[17] Lack of an initial diagnosis, failed multiple treatment regimes, uncertain prognosis and possible perceptions of an uncertain future may have a profound influence on patients' state of mind. The end result is a pain disorder presenting as a biopsychosocial chronic complex disease process.[19]

ANSWER 6

Management of CRPS requires provision of education and self-management advice, physical rehabilitation, pain relief and psychological support.

Referral to a pain specialist, preferably at a multidisciplinary pain centre, would be appropriate for Anna. In this setting she would be provided with coordinated care aiming for 'functional restoration' of her limb to enable normal foot function/activity. Contact should be made with the referral centre to prioritise commencement of the specialised treatment and avoid further delays. Pain management centres will triage acute CRPS cases for early assessement and intervention in an attempt to reduce the extent of future pain and disability.

Treatment by a physiotherapist and an occupational therapist should commence as soon as possible. Immobility and poor circulation contribute directly to worsening of the condition, while early treatment generally reduces the risk of progression towards disabling, chronic CRPS. Common treatments include desensitisation procedures, mirror therapy, proactive physical therapy and occupational therapy to minimise disuse and further atrophy. These should be continued even if the patient develops a chronic state of CRPS.[19–23]

Psychological support at an early stage is essential. Anna has severe pain and disability. Her altered mood, depression, maladaptive coping, fear/avoidance, poor sleep hygiene and other emotional factors compounds her problems and she would benefit from psychological support. Weekly or twice weekly counselling, cognitive behaviour therapy (CBT), education and explanation of Anna's condition undertaken in a compassionate and positive manner, for example, in a cognitive-based small group education program with other people experiencing chronic pain, would be helpful. Professional staff at pain centres are involved in the delivery of group education and information sessions to support overall physical and psychological wellbeing, aiming towards achieving as normal a life as possible.[18–20]

Other considerations for Anna's CRPS syndrome include:

Pharmacological therapy

Although CRPS is associated with neuropathic pain,[24] there are few evidenced-based studies investigating CRPS treatments. Treatment, therefore, tends to be based on extrapolation of information from studies of other common neuropathic conditions, such as painful diabetic nephropathy, post-traumatic neuralgia and post-surgical neuropathic pain such as post-herionrraphy pain.[25]

- **Analgesics**

  Opioid analgesics tend to be less effective then non-opioids in neuropathic pain but may be useful for pain due to nociceptor stimulation (eg inflammatory conditions). Evidence suggests that dual acting analgesics such as tramadol or tapentadol may be effective; however there are restrictions on their use.[25]

- **Anti-inflammatory agents**

  In the early, acute stage, NSAIDs may be tried for short periods.[26] A case has been made for use of oral steroid therapy for a few days in the acute phase, but there are no studies to support this line of therapy.[25]

- **Tricyclic antidepressants (TCAs)**

  If simple analgesics and anti-inflammatory agents are ineffective, a small dose of a TCA may be considered (eg amitriptyline 10–25 mg at night, to a maximum dose of 75–100 mg at night). Such agents are thought to offer pain relief independently of their mood-altering effects.[26]

- **Pregabalin and gabapentin**

  Pregabalin commenced at 75 mg daily or gabapentin commenced at 100–300 mg daily are listed on the Pharmaceutical Benefits Scheme (PBS) for treatment of refractory neuropathic pain that is

not responsive to other drugs.[26] These agents should be monitored for tolerance and their side effects include excessive drowsiness, cognitive impairment and disorientation.

If Anna does not respond to any of the strategies discussed above, she should be referred to a pain physician.

CONCLUSION

You refer Anna to a pain physician, providing a detailed letter outlining the history of her pain and its management to date, and request an urgent appointment. The pain physician, physiotherapist, occupational therapist and clinical psychologist assessed Anna at a multidisciplinary pain centre. An appropriate pain management plan was instituted following discussion of Anna's case.

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CASE 5

RUPERT IS STILL SORE AFTER HERNIA REPAIR

Rupert, 65 years of age, underwent a right inguinal hernia repair 3 months ago. Since his surgery he has been experiencing troublesome pain localised to the operated groin. He attends your clinic at the urging of his wife, who is concerned that the pain has not subsided. Correspondence from the surgeon indicates that Rupert underwent an uncomplicated open hernia repair with reinforcement of the posterior wall of the inguinal canal with a synthetic mesh. Rupert admits that the discomfort has had a negative impact on his lifestyle. He retired recently and has become a zealous golfer but the post-surgical inguinal pain troubles him enormously and he has not been able to return to playing golf.

QUESTION 1

What would you assess on examination? What investigations would you consider?

QUESTION 2

How is chronic post-surgical pain (CPSP) defined?

QUESTION 3

How common is chronic post-operative inguinal pain (CPIP)? What are the causative factors?

QUESTION 4

What conservative treatment strategies might be of benefit? What specific pharmacological treatments may be useful?

QUESTION 5

Are topical treatments useful in CPIP?

QUESTION 6

What other options might be considered if conservative measures fail?

QUESTION 7

Is there a role for further surgery for Rupert?

CASE 5 ANSWERS

ANSWER 1

Inguinal hernias are often asymptomatic and it is worth considering other causes of groin pain. Rupert may have undergone hernia surgery under the erroneous assumption that the hernia was the structure responsible for the pain. Other common causes of groin pain to consider include musculoskeletal pathology, such as osteoarthritis of the hip, and testicular pathology. In this scenario, Rupert may report the pain remains unchanged despite surgery (or, if particularly unfortunate, may report new pain due to CPIP in addition to the original pain).

Although infrequent, it is important to consider the possibility of mesh infection in any patient who has undergone hernia repair surgery involving a mesh. Assess for erythema, induration or increased temperature in the abdominal wall in the area of the mesh. Evaluate for systemic manifestations of sepsis including fever, malaise and rigors. Risk factors for infected mesh include obesity, smoking and diabetes.[1]

Hernia recurrence should be excluded through physical examination and imaging. Ultrasonography is recommended as the first choice of imaging for recurrence and meshoma (contraction, migration, or bunching-up of a prosthetic mesh).[2] Magnetic resonance imaging (MRI) may be indicated if ultrasonography findings are equivocal or negative and there is still an index of suspicion.[3]

Discern the nature of the pain, differentiating between neuropathic pain (arising from damaged nerves or from abnormal nerve responses to persistent uncontrolled pain) and nociceptive pain (due to stimulation of nerve endings).[4] In CPIP, neuropathic pain tends to be the major component and the presence of allodynia, hyperalgesia, dysaesthesia or hypoaesthesia supports the presence of a neuropathic component to the pain.[5]

It is also useful to assess the severity of the pain, for example, using words (mild, moderate or severe), a visual analogue scale or a numerical scale (0–10). In some series, up to 15% of patients will report CPIP but only 5% have pain they describe as 'bothersome' or pain that seriously interferes with their day-to-day activities.[6,7]

ANSWER 2

Chronic post-surgical pain (CPSP) is defined as pain that develops after surgical intervention, lasts for at least 2 months and for which other possible causes of pain have been excluded.[8] In the case of chronic CPIP, 3–6 months is generally considered the duration to define chronicity, in view of post-operative inflammatory processes specific to this type of surgery.[9]

ANSWER 3

The estimated risk of moderate-to-severe, chronic, post-surgical pain is 10–12%.[10–12] A number of risk factors have been identified that may contribute to the development of CPSP.

These risk factors include:[13]

- **Pre-operative factors**
  - Moderate–severe pain lasting longer than 1 month
  - Repeat surgery
  - Psychological factors (eg lack of resilience, passive coping, catastrophising)
  - Pre-operative anxiety
  - Female gender
  - Younger age
  - Workers' compensation
  - Genetic and environmental components
  - Inefficient diffuse noxious inhibitory control
- **Intra-operative factors**
  - Surgical procedures with risk of nerve damage
- **Post-operative factors**
  - Acute, moderate–severe pain
  - Radiation to area
  - Use of neurotoxic chemotherapy
  - Psychological factors
  - Anxiety.

With regard to CPIP specifically, causative factors may also include hernia recurrence, meshoma, inguinal nerve injury or entrapment.[3] Pain patterns may by neuropathic or nociceptive and have a somatic or visceral distribution.[9] Neuropathic pain is thought to arise following injury to one of the inguinal nerves.[14] The resultant pain is perceived in the sensory distribution of the affected nerve(s). The inguinal nerves that are commonly involved are the iliohypogastric nerve, ilioinguinal nerve and the genital branch of the genitofemoral nerve.[15] Less frequently, the femoral branch of the genitofemoral nerve and the lateral cutaneous nerve of the thigh can be involved.[16,17] These nerves can become damaged intraoperatively by surgical manipulation or become entrapped in suture or fixation material.[14] Nerve injury or compression results in myelin degeneration, nerve oedema, fibrosis and axonal loss. Post-operatively, a nerve lesion can arise as a result of envelopment within a meshoma, irritation from excessive inflammation and fibrotic reaction, or from neuroma formation.[18] Causes of nociceptive pain include hernia recurrence, meshoma formation and persistent inflammation around the mesh repair.[15] In some cases, pain and discomfort can arise from the bulk effect of the mesh itself.[19] Visceral pain can arise from mesh adhesion to the nearby small bowel, or from involvement of the spermatic cord. As there is usually an overlap of neuropathic and nociceptive pain, it is frequently difficult to appreciate a discrete distinction between the two patterns.[20] With time, the picture may become complicated by a component of central and/or peripheral sensitisation to the pain.[21] Furthermore, it is well recognised that psychosocial factors play a significant role in the development of chronic pain and the nature and severity of the disability associated with it.[22,23]

ANSWER 4

Treatment of the patient with CPIP remains a challenge. In addition to neuropathic and nociceptive components, the pain is frequently influenced by emotional, social and behavioural factors. Accordingly, a multimodal multidisciplinary approach is necessary.[3]

Conservative treatment modalities should include an explanation as to the aetiology of the pain and reassurance that milder, less bothersome pain generally improves. More information is being given to patients pre-operatively so that they are aware of what to expect. Conservative strategies include simple analgesics, such as paracetamol and non-steroidal anti-inflammatory agents (NSAIDs), neuropathic pain medications as single agents or in combination, physical therapy and behavioural therapy.[3]

Inflammatory nociceptive pain responds well to NSAIDs. Neuropathic pain resulting from nerve damage caused by local inflammatory processes may also respond to NSAIDs.[9] Although NSAIDs are effective as analgesics, continued long-term use is generally not sustainable because of possible adverse effects.[24]

The anticonvulsants gabapentin and pregabalin, tricyclic antidepressants (TCAs), serotonin/noradrenaline reuptake inhibitors (SNRI) and topical lignocaine (generally used as a 5% patch) are all considered first-line treatments for neuropathic pain.[25,26] However, not all of these drugs are readily available on the Pharmaceutical Benefits Scheme (PBS). For example, gabapentin is PBS-listed for treatment of refractory neuropathic pain not controlled by other drugs, while the SNRI duloxetine, which is indicated for painful diabetic peripheral neuropathy (PDPN),[27] is only available on the PBS for major depressive disorders, and lignocaine 5% patches are not available on the PBS. Although most available trials have investigated treatment of neuropathic pain in the context of post-herpetic neuralgia (PHN) or PDPN, it is reasonable to extrapolate the results for other neuropathic pain conditions.[26]

Opioids have traditionally been considered a second-line treatment, as side effects and concerns regarding long-term tolerance (including opioid-induced hyperalgesia, immune suppression, endocrine deficiencies, dependence, addiction and overdose) limit long-term use.[28] Opioid therapy in the management of chronic non-cancer pain is increasingly contentious. A recent Australian guideline published in May 2014 stated that opioid therapy should not be initiated for the management of chronic non-cancer pain, given current medical evidence for opioid efficacy and safety.[29,30] Evidenced-based indications are acute pain, cancer pain, palliative care and opioid dependence/addition.[29,30]

Where there is refractory neuropathic pain, referral to a pain specialist and combination therapy is often needed.[26]

ANSWER 5

Although it is reasonable to attempt a trial of topical medications, given that the pain is localised to a discrete area, the drug may not be absorbed deeply enough to be efficacious in treating the underlying condition. The efficacy of topical lignocaine has been established in other conditions and lignocaine patches are generally considered safe

as systemic absorption is low.[28] However, a well-designed but small crossover trial of lignocaine patches (5%) in patients with severe CPIP failed to show benefit.[31] Capsaicin patches are emerging as a therapeutic option in neuropathic pain but are not approved or available for use in Australia.[29] Application of capsaicin is used to desensitise sensory axons and thereby prevent transmission of pain. However, a recent randomised placebo-controlled trial investigating capsaicin (8%) patches in the treatment of severe CPIP failed to show significant differences in pain relief between capsaicin and placebo treatment.[32]

ANSWER 6

Non-surgical interventional treatments useful in CPIP include nerve blocks, pulsed radiofrequency (PRF) and cryoablation.

Nerve block of the ilioinguinal nerves is useful for diagnostic and therapeutic purposes in the diagnosis and treatment of CPIP and some evidence suggests it can provide effective, sustained pain relief.[33] If a nerve block results in pain relief but the analgesia is not sustained, PRF or cryoablation may be considered for longer-lasting analgesia.

PRF is an interventional technology used in chronic pain management and involves administering high-intensity current in short pulses to nerve tissue. Heat is allowed to dissipate in the latent phase so neurodestructive temperatures are not attained (typically, the probe heats to 42°C). The mechanism by which PRF provides pain relief is not fully understood but it is thought to attenuate conduction of impulses in pain fibres. Accordingly, PRF is a safe treatment modality and has clinical applications in neuropathic pain. PRF has been reported as a successful treatment modality in multiple case series as well as in recent systematic reviews.[34–36] It has been applied peripherally to the inguinal nerves and also to the nerve roots that give rise to the inguinal nerves (T12–L2).

Cryoablation is a neurodestructive technique that selectively destroys axons and myelin sheaths while leaving epineurium and perineurium intact and hence neuroma formation is unlikely. This treatment can result in prolonged pain relief without risk of deafferentation pain and has been reported as a successful mode of analgesia for patients with CPIP.[37]

Neuromodulation has been used successfully in patients with CPIP with pain refractory to pharmacological and other treatment modalities. Peripheral nerve field stimulation (PNFS), and spinal cord stimulation (SCS) are neuromodulation techniques that use implantable devices to produce pain relief by providing gentle paraesthesias in the concordant areas of pain. Multiple case reports and case series of neuromodulation use in CPIP have been published showing successful results; however, patient selection is crucial for the success of these modalities.[38–42] Dorsal root ganglion stimulation is an emerging neuromodulation technique that offers some advantages over traditional SCS. Early data suggest it may represent an effective treatment for chronic neuropathic pain conditions in the groin region.[43]

ANSWER 7

The majority of patients can be managed using conservative measures. However, surgical management can be considered for patients whose pain is refractory to conservative measures, if there is a structural or anatomical target that may be corrected surgically with a reasonable expectation that this will improve the pain.[3] Remedial operations should be performed by experienced hernia surgeons.

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PAIN MANAGEMENT (ACTIVITY ID: 19111)

This unit of check is approved for 6 Category 2 points in the RACGP QI&CPD program. The expected time to complete this activity is 3 hours and consists of:

- reading and completing the questions for each case study
- you can do this on hard copy or by logging on to the gplearning website, http://gplearning.racgp.org.au
- answering the following multiple choice questions (MCQs) by logging on to the gplearning website, http://gplearning.racgp.org.au
- you must score ≥80% before you can mark the activity as 'Complete'
- completing the online evaluation form.

You can only qualify for QI&CPD points by completing the MCQs online; we cannot process hard copy answers.

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CASE 1 – JOSEPHINE

Josephine, a cleaner aged 59 years, fell and hurt her back at work a year ago. She has come to see you for the first time to discuss her ongoing back pain. At the time of her fall, imaging did not show significant findings and her GP prescribed simple analgesics for her pain. A second GP referred her for physiotherapy, which was not useful. Examination today does not reveal any identifiable underlying problems.

QUESTION 1

Are there any red or yellow flags in this presentation?

A. Doctor shopping is a possible yellow flag in this case.

B. There are several red flags in this presentation.

C. Worker's compensation claim is a yellow flag in this case.

D. Answers A and B are correct.

E. Answers A and C are correct.

FURTHER INFORMATION

Josephine's current medications include paracetamol up to 4 g daily, tramadol 200 mg twice daily and oxycodone CR 80 mg twice daily. Occasionally, she takes temazepam 10 mg at night to help her sleep.

QUESTION 2

Which of the following statements is correct with regards to opioid use in chronic pain?

A. Opioids are useful adjunct analgesics in the setting of any chronic pain.

B. Hunter Integrated Pain Service (HIPS) guidelines endorse opioid use in chronic non-cancer pain.

C. Current indications for opioids include chronic non-cancer pain (CNCP).

D. HIPS states that people using opioids for CNCP should be slowly weaned off them.

E. According to HIPS, opioid dependence/addiction is not an evidence-based indication for opioid therapy.

CASE 2 – ANNE

Anne, aged 33 years, presents with a 12–18-month history of tiredness, persistent aches and pains in her arms and neck, and difficulty sleeping. She finds it difficult to continue her usual activities and is not coping at work or at home. Examination reveals extensive musculoskeletal tenderness, which you think is suggestive of fibromyalgia.

QUESTION 3

Which of the following correctly describes appropriate assessments and/or investigations for Anne?

A. A comprehensive general examination is not required in the assessment of fibromyalgia.

B. A full blood evaluation (FBE), erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) should be considered.

C. Liver function and a thyroid function tests should be considered.

D. Answers B and C are correct only.

E. Answers A, B and C are correct.

FURTHER INFORMATION

Fibromyalgia is confirmed using the American College of Rheumatology's diagnostic criteria. You and Anne develop a multidisciplinary patient management plan to manage her fibromyalgia.

QUESTION 4

Which answer is correct with regards to the management of fibromyalgia?

A. Simple analgesics (eg paracetamol) and anti-inflammatory agents have a role in the management of fibromyalgia.

B. At present, there are no medications approved for fibromyalgia.

C. Selective serotonin reuptake inhibitors (SSRIs) have some benefit for fibromyalgia pain.

D. A fibromyalgia plan consists of two components.

E. Topical analgesics are recommended in fibromyalgia.

CASE 3 – JANE

Jane, 19 years of age, presents for the first time with a 1-year history of abdominal pain. She has seen several GPs who, after examining and investigating her, have advised that there is no underlying explanation for her pain.

QUESTION 5

Which answer correctly outlines possible causes of Jane's pain?

A. Endometriosis

B. Fibromyalgia

C. Abdominal migraines

D. *Herpes zoster* infection

E. Answers A–D are correct.

CASE 4 – ANDREW

Andrew, aged 67 years, visits for the third time as he is concerned about ongoing pain, swelling and mottled skin arising from a recent ankle injury. Examination and investigations undertaken at his first visit revealed normal findings. Today he advises that the pain is ongoing. His right foot often changes colour and he can no longer wear closed shoes. You suspect a diagnosis of complex regional pain syndrome (CRPS).

QUESTION 6

Which of the following options is correct regarding confirmation of this diagnosis?

A. Magnetic resonance imaging (MRI) data are required to confirm the diagnosis of CRPS.

B. MRI and thermography data are required to confirm the diagnosis of CRPS.

C. There are no specific investigations that can be used confirm CRPS presently.

D. A bone scintigram is required to confirm the diagnosis of CRPS.

E. Thermography data is required to confirm the diagnosis of CRPS.

FURTHER INFORMATON

Using clinical diagnostic criteria and with the support of MRI and thermography data you confirm a diagnosis of CRPS.

QUESTION 7

Which of the following options is the most correct with regards to management of CRPS?

A. Management of CRPS is best undertaken in the general practice setting.

B. There is strong evidence to support the use of pharmacological therapy for CRPS.

C. There is no urgency with regards to referral for physiotherapy or occupation therapy.

D. Andrew does not require assessment for a possible mood disorder (eg depression).

E. Management requires patient education, self-management advice, rehabilitation, pain relief and psychological support.

CASE 5 – JOHN

John, 69 years of age, comes to see you about ongoing pain following left inguinal hernia repair surgery 5 months ago. After several visits you have concluded that he has developed post-surgical pain syndrome.

QUESTION 8

Which statement is correct regarding the diagnosis of chronic post-surgical pain (CPSP) and/or chronic post-herniorrhaphy inguinal pain (CPIP)?

A. Mesh infection is not a likely contributor to CPIP and does not require routine consideration.

B. A diagnosis of post-surgical pain requires thermography data showing temperature variations between areas of pain and those without pain.

C. For a diagnosis of CPIP, 3–6 months of ongoing chronic pain is required and other causes of pain must be excluded.

D. The diagnosis of CPIP requires pain to have been present for at least 2 months and other possible causes of pain excluded.

E. Non-surgical interventions such as nerve block, pulsed radiofrequency and ablation are not useful when conservative pain management fails in CPIP.

check

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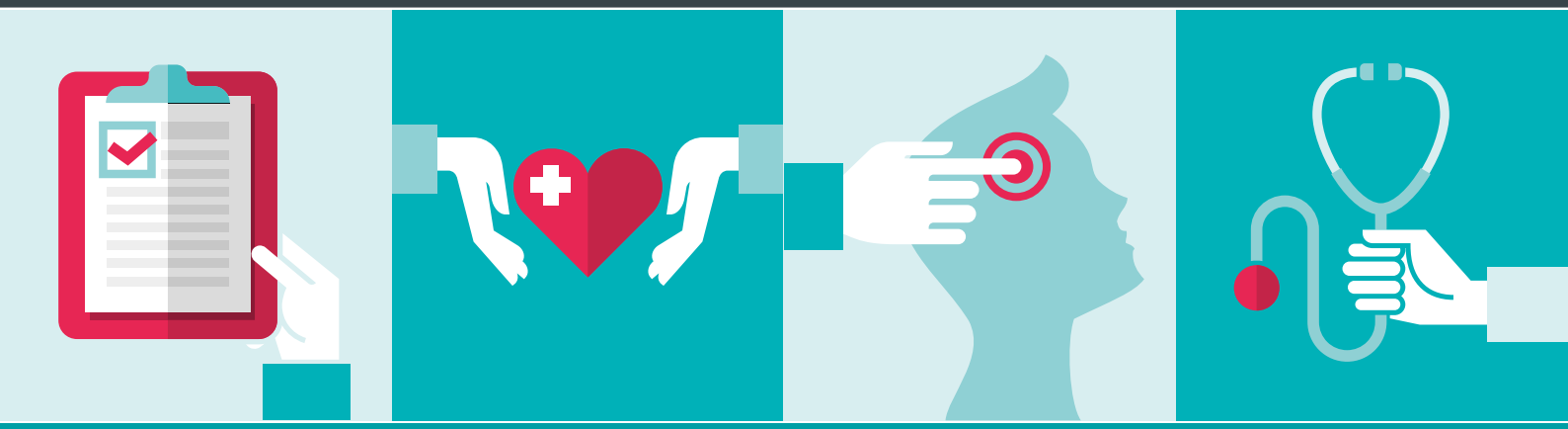

Unit 515 April 2015

Stages of life: Childhood

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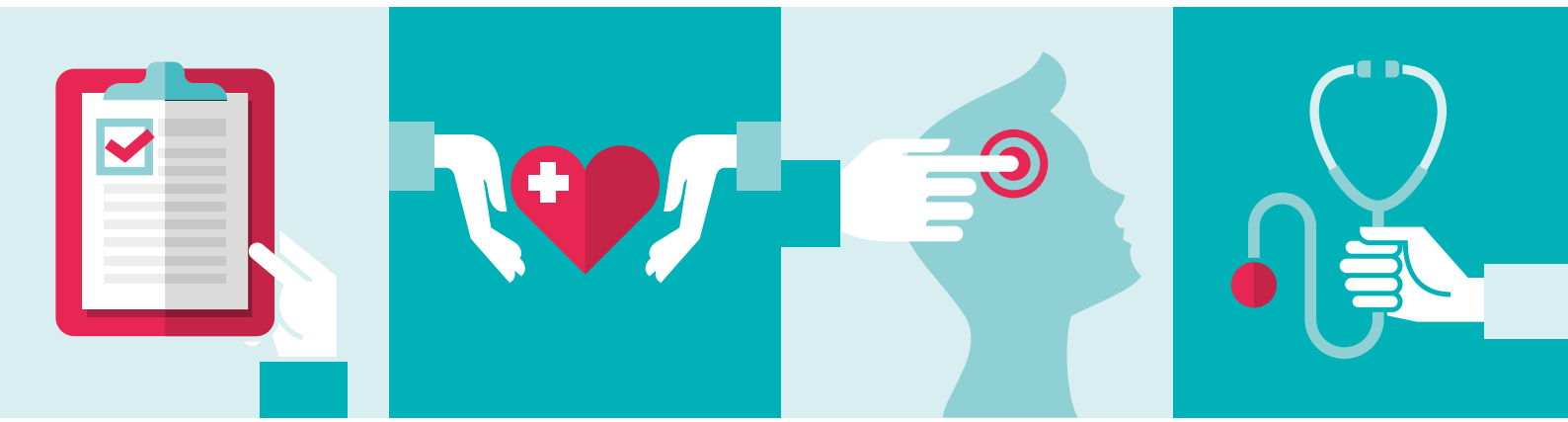

Stages of life: Childhood

Unit 515 April 2015

The five domains of general practice

- Communication skills and the patient-doctor relationship
- Applied professional knowledge and skills
- Population health and the context of general practice
- Professional and ethical role
- Organisational and legal dimensions

RACGP

Child mortality rates in Australia have decreased by more than half in the past 20 years.[1] However, chronic illness continues to be a major contributor to the burden of disease in children and about 2 in 5 children in Australia have a long-term condition.[2] Asthma, cancer and diabetes are three chronic conditions of particular concern and are National Health Priority Areas.[2] Preventive measures, early detection and intervention in the areas of health, safety and education can improve a child's health and general wellbeing. This edition of *check* focuses on the assessment and management of childhood conditions in general practice.

LEARNING OUTCOMES

At the end of this activity, participants will be able to:

- explain how asthma is diagnosed and managed in children
- outline the diagnosis and management of coeliac disease in children
- describe the assessment of children presenting with abdominal pain
- discuss the causes of reflux in infants
- discuss appropriate measures in the assessment of bruising in children
- list the referral pathways for children with learning difficulties.

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ACRONYMS

ADHD	attention deficit hyperactivity disorder
ASRS	Autism Spectrum Rating Scales
CMPA	cow's milk protein allergy
CRP	C-reactive protein
DGP	deamidated gliadin peptide
DSM-5	Diagnostic and Statistical Manual of Mental Disorders, fifth edition
FBE	full blood evaluation
GOR	gastro-oesophageal reflux
GORD	gastro-oesophageal reflux disorder
HLA	human leukocyte antigen
IBD	inflammatory bowel disease
IBS	irritable bowel syndrome
NICE	National Institute for Health and Care Excellence
PBS	Pharmaceutical Benefits Scheme
PEDS	parents' evaluation of developmental status
PPI	proton pump inhibitor
PTSD	post-traumatic stress disorder
SLD	specific learning disorder
tTG	tissue transglutaminase antibody
T1DM	type 1 diabetes mellitus
URTI	upper respiratory tract infection

CASE 1

DANIEL HAS A COUGH AND SHORTNESS OF BREATH

Maria, a lawyer aged 34 years, has made an appointment to see you to discuss her son Daniel who is 3 years of age. She reports that since the start of winter this year, Daniel has been troubled by a dry cough and episodes of laboured breathing. You know from your previous consultations with Maria that she is keen on non-pharmacological therapy where possible. Maria asks for your help with Daniel's cough.

QUESTION 1

What is your initial approach to this consultation?

FURTHER INFORMATION

The history reveals that Daniel has had a cough and a wheeze for 2–3 days and nights each week for the past 2 months. Maria has tried a humidifier in the room but that did not relieve Daniel's symptoms. In desperation, she borrowed a salbutamol puffer from her sister when she was visiting with her daughter, Daniel's cousin, who has asthma. Maria felt the puffer helped Daniel.

Your examination reveals a well-looking 3-year-old boy who is not in any respiratory distress. He does, however, have a bilateral wheeze. His growth parameters are normal for his age.

QUESTION 2

What is your initial diagnostic impression?

QUESTION 3

What differential diagnoses should you consider before making a diagnosis of asthma for the first time?

QUESTION 4

How would you classify the pattern of Daniel's asthma?

QUESTION 5

What treatment might you initiate for Daniel? What instructions would you provide for Maria?

QUESTION 6

Maria is concerned about giving Daniel corticosteroids. How might you address Maria's concerns?

QUESTION 7

Maria asks about alternative and complementary medicines, and non-drug therapies for asthma. What would you tell her?

FURTHER INFORMATION

Maria and Daniel return 4 weeks later for review. Your assessment of Daniel now is that he has shown some improvement but still has symptoms on 1–2 days and nights per week and he uses the reliever twice during the week

QUESTION 8

If spacer technique is good and asthma control remains poor, what might you do next?

CASE 1 ANSWERS

ANSWER 1

It is important to take an appropriate history and conduct a suitable examination. Questions for the history may include:[1]

- How long has Daniel had the cough?
- Is it a daytime or night-time cough?
- Are there any aggravating or relieving factors?
- Is Daniel exposed to any triggers in his environment such as smokers in the house/around the house?
- What is the frequency of the symptoms?
- Are there any associated symptoms such as fever?
- Can Maria clarify the meaning of 'laboured breathing'?
- Has Maria taken Daniel to the hospital at any point? If so, ascertain the outcome and ask to see the discharge summary.
- Has Maria already used any measures to alleviate the symptoms?

The history taking should also include:

- a systems review (eg has there been any diarrhoea, vomiting, snoring, recent upper respiratory tract infection [URTI]?)
- review of growth centiles in the paediatric record book ('Blue book')
- vaccination status
- family history of respiratory or any other medical problems
- travel history.

Examination should focus on the following:[1,2]

- the level of immediate respiratory distress – respiratory rate, subcostal recession, ability to speak in sentences
- colour – pallor, cyanosis
- signs of chronic lung disease such as clubbing
- chest examination – looking for unilateral (asymmetrical) or bilateral (symmetrical) signs such as wheeze, crackles, bronchial breath sounds
- growth parameters and graph on centile charts
- associated conditions (eg atopy).

ANSWER 2

Daniel's history and your examination findings suggest that Daniel may have asthma.

The ideal methodology for diagnosis of asthma is spirometry, but in children under the age of 7 years this may not be achieved reliably. Hence, a history that includes recurrent wheeze, cough or chest tightness associated with a concordant family history of asthma or atopy can be critical in making a diagnosis. A response to bronchodilator therapy can also provide a helpful retrospective confirmation of the diagnosis.[2]

ANSWER 3

Other conditions that can mimic asthma include (but are not limited to):[3]

- inhaled foreign body
- gastro-oesophageal reflux disease (GORD)
- cystic fibrosis
- persistent viral or other infectious disease symptoms such as pertussis or bacterial bronchitis
- tracheomalacia
- habit cough – classically absent when sleeping and treated with suggestion therapy[2]
- sleep apnoea
- hyperventilation and anxiety attacks – these may mimic the shortness of breath of asthma but spirometry during an attack may not show an asthma pattern.
- travel-related conditions (if history of recent travel is given).

Asthma is characterised by variable airflow limitation associated with respiratory symptoms such as wheeze, shortness of breath and chest tightness, which may vary over time.[1]

ANSWER 4

Daniel's asthma could be classified as intermittent, frequent or persistent and, if persistent, as mild, moderate or severe (*Table 1*).[1]

As Daniel has daytime and night-time symptoms on 2–3 days per week, his condition can be classified as moderate persistent asthma.

ANSWER 5

It would be prudent to commence Daniel immediately on a low dose of inhaled corticosteroid such as fluticasone 50 µg twice a day via spacer as a preventer, together with salbutamol 100 µg given as six inhalations via spacer as a reliever (for symptom relief) when required.[1,4,5] Maria should be advised to ensure that Daniel rinses his mouth after inhalation to minimise oropharyngeal candidiasis and systemic absorption of the corticosteroid.[5]

The correct way to use a spacer is to allow 4–6 breaths per puff of the inhaler. Explain to Maria that this can take some time and requires patience, especially with children. For younger children, a mask may be required in order to obtain a good seal,[5] but at the age of 3 years Daniel should be able to manage without one.

An alternative to inhaled corticosteroids is montelukast. The British Thoracic Society guidelines[4] suggest inhaled corticosteroids should usually be the first-line preventer; however, the *Australian Asthma Handbook*[1] allows for the use of montelukast as first-line agents.

You should provide an asthma action plan[6] with instructions on the correct use of a spacer device. Two copies of the asthma action plan should be given to Maria – one for home and one for childcare.

You should also obtain consent for and prepare a GP management plan (Medicare item 721) and give Maria a copy. This document, along with the asthma action plan, should assist Maria in managing Daniel's asthma. You could also direct Maria to the *Australian Asthma Handbook*,[1] which is available online.

Table 1. Definitions of asthma in children aged 0–5 years not taking regular preventer[1]

Category			
Infrequent intermittent asthma	Symptom-free for at least 6 weeks at a time (symptoms up to once every 6 weeks on average but no symptoms between flare-ups)		
Frequent intermittent asthma	Symptoms more than once every 6 weeks on average but no symptoms between flare-ups		
Persistent asthma	**Mild** At least one of: • Daytime symptoms† more than once per week but not every day • Night-time symptoms† more than twice per month but not every week	**Moderate** Any of: • Daytime symptoms† daily • Night-time symptoms† more than once per week • Symptoms sometimes restrict activity or sleep	**Severe** Any of: • Daytime symptoms† continual • Night-time symptoms† frequent • Flare-ups frequent • Symptoms frequently restrict activity or sleep

† Symptoms between flare-ups. A flare-up is defined as a period of worsening asthma symptoms, from mild (eg symptoms that are just outside the normal range of variation for the child, documented when well) to severe (eg events that require urgent action by parents and health professionals to prevent a serious outcome such as hospitalisation or death from asthma).
Note: Use this table when the diagnosis of asthma can be made with reasonable confidence (eg a child with wheezing accompanied by persistent cough or breathing difficulty, no signs or symptoms that suggest a potentially serious alternative diagnosis and the presence of other factors that increase the probability of asthma such as family history of allergies or asthma).
Reproduced with permission from the National Asthma Council Australia from the Australian Asthma Handbook, Version 1.0. Melbourne: National Asthma Council Australia, 2014. Available at www.asthmahandbook.org.au

ANSWER 6

The issue of growth retardation due to inhaled corticosteroids has been the subject of much research over the years. It has been shown that inhaled corticosteroids may lead to a reduction in height of 1 cm in the first year of use.[7] Furthermore, a 2014 Cochrane review[8] involving 10 trials and 3394 children found a small but statistically significant difference in growth velocity in the first year of inhaled steroid use. The magnitude of this effect was deemed to be dose-related: growth velocity was 5.94 cm/year in the low-dose group (50–100 µg beclomethasone equivalent) and 5.74 cm/year in the higher-dose group (200 µg beclomethasone equivalent). However, as no studies in the review went beyond 12 months, the reviewers concluded that, although it would be prudent to minimise inhaled steroid use to the lowest dose for the smallest possible time, further studies are required in this area.[8] A large study that ran for 10 years[9] showed that final adult heights achieved, even after a mean of 9.2 years of inhaled corticosteroid use, were similar in the treatment and the control groups.

It is therefore possible that the growth retardation effect seen with inhaled corticosteroids may be present only at the initiation of therapy and may not persist beyond the first year.[5,9] As with all medications, the decision to treat with inhaled corticosteroids should always be made after weighing up potential benefits versus harms and having a full and frank discussion with the patient.

It would be prudent to explain to Maria in plain English that as with all medications, inhaled corticosteroids do have risks but we would aim to use the lowest possible dose for the shortest time and that given the severity of Daniel's asthma, presently, the benefits would outweigh the risks.

ANSWER 7

You explain that at this stage there is no substantial evidence that any of the following measures can help:[4]

- avoidance of common allergens like dust mite
- modified infant formula
- fish oil
- vitamin E supplementation
- selenium supplementation
- dietary sodium restriction
- magnesium supplementation
- vitamin C supplementation
- probiotics
- acupuncture
- homeopathy
- hypnosis
- chiropractic therapy
- pyridoxine (vitamin B6)[1]

There is mixed evidence for herbal and traditional Chinese medicine and further studies are required to elucidate their role, if any.[4]

You advise Maria that in Daniel's case, as he has moderate persistent asthma, sole reliance on non-pharmacological therapy could prove deleterious to his health and should be avoided until his asthma is brought under control and a 'step-down' can be attempted.[4]

There is good evidence to support avoidance of exposure to cigarette smoke[1,10] and, although not strictly relevant to Daniel, should Maria decide to have another baby, there is some evidence that breastfeeding can have a protective effect as well.[4] Furthermore, while not relevant to Daniel's case, weight loss in overweight or obese patients can help asthma control[4] and cineole (a component of eucalyptus oil) has also been shown to help.[1]

ANSWER 8

If asthma control remains poor, an increase in inhaled corticosteroid dose could be considered and if the response is still inadequate at a dose of 500 µg of fluticasone per day,[5,11] it may be worth reconsidering the diagnosis and referring Daniel to a paediatrician or

paediatric respiratory physician for a second opinion. Referral should also be considered if there are severe asthma exacerbations despite maximal therapy.

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CASE 2

CHARLIE HAS LOOSE MOTIONS

Charlie is brought to see you by his mother. Charlie is 3 years and 9 months of age. His mother reports that Charlie has had loose motions over the last 3–4 months. She is worried about the possible causes.

QUESTION 1

What key parts of the history do you need to ask about?

FURTHER INFORMATION

You learn that Charlie was born at term weighing 3.25 kg after an unremarkable pregnancy and was breastfed for the first 7 months of life. Charlie was well as an infant and his growth and developmental progress were normal. However, he was hospitalised with diarrhoea and vomiting just after his third birthday. Although not substantiated at the time, these symptoms were thought to be secondary to a viral infection. The symptoms settled over 7–8 days. Charlie lost some weight at the time of the acute diarrhoea (about 700 g), but regained this weight within 1–2 weeks. Subsequently, however, his mother thinks that he has not gained much more weight. He now weighs 14.5 kg.

He has been more lethargic and grumpy than usual in the past few months, and reports some vague abdominal pain most days. He has up to four loose unformed bowel motions each day, but no urgency and no blood.

Charlie has no other past medical or surgical history. There is no history of travel, or known contact history. Charlie has no siblings. His father has well-controlled type 1 diabetes mellitus (T1DM) but is otherwise well. The only other family history of possible relevance is that his mother's sister has what she calls irritable bowel syndrome (IBS).

QUESTION 2

What are the key aspects of examination that you will focus on?

FURTHER INFORMATION

You arrange to measure Charlie's weight and height, and plot these on an appropriate growth chart. You compare these to his previous measurements and note that his height has continued along the 50th percentile for age. By contrast, Charlie's weight, which was at the 50th percentile before his third birthday, is now between the 10th and 25th percentiles for age.

You complete an abdominal examination and find no specific abnormalities. There is no distension, no organomegaly and no presence of mass. There is no tenderness and bowel sounds are normal. You do not note any pallor or oedema.

QUESTION 3

What are the likely differential diagnoses for Charlie's symptoms? What tests would you perform?

QUESTION 4

What would you recommend for Charlie while you await the results of these investigations?

FURTHER INFORMATION

The results, shown in *Table 1,* indicate low iron stores and a microcytic anaemia. C-reactive protein (CRP) and albumin are both normal, and stool microscopy and culture show no white cells and no pathogens. Tissue transglutaminase antibody (tTG) and deamidated gliadin peptide (DGP) levels are elevated.

Table 1. Test results

Test	Charlie's result	Normal ranges
Stool microscopy and culture	Normal	
Full blood evaluation (FBE):		
• Haemoglobin	103 g/L	120–140 g/L
• Mean corpuscular volume (MCV)	77 fL	78–93 g/L
Iron studies:		
• Ferritin	9 mg/L	20–200 mg/L
Albumin	Normal	
CRP	Normal	
Coeliac serology:		
• IgA tTG	78 IU	<5* IU
• IgG DGP	62 IU	0–20* IU
• Total IgA	0.5 IU/mL	0.3–0.7 IU/mL

*Normal ranges vary with different test kits

You refer Charlie to the local paediatric gastroenterology service for small bowel biopsy (endoscopic biopsy from proximal small bowel). This is completed 3 weeks later.

The endoscopy report indicates scalloping of the duodenal folds, with several small erosions in the duodenal cap. The histology results are available 4 days later and indicate the presence of crypt hyperplasia, patchy villous atrophy and intraepithelial lymphocytosis. No other changes are evident.

QUESTION 5

How would you interpret these results?

QUESTION 6

What would you recommend for Charlie and his family?

QUESTION 7

How would you follow his progress?

FURTHER INFORMATION

At a subsequent visit, Charlie's mother, who screened negative for coeliac disease, reports that she is pregnant with their second child. She asks about her diet during pregnancy, when to introduce gluten into her new baby's diet and when and how to screen for coeliac disease.

QUESTION 8

What will you tell Charlie's mother?

CASE 2 ANSWERS

ANSWER 1

You will need to ascertain the presence of any associated symptoms. Several of the conditions included in the differential diagnosis for Charlie are likely to be familial in nature and so documenting family history will be important.

ANSWER 2

It is particularly important to assess nutritional consequences of chronic diarrhoea in a toddler.[1] These include weight gains and linear growth.

Assessment of growth is an important aspect in the examination of children with chronic gastrointestinal symptoms. Although the current growth parameters are important, these need to be seen in the context of historical growth data (what has happened over time?). The relationship between height and weight is also a key aspect of interpretation.

Explore nutritional aspects, including looking for micronutrient deficiencies; the most common is iron deficiency. Others include vitamin D, vitamin B12 and folate deficiency.[2]

Warning signs of significant mucosal disease might include the presence of blood (haematochaezia), significant weight loss or slowing of weight gains, repeated hospital admissions requiring fluid support, and nutritional findings (eg oedema secondary to enteric protein loss).

ANSWER 3

Possible differential for these symptoms include:[1]

- gastrointestinal infection, such as from parasites (giardia or strongyloides)
- coeliac disease
- constipation with overflow
- carbohydrate intolerance (eg lactose intolerance or excessive ingestion of fructose)
- inflammatory bowel disease (IBD)
- small intestinal bacterial overgrowth.

Appropriate initial investigations would include:[1,2]

- stool microscopy and culture, with specific request for parasites
- FBE
- iron studies, including ferritin levels
- albumin
- CRP
- coeliac serology (IgA tTG, IgG DGP) antibody, total IgA.*

*The total IgA level is often included automatically, depending on the test kit used by the laboratory and local laboratory practice. Standard IgA tTG will not be reliable in individuals with IgA deficiency, in which case an IgG-based serological test, such as IgG tTG or IgG DGP, is required. Also, IgA tTG tests may not be as reliable in young children.

ANSWER 4

Given that the differential diagnosis includes lactose intolerance, it would be reasonable to arrange a food and symptom diary. This could establish connections between ingestion of dairy foods (containing lactose) and symptoms.

If there appears to be a relationship between dairy products and diarrhoea, it may be reasonable to suggest a short period of lactose exclusion (over 7–10 days). All obvious dairy products should be excluded and replaced with lactose-free alternatives (lactose-free cow's milk or soy products). Clearly, dairy products provide an important source of calcium and should not be excluded indefinitely without clear indication and without consideration of calcium intake.

Similarly, if Charlie seems to be having a large volume of undiluted fruit juice every day, it would be appropriate to recommend a reduction in this intake.

Although coeliac disease is on the differential list, an empirical trial of a gluten-free diet should not be undertaken at this time.[2] Given that the management of coeliac disease requires a life-long dietary change, it is essential to ensure that the diagnosis is established definitively at this stage. An empirical trial of gluten exclusion or reduction may lead to partial mucosal improvements, which then interferes with the interpretation of the duodenal histology, thereby preventing or delaying a definitive diagnosis.

ANSWER 5

The endoscopic and histological features reported are consistent with and diagnostic of coeliac disease. It is important to recall that confirmation of coeliac disease requires duodenal biopsy.[3,4] Given Charlie's presentation with gastrointestinal symptoms, his positive coeliac serology and his biopsy results you have no doubt that he has coeliac disease.

Even just a few decades ago, most children diagnosed with coeliac disease presented with so-called 'classic coeliac disease'. This pattern involved severe malabsorptive symptoms and significant

failure to thrive. Although some toddlers still present in this manner, most children now present with just one or two gastrointestinal symptoms or even with non-intestinal symptoms. Preschool children more often have diarrhoea and interruption to growth, whereas older, school-age children more commonly present with abdominal pain.[5,6]

ANSWER 6

You should arrange to discuss the histology results with Charlie's parents. You should discuss the aetiopathogenesis of coeliac disease, the key elements being diet, at-risk genes and the immune response.[7,8] Coeliac disease is initiated by the toxic component of gluten proteins (from cereals), which we are unable to digest. This protein moiety is able to enter the small intestinal mucosa where it is processed and then detected by antigen-presenting cells. If these cells contain the correct human leukocyte antigen (HLA) molecules, reflecting genetic risk, then these activated cells are able to stimulate a T lymphocyte response. This immune response leads to the mucosal changes that were seen on Charlie's biopsies.

Charlie should now commence a gluten-free diet, which will be a life-long dietary change. You send off a referral to the local paediatric dietetic service requesting dietetic education for the family. You also provide the contact details for Coeliac Australia and the local support group (for support, resources and information updates) and provide written confirmation of the diagnosis, which is required for Coeliac Australia membership.[2,4]

Given the increased risk of coeliac disease in first-degree family members (approximately 10% in first-degree family members[2,7]), you should also arrange for Charlie's parents to have coeliac serology bloods completed.[2,4] His father has additional risk as there is an association between coeliac disease and T1DM (5–10%).[3] You recall the family history of Charlie's aunt and you mention to his mother that the aunt may also have coeliac disease and this may be contributing to her IBS symptoms.

ANSWER 7

In terms of follow-up, check on Charlie's initial adjustment to a gluten-free diet after a few weeks. At this time it may be reasonable to add some iron supplements to help build up Charlie's iron stores (if he has features of anaemia on history and/or examination).[2,3]

Charlie should be reviewed 6 months after diagnosis to check on his adherence to the gluten-free diet, and to re-assess his growth (expecting that he has regained weight at this time), check on resolution of symptoms and repeat examination. You should arrange for repeat serology tests, and for repeat FBE and iron status.[2,3]

Subsequently, Charlie should be reviewed annually.[1–3] At these times, you would check his symptoms, document his weight, review his adherence to the gluten-free diet and arrange monitoring blood tests, including coeliac serology. At these times, you should remind Charlie and his parents of the importance of adherence to the gluten-free diet. Full adherence is important in terms of preventing recurrence of symptoms, ensuring maintenance of normal duodenal mucosa and preventing long-term complications of untreated coeliac disease. These include gastrointestinal complications (eg diarrhoea, pain, lymphoma) and non-gastrointestinal complications (eg osteoporosis, iron deficiency, poor growth, dental enamel and infertility).

ANSWER 8

Background

Coeliac disease is clearly associated with HLA types DQ2 and DQ8.[3] The absence of these genes effectively excludes the risk of coeliac disease occurring in the future. However, although HLA positivity is essential, it is not sufficient for the development of coeliac disease, as the majority of people with these HLA types do not develop coeliac disease, and other genes and other factors must be involved. Up to 50% of the Australian and New Zealand populations have one or both HLA types,[7] whereas the prevalence of coeliac disease is in the order of 1–1.5%.[2,8]

Evidence suggests that the preferred time to introduce gluten is at 4–6 months of age to maximise the potential for immunological tolerance in genetically predisposed individuals.[9] Breastfeeding at this time was thought to be additionally protective but this has been questioned by recent research.[8,10]

It may take several years from the introduction of gluten for positive antibodies to develop and results may be falsely negative even in children under 2–4 years of age with symptoms.

Advice for Charlie's mother

As Charlie's mother has already been screened and found not to have coeliac disease, there is no need for her to be on a gluten-free diet and there is no evidence to suggest that this would in any way alter the risk of her child developing coeliac disease.

Advice about the age at which to introduce gluten-containing solids should be the same as for other infants and, in particular, Charlie's mother should be advised not to deliberately delay their introduction.

Should the new baby go on to develop symptoms suggestive of coeliac disease, it is important to advise her not to institute a gluten-free diet before a firm diagnosis has been made by blood tests and biopsy. In the absence of symptoms, expert opinion recommends routine screening at about ages 4, 7 and 12 years.

It is also possible to test the new baby's HLA status. This can be done on a saliva sample or buccal smear in young children, avoiding the need for blood tests. If negative, then no further screening or monitoring steps are required. If positive for DQ2 and/or DQ8 then screening must be carried out as above.

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CASE 3

CHRIS HAS DISTRESSING PAIN IN THE TUMMY

Chris, aged 6 years, attends with the whole family. Chris looks well today but his mother Jill is upset. She explains that last night Chris had a bout of tummy pain and says, 'He was screaming and writhing around on the floor. I was really frightened so I took him to the emergency department but there was a 4-hour wait'. After 1 hour in the waiting room, Chris was back to his normal self so Jill decided to take him home before the doctor saw him. She then made an urgent appointment to see you this morning. She tells you, 'It has been going on for months … far too long'.

QUESTION 1

Having listened to this story and observed Chris and his family as they settled in to your consulting room, what goals for this consultation are you developing?

FURTHER INFORMATION

Your empathic approach works well and Jill's concern dissipates as the consultation progresses. She appreciates your thorough questioning and the rapport you are building with Chris.

QUESTION 2

At this early stage, what is your provisional diagnosis? What differential diagnoses would you consider?

FURTHER INFORMATION

Chris says he has to sit on the toilet for quite a long time and that his poo is often hard. Jill adds, 'Another thing, doctor, he's had diarrhoea lately and has come home from school with dirty underpants quite a few times recently'.

QUESTION 3

What are the implications of this new information for your provisional diagnosis?

QUESTION 4

How will you confirm your provisional diagnosis?

FURTHER INFORMATION

Chris gets more comfortable as the examination proceeds. You ask him, 'Is it ever painful when you are actually pushing out your poo?' He says, 'No'. You ask, 'Do you ever use the toilet at school Chris?' He says, 'Oh yes'.

QUESTION 5

Why is this information helpful?

QUESTION 6

What, if any, investigations are indicated?

QUESTION 7

What else should your consider in this consultation?

QUESTION 8

What plan of management will you propose for Chris and his family to consider?

CASE 3 ANSWERS

ANSWER 1

Appropriate goals for this consultation would be to:

- win Chris's mother's trust and settle her distress
- take a thorough history and perform an appropriate physical examination
- develop a provisional and differential diagnosis for Chris
- involve Chris and his family in agreeing to a management plan.

Be clear about the importance of achieving a therapeutic relationship with Chris and especially with his mother. Experience suggests that failure to involve Chris and his family in agreeing to a management plan often results from failure to win the parents' trust. In this case, Chris's mother needs the doctor to listen to her, hear and validate her concerns, and contain her distress.

Examples of empathic statements that experience suggests are likely to be helpful include:

- 'That was really upsetting.'
- 'A horrible night ... '
- 'It's really hard to watch when a child is in such pain – you feel so helpless ... '
- 'No one likes to see their children in distress.'

ANSWER 2

On the basis of your observations of this apparently well boy with a long history of episodic, distressing abdominal pain, idiopathic constipation (meaning there is no physiological or anatomical cause), is the most likely diagnosis.[1] However, it is important to obtain a thorough history and perform a physical examination to confirm the diagnosis.

Other causes of episodic abdominal pain that might include or be confused with constipation include Hirschsprung's disease,[2] which is most likely to present in the first weeks of life with delayed passage of meconium, abdominal distension and repeated vomiting[3]. A child with intussusception[4] or volvulus[5] can look remarkably well in between episodes of pain. Intussusception is the most common cause of intestinal obstruction in children up to 3 years of age.[4] Volvulus commonly presents in the early months of life but either condition can occur in older age groups.[4,5]

Other, non-idiopathic causes of constipation are exceedingly rare but need to be kept in mind. They include:

- coeliac disease
- hypothyroidism
- neurological dysfunction with lower limb signs
- an anteriorly placed anus.[2,6]

ANSWER 3

The loose stool of encopresis is commonly mistaken as diarrhoea.[1,2,6] This is one of many reasons that Jill might find it hard to share the provisional opinion that constipation is the underlying cause of her son's pain. You explain that this 'pseudo-diarrhoea' is in fact loose stool seeping around a dam of impacted faeces. The 'diarrhoea' will be fixed by treatment of the underlying constipation, although that may seem counterintuitive.

ANSWER 4

You should obtain a more complete history and perform a physical examination.[2]

It can be useful, early in the consultation, to establish if Jill has a view on what is causing the problem. Features in the history that suggest idiopathic constipation include recurrent abdominal pain, lengthy periods sitting on the toilet trying to pass stool, stools that are hard in texture and reduced frequency of passing stools. There may be a history of constipation in the past. It is important to establish if the actual passage of stool through the anus is painful. In young children there may be a history of behaviours that display efforts to delay the passage of stool. There may be a history of 'pseudo-diarrhoea' or encopresis as discussed above. Constipated children may have reduced appetite and may have become irritable or less joyful. Does the patient usually have a healthy diet? An appreciation of the social context and family functioning are important here as in most consultations with children.

Check for a softly distended abdomen with palpable faeces in the left lower quadrant and increased bowel sounds, including tympanic sounds. If impaction has been present for any length of time, each of these signs will be more pronounced. Inspecting the anus might reveal an anal fissure or perianal streptococcal infection. It is important to check that height and weight velocities are normal.[2] The National Institute for Health and Care Excellence (NICE) guideline[2] recommends inspection of the skin and anatomical structures of the lumbosacral/gluteal regions, and ensuring that there is a normal gait and normal tone and strength in lower limbs. Experience suggests that an appropriate history and examination all but confirm a diagnosis of idiopathic constipation. Other, much rarer, possibilities in the differential diagnosis need to be kept in mind as follow-up continues.

Digital rectal examination should only be undertaken, if at all, by an experienced clinician who is able to interpret the findings.[2]

ANSWER 5

Lack of pain during anal dilation makes an anal fissure and other perianal conditions, such as streptococcal infection, unlikely. It also makes fear of the feeling of anal dilation unlikely to be a causal element in this presentation. You have eliminated the quite common fear of using toilets at school, which, if present, might arise from a spectrum of issues ranging from family culture through past episodes of bullying in the toilets, and on to anxiety disorders. Pseudo-diarrhoea with encopresis favours your provisional diagnosis and suggests impacted faeces.[2]

ANSWER 6

No clinical investigations are indicated.[2] Specifically, the NICE guideline[2] advises against the use of use a plain abdominal radiograph or abdominal ultrasound to diagnose idiopathic constipation. Normal growth velocities make hypothyroidism or coeliac disease unlikely causes for Chris's constipation.

ANSWER 7

As the consultation proceeds, you should check that Jill's understanding of the problem is developing as you hope it is. Many parents find it hard to accept that the agonising episodes of pain they have observed in their children, and failed to relieve, could possibly be caused by something as 'simple' as constipation. 'He has a really good diet', they often say. If Jill is resisting your explanations then stop and declare it, 'I suspect you aren't convinced?' The following silence, and then her response, may provide clues that will allow you to empathically explore the reasons for her lack of conviction. These must be dealt with if the consultation is to succeed.

A 'script' that might help when parents' doubts persists is something like:

> 'These pains are horrible to have and horrible to watch. They can be excruciating (or, they are really, really horrible ... they really, really hurt). On the other hand, they are not dangerous ... they are not risky for Chris's health ... but they are horrible and we can all work together to get rid of them'.

ANSWER 8

Non-pharmacological components include:[1,2]

- maximising parental confidence and competence
- minimising any environmental stressors impacting on Chris (including toileting strategies)
- encouraging healthy eating, drinking and exercise.

Chris has impacted faeces. Features suggesting impaction include chronicity, easily palpable faecal masses and encopresis.[2] In this case, it is necessary to disimpact first. An oral approach to disimpaction is preferred.[1,2] This is usually achieved at home with increasing doses of Movicol.[1] In Australia, one of the proprietary formulations of polyethylene glycol 3350+ electrolytes is licensed for disimpaction and maintenance in children from 2 years of age.

Readers should consult their usual formularies for disimpaction and maintenance regimes. The table of laxatives and doses in the Royal Children's Hospital Guideline is easily accessed, clear and concise.[7] The guidelines[1,2,6,7] offer advice on adding other laxatives if needed. There is only one macrogol approved for use in children as young as 2 years of age, which comes in two paediatric formulations, one with flavouring and one without. Unlike the adult formulations, the paediatric formulations are not listed on the Pharmaceutical Benefits Scheme (PBS) for chronic constipation. The most common causes of failed treatments are inadequate doses and failure to persist for an appropriate length of time.[1]

The parents and child need to know that this initial phase of treatment is likely to be messy and painful. It should happen at home and will need time off from pre-school or school. The disimpaction regime should cease when Chris passes a large quantity of stool or watery diarrhoea. He should then be transferred to a maintenance regime (described below).

It can be helpful to see Chris at least weekly to check progress, maintain morale and to encourage persistence with the maintenance regime. Maintenance usually needs months rather than weeks to be effective and requires daily use of laxatives recommended for children.[1,2,5] It is important to advise parents that there is no evidence that long-term laxative use is harmful, addictive or damaging.[5] Families may need a lot of encouragement to persist.

RESOURCES FOR PATIENTS

- Raising Children Network has a variety of essays on constipation and related subjects aimed at parents, http://raisingchildren.net.au/articles/constipation.html/context/555

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CASE 4

XAVIER IS VOMITING AFTER FEEDS

Xavier is 5 weeks of age. The maternal child health nurse asks you to see him because his mother, Susie, complains that he is very unsettled and vomits frequently. He is being breastfed and when his mother fed him at the appointment his sucking was very noisy. He did not cry during the feed or arch or pull off and finished feeding from both breasts. However, 5–10 mins after his feed he brought up a large amount of undigested milk.

QUESTION 1

What features would be important to ask about in the history?

FURTHER INFORMATION

Xavier is Susie's second child. She had an uneventful pregnancy and delivery, and Xavier was born vaginally at 39 weeks. He weighed 3.68 kg at birth and had Apgar scores of 9 at 1 minute and 5 minutes. It took 5 days before Susie's breast milk came in and Xavier lost 10% of his birth weight. He is now gaining weight and has put on 300 g in the last week. He is on the 50th percentile for weight and height on his growth chart. Xavier is fed on demand every 2–3 hours and twice overnight. Susie reports that Xavier cries when he is lying on his back and does not settle unless held upright and rocked. He likes to be held and patted before sleeping but sleeps well between feeds. He gulps a lot when feeding but does not cry or arch and completes a full feed. Initially, Susie had considerable nipple pain when feeding but she saw the hospital's lactation consultant who helped with Xavier's latch, which has now improved and Susie's nipple pain is getting better. Xavier passes 4–5 stools a day but they are not green or frothy. He is not crying when you see him and looks comfortable in Susie's arms.

Susie had postnatal depression with her first baby, as well as breastfeeding problems that required intensive support with a lactation consultant and GP for the first 3 months.

Note, the average birth weight of most babies is approximately 3–3.5 kg and it is not uncommon for babies to lose weight in the first few days through loss of prenatal fluid.[1] Weight loss of <10% is considered acceptable but >10% suggests that there is a problem with feeding or absorption. Babies should regain their birth weight by their second week of life and continue to gain 100 g or more each week in the first 3 months.[1] Most breastfed babies feed 8–12 times in a 24-hour period, including 2–3 feeds overnight.[1]

QUESTION 2

What features should be examined?

FURTHER INFORMATION

Xavier is well hydrated and has a normal fontanelle. His facial features and palate are normal. His pupils and red reflex are normal. He has two heart sounds, no murmurs or added sounds, and his chest is clear. His abdomen is soft and there are no masses, and his umbilicus has healed well. His hips and genitalia are normal, and his neurological examination is normal. His skin is normal and there are no signs of eczema.

During your discussion and after your examination Xavier falls asleep in his car carrier.

Susie's mood is good and she is enjoying her baby more this time but is concerned about Xavier's crying and vomiting. She says, 'The maternal child health nurse was concerned that this might be reflux. He does vomit a lot. He can cry quite a bit at times and I can't hold him all the time as I have his older sister to take care off. Is there anything I can do to stop his vomiting?'

QUESTION 3

What are possible diagnoses for Xavier's vomiting?

QUESTION 4

What is gastro-oesophageal reflux (GOR)?

QUESTION 5

What features would make you suspect gastro-oesophageal reflux disorder (GORD) instead of simple regurgitation?

QUESTION 6

What management options would you suggest for Xavier's vomiting and crying?

CASE 4 ANSWERS

ANSWER 1

A general neonatal history should be taken from the mother, including asking about:

- the pregnancy, delivery and any special care needed immediately after the birth
- Xavier's weight and signs of normal developments
- further details about fever and regurgitation/vomiting including:
  - the colour of the vomit (to determine if there is blood or bile in the vomit)
  - the timing of episodes
  - amount of regurgitation/vomiting
  - the force involved
- other associated symptoms.

A feeding history should be elicited, asking:

- How often does the baby feed?
- If formula-fed, what amounts does the baby take?

It is important to know if there have been any difficulties with breastfeeding and questions should be asked about the baby's crying, settling and sleep.

Additional questions include:

- How is the mother is coping?
- Are there are other siblings who need care?
- What sort of support does the family have?
- Is there is any history of mental health problems?

ANSWER 2

A full examination should be carried out including:

- body temperature measurement
- assessment of hydration
- fontanelle and palate examination
- abdominal examination
- genitalia and anus examination
- assessment of skin
- examination for normal spine
- neurological examination.

If there are still concerns about breastfeeding, it can be useful to observe a feed, looking for a good latch and feeding technique, as well as any signs of nipple damage.

Xavier's growth charts and his hand-held care record should be reviewed.

Xavier's weight should be measured, using specific baby scales, and this should be done without clothes or a nappy.

ANSWER 3

Xavier has signs of regurgitation with some crying and irritability, but with normal growth patterns. The most likely diagnosis is a normally growing and developing baby with physiological gastro-oesophageal reflux (GOR). However, it is important to exclude other causes of vomiting in infants[2] and exclude red flags.[3]

Other gastrointestinal disorders include:

- GORD: symptoms may include vomiting, feeding refusal and failure to thrive
- pyloric stenosis: projectile vomiting
- malrotation: bilious vomiting with abdominal distension
- cow's milk protein allergy (CMPA): vomiting, diarrhoea, eczema and urticaria linked to exposure to cow's milk and can occur with formula or breast milk
- hepatitis: jaundice and right upper quadrant pain
- viral gastroenteritis: vomiting, diarrhoea and fever.

Urinary tract infections can also cause vomiting.

Meningitis and hydrocephalus should be excluded.

Metabolic disorders, such as renal tubular acidosis, urea cycle defects and hypocalcaemia, are rarer causes of chronic vomiting in infants and children.[4]

ANSWER 4

GOR is the passage of gastric contents into the oesophagus (with or without regurgitation and vomiting) lasting <3 minutes in the postprandial period, with few or no symptoms. It is the result of a laxity in the lower oesophageal sphincter, which in infants is due to developmental immaturity. Infantile GOR peaks at 4 months of age[5] and is usually improved[1] or resolved by age 12 months.[6] Around 70–85% of infants have regurgitation within the first 2 months of life.[7] GOR is benign and does not impact on the baby's health.[2]

ANSWER 5

GORD is suspected when GOR causes troublesome symptoms and or complications[8] such as:

- failure to thrive
- haemtemesis
- refusal to eat
- aspiration pneumonia
- sleeping problems
- chronic respiratory disorders
- oesophagitis
- stricture
- anaemia
- apnoea.

Complications are serious but uncommon.[8] Referral to a specialist should be sought for further investigation if the above symptoms are present.[1,8]

GOR may be the presenting features of food allergy, most commonly to dairy products and sometimes to soy.[2] CMPA is an immunologically mediated adverse reaction to cow's milk protein. It can present as a range of symptoms occurring from minutes to hours to several days after ingestion of cow's milk formula.[8] Children with CMPA are often irritable, may have diarrhoea and may demonstrate feeding refusal.[2] Up to 40% of infants with symptoms of GORD referred to specialist services are thought to have CMPA.[8] The key element to note on history taking is that symptoms are most likely to develop within 4 weeks of exposure to cow's milk formula.[9] Note that CPMA is not limited to formula-fed infants and can occur in exclusively breastfed infants, as intact cow's milk proteins can be secreted in breast milk.[10]

ANSWER 6

As GOR is transient, the aims of management are to be supportive, reassure the parents that GOR is not harmful and provide parents with good patient education (refer to *Resources*). Providing explanations about the laxity and immaturity of the gastro-oesophogeal junction can be helpful. Highlighting ongoing growth and using the growth charts as a visual aid to reassure patients can also be useful.

Putting the infant in the prone position after feeding can also decrease the incidence of reflux but this should always be done when the infant is awake and with adult supervision.[11] Thickening feeds, for example by using rice cereal, corn starch or commercial food thickeners is often recommended for formula-fed infants,[2,11] but a Cochrane study found no evidence of efficacy, as there was a lack of good-quality randomised controlled trials.[12]

A small study suggested that avoiding exposure to tobacco smoke, avoiding overfeeding, avoiding aerophagia (swallowing of air) by ensuring good attachment when breastfeeding and/or using a bottle effectively led to improvement in GOR symptoms.[13]

Provision of information about settling and the normal period when babies are more likely to cry and be unsettled can also be helpful for parents (refer to *Resources* section)

Infants diagnosed with GOR and GORD are often treated with proton-pump inhibitors (PPIs) or other anti-secretory medicines. However, a recent systematic review of clinical trials showed that GORD is rarely a cause of excessive crying or irritability in infants and PPIs are no better than placebo at relieving symptoms.[14] In infants, gastric acid is buffered for 2 hours after feeding with breast milk or formula and it is thought that the buffered refluxate does not irritate the oesophageal mucosa.,[15] Although short-term use of PPIs seems to be well tolerated, evidence to support long-term safety is lacking.[11,14] If there is no improvement and reflux symptoms have a longer duration, or are causing significant feeding and settling difficulties, or are associated with complications, a trial of PPI therapy may be indicated.[1] Granules or rapidly dispersible tablets may be easier to use in infants. A suitable regimen would be:[2]

- esomeprazole granules, 0.4–0.8 mg/kg (maximum 20 mg), dispersed in water and given orally once daily
- rapidly dispersible lansoprazole tablet, 1.5 mg/kg (maximum 30 mg), placed on the tongue to dissolve, once daily

- pantoprazole granules, 1 mg/kg (maximum 40 mg), dissolved in water or mixed with soft foods, if applicable, and given orally once daily.

There is insufficient evidence to support the use of prokinetic drugs (eg metoclopramide, domperidone or cisapride) and their side effect profile also makes them unsuitable.[2]

In children with CPMA-induced GORD, it is reasonable to eliminate dairy products and to trial a change in formula. For infants older than 6 months, this may include use of infant soy for 2 weeks.[8] If there is no improvement, specialist referral may be warranted to assess if an extensively hydrolysed formula is required.[8] Breastfed infants should not be changed to formula.[11] An elimination diet for the mother can be trialled for 2–4 weeks and if symptoms improve, cow's milk protein can be reintroduced. If symptoms recur, the mother would need to resume the elimination diet.[16] This should be done with support from a paediatric dietician.[16] Non-invasive breath tests for lactose intolerance can be used but accessibility can be difficult and stool-reducing substances are unreliable and non-specific for lactose intolerance and are no longer recommended.[8]

Surgical treatment is reserved for infants in whom medical therapy has failed to control symptoms or recurrent aspiration infections. This requires a specialist review.[8]

RESOURCES FOR PATIENTS

- The Royal Children's Hospital website provides fact sheets on GOR for parents, www.rch.org.au/kidsinfo/fact_sheets/Reflux_GOR/
- The Period of PURPLE Crying website has information about crying in early months and advice on settling, http://purplecrying.info
- Australian Society of Clinical Immunology and Allergy provides an advice sheet on cow milk avoidance diet, www.allergy.org.au/images/pcc/ASCIA_PCC_Dietary_avoidance_cows_milk_soy_2014.pdf
- National Institute for Health and Care Excellence guidelines Gastro-oesophageal reflux disease: recognition, diagnosis and management in children and young people [NG1] provides patient information, www.nice.org.uk/guidance/ng1/ifp/chapter/about-this-information

RESOURCES FOR DOCTORS

- Therapeutic Guidelines Gastrointestinal Therapeutic guidelines – Gastro-oesphageal Reflux in Children
- The Royal Children's Hospital, Melbourne. Gastro-oesophageal reflux guidelines for clinicians, www.rch.org.au/clinicalguide/guideline_index/Gastrooesophageal_Reflux_in_infants
- National Institute for Health and Care Excellence guidelines – Gastro-oesophageal reflux disease: recognition, diagnosis and management in children and young people [NG1], www.nice.org.uk/guidance/ng1

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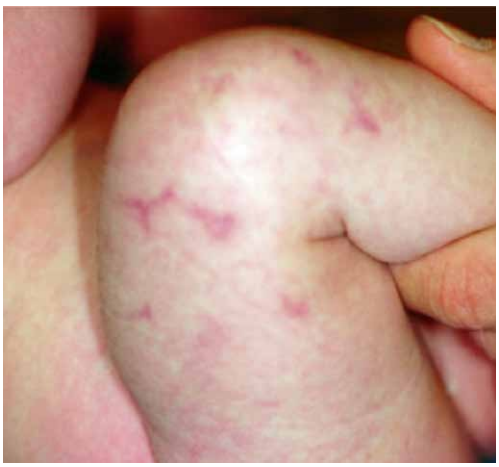
CASE 5

BILLY HAS MARKS ON HIS LEG

Kylie presents with her son, Billy, who is 6 weeks old and has no known health issues. She has come to discuss Billy's immunisations.

The practice nurse undresses Billy and notices what appears to be an unusual rash on his leg (*Figure 1*). Kylie says she noticed the marks a couple of days ago, but does not know what caused them.

Figure 1. Markings on Billy's leg



Reproduced with permission from Springer from Giardino AP, Lyn MA, Giardino ER, editors. A practical guide to the evaluation of child physical abuse and neglect. New York: Springer; 2010.

QUESTION 1

What is your initial assessment of the 'rash' on Billy's leg?

QUESTION 2

What would you do next?

FURTHER INFORMATION

Kylie says Billy has seemed out of sorts the last few days. She had left Billy with her partner or with the neighbours during the past 3 days and she is sure they would have let her know if there were any problems. She says she will go home and talk to the neighbours again. Kylie says she saw the paediatrician last week and there were no concerns. She offers go back to the paediatrician again if you recommend it. Kylie seems very reasonable in her approach and does not seem depressed.

QUESTION 3

Are Kylie's suggestions a reasonable course of action?

QUESTION 4

Can this case be managed and resolved in a general practice setting in a few days?

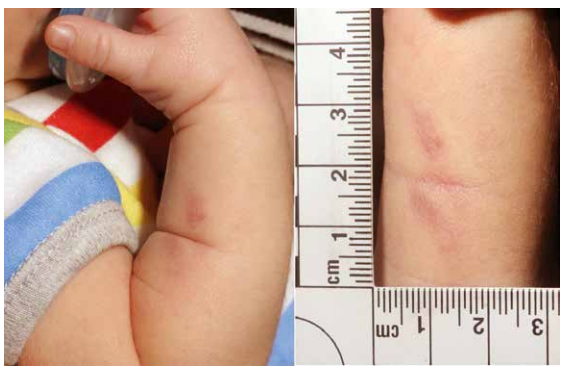
QUESTION 5

Is bruising on the leg of this baby pathognomonic of child abuse or a bleeding disorder?

QUESTION 6

If Billy presented, instead, with two parallel linear bruises 1.5 cm in length on his forearm as shown in *Figure 2*, how would you interpret this?

Figure 2. Red bruising to the forearm of a breastfed baby



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QUESTION 7

What are the most common sites of accidental childhood bruising?

QUESTION 8

What are the uncommon sites for accidental bruising that should raise suspicion?

CASE 5 ANSWERS

ANSWER 1

The red marks shown in *Figure 1* have the appearance of bruises (ie blood in the skin or visible through the skin). It is easier to detect bruising on a person with light coloured skin. The marks have the appearance of grab-marks but for clinical decision-making it is sufficient to note that the child has bruises on his leg.

ANSWER 2

Appropriate next steps include:

1. Explore the history. Ask Kylie if she can remember anything about the marks. When did she first notice them? How has Billy been in terms of his health, feeding, sleeping and mood in the last few days? Record exactly, preferably using her words, any account that Kylie gives of what happened. Also record details of who has been caring for Billy recently.
2. Review any psychosocial information the practice holds about the family and about this child's health.
3. Keep any information you give Kylie general. For example, you could state, 'These marks could be bruises and it is important to check that Billy is well and has no bleeding tendency or problems, and to work out what might have happened'.

These recommendations are based on the dual principles of communication in general practice of giving warning before breaking bad news and, in potentially serious matters, of not contaminating a police investigation.

ANSWER 3

This is not a suitable plan of action.

Any bruising in a baby who is not mobile is highly suspicious and must be comprehensively investigated by a paediatric child protection team. As a mandatory reporter, you must immediately contact the Child Protection Helpline for your state or territory (refer to *Resources*).[1]

The principles of response are:[2]

1. identify (the risk)
2. assess/consult
3. notify
4. manage.

ANSWER 4

This case cannot be managed and resolved in a general practice setting in a few days.

Billy may have other injuries and he requires a paediatric assessment, which may include a full assessment of the circumstances of his injury, a skeletal survey, a scan for subdurals and a retinal assessment.

Billy will probably need to be admitted to hospital for investigations, which also provides time for a police investigation and community services assessment. Admission to hospital is much less confrontational and/or distressing than removal of Billy from his parents while investigations are made. Bruising may also be a sentinel injury noted prior to a diagnosis of child abuse.[3]

Ideally, a parent would be supportive of a hospital admission to investigate the problem. It is important that the child is in a safe place and parental contact is unlikely to be prevented at this stage. Kylie is still breastfeeding and should be supported to continue this while Billy is in hospital.

In children, the age group most likely to require hospitalisation due to assault, are children under 1 year.[3] Infants are at the greatest risk of inflicted traumatic brain injury[4] and death by assault.[5]

If abuse has occurred, Kylie may be involved, with or without mental illness or coercion due to partner violence. Alternatively, Kylie may have no knowledge of what has happened to Billy or she may not have been present at the time of the injury and may believe lies told by the perpetrator.

ANSWER 5

No injury is pathognomonic (characteristic of a particular condition) of child abuse but for certain patterns of injury the probable or very possible explanation is assault. Bruising in non-ambulant infants remains very suggestive of physical abuse and explanations provided by parents should be considered carefully.[6] Bruising may also be a sentinel injury noted prior to the diagnosis of child abuse. This situation requires an assessment led by a child abuse team. Babies and toddlers who fall off the bed, change table or out of the cot, would rarely sustain a moderate injury and will not usually bruise.[7]

According to the Cardiff Child Protection Systematic Reviews, injury in a child 'must never be interpreted in isolation and must always be assessed in the context of medical and social history, developmental stage, explanation given, full clinical examination and relevant investigations'. They also recommend appropriate investigation of any unexplained injury identified in a child that causes healthcare professionals concern.[8] The Royal Children's Hospital, Melbourne recommends that examination should include height and weight measurment; examination of the head, mouth, eyes, ears, chest, abdomen, back and limbs; and the use of body diagrams and a 'physical abuse' proforma to record findings.[9] If immediate specialist review has been obtained, some parts of this examination can be left to the referral unit so the child does not need to have two lengthy examinations. Specialist units will also use forensic photography to document injuries.

ANSWER 6

Several explanations could account for markings shown in *Figure 2*. One possibility is abuse. Another is that these markings represent a self-inflicted 'baby hicky'. For example, when a baby's dummy falls on the floor, a baby may suck furiously on their forearm in the location of the bruises. This behaviour may be witnessed by parents and/or healthcare providers (GPs, practice nurses) and is one cause of non-assaultive bruising in babies. Breastfed babies have also been reported to have self-inflicted bruises on their arms from sucking when hungry.[6]

As a general principle, clinicians need to assess a baby's stage of development when deciding whether bruises could be accidental. This is more important than age. If a baby is cruising or walking, this activity has a direct bearing on the amount and location of non-abusive bruising that the child may have.[10] Once children are cruising, bruising becomes more common from falls and, in active childhood, children sustain more bruises.[11]

ANSWER 7

Common sites of accidental childhood bruising are described below:[11]

- In mobile children, the most common sites of bruising are the shins and knees.
- Most accidental bruises occur over bony prominences and are commonly seen on the front of the body. These correspond to the sites that are bumped in falls.
- In slips, trips and falls, the most common sites of bruising are the back of the head and the front of the face, including the T zone of the forehead, nose, upper lip and chin.
- Children who are pulling to stand may bump their head and sustain bruising to the head, usually on the forehead.

ANSWER 8

Accidental bruising in childhood is uncommon in a number of sites, including the back, buttocks, forearm, face, neck, ears, behind the ears, abdomen or hip, upper arm, posterior leg, foot and/or hands.[12] Bruising in any of these areas should be treated seriously by healthcare professionals and requires questioning, carefully recording any explanation and, where there is doubt, reporting and further investigation. If practicable, speak to the child alone and ask them for an explanation of the bruises before asking adults. Cast your eyes over all children present and look for signs of bruising.

CONCLUSION

It is important to treat Kylie with kindness and respect as you explain the need for urgent assessment and mandatory reporting. It is generally helpful to emphasise the need for immediate medical assessment rather than to emphasise the child protection concerns. This minimises distress for the parent if there is an innocent explanation and makes any police investigation easier, as the actual perpetrator is less likely to be alerted to prepare a cover story, which may, for example, involve coercing older children to say that they 'dropped the baby', etc. The family GP will be providing a professional response, rapid referral and immediate reporting. In a rural situation, where there may be delay, a clinical photograph of the injury, included in your medical record, may assist in preserving information for specialist child protection review. Your records, including any photograph could have legal implications and any details obtained of the history and examination, would be recorded with special care.

Abuse and violence: Working with our patients in general practice[5] (the White book), provides excellent coverage of these issues in the chapter 'Child abuse'. There is useful information and downloadable body diagrams on The Royal Children's Hospital, Melbourne Web site (www.rch.org.au/clinicalguide/guideline_index/Child_Abuse/).

All GPs are involved in primary prevention of child abuse by supporting healthy families and parenting, but secondary prevention in terms of detecting abuse is also vital.

This case highlights the potential serious significance of any bruising in a pre-ambulant baby. Infants cannot verbally disclose what is happening or take evasive action and, given their fragility, are at particular risk of death or serious injury from physical assault.

RESOURCES FOR DOCTORS

- The Royal Australian College of General Practitioners' White book has a range of resources by state and territory to support the management and mandatory reporting of child abuse, visit www.racgp.org.au/your-practice/guidelines/whitebook/tools-and-resources/7-resources
- The Royal Children's Hospital Melbourne, www.rch.org.au/clinicalguide/guideline_index/Child_Abuse/

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CASE 6

JOHN IS STRUGGLING AT SCHOOL

John, 8 years of age, is a year 3 student who is brought in by his mother, Susan. She reports that he is struggling with reading and writing at school. Susan believes this has been present since John started school, but it seems to have worsened. She believes this is affecting his learning ability.

When John reads, he often skips words, misreads words and lacks accuracy in reading words. As a result, he is reluctant to participate in reading activities.

John also has problems with spelling words and handwriting skills.

QUESTION 1

What history would you take from John's mother?

QUESTION 2

What physical examination would you perform on John?

QUESTION 3

What collateral information would assist with your assessment?

FURTHER INFORMATION

Susan recalls that John had an unremarkable antenatal history and was born at full term without complication. He is the eldest of three children. He started talking at the age of 2 years and a speech pathologist diagnosed him with a moderate language delay at the age of 3 years. At that time, he often cried, as he could not always communicate what he wanted. Susan attended a speech program course that involved using simple sign language to communicate, sound repetition and simplified sentence structure.

When John was 5 years, Susan noticed he was unable to read or write as fluently as other children. He had no trouble with speaking, constructing sentences or pronouncing words. His behaviour at school and home were consistent with a good attention span. Recently, John has become frustrated with falling behind in his academic work, which has resulted in occasional teasing at school and irritability at home. There have been no issues with disorganisation, self-care, eating or sleeping habits.

John's physical examinations are unremarkable and there are no dysmorphic features. He is interactive throughout the consultation. His weight is 25 kg and height is 130 cm (50th centile). His reading ability is consistent with prep level and he has difficulties with spelling simple words and constructing simple grammatical sentences. He has a good attention span and is focused throughout the activity. His conversation content is appropriate for his age. He has a particular interest in astronomy and science.

QUESTION 4

What is your diagnosis?

QUESTION 5

What are other possible causes to consider in a child who struggles at school?

QUESTION 6

What referrals might be appropriate in a case such as John's?

QUESTION 7

How would you manage and support John in the community?

QUESTION 8

What is the long-term prognosis for John?

CASE 6 ANSWERS

ANSWER 1

The approach to assess a child who is struggling at school is to determine if there are any biological and environmental risk factors, rule out any organic medical conditions and work out whether there is an appropriate diagnosis.[1]

First, assess the duration of his school difficulties. Any recent deterioration in school performance may be caused by family stressors and/or psychological stressors. It is important to determine whether it has been a chronic issue, especially with early milestone delays (social history from birth).

In a clinical situation, it is best to speak to the child directly (depending on the age of the child).[1] Ask the parents and child how they know if they are struggling at school. You can gather information by asking the following types of questions (collateral history from teachers):

- Have you been told by a teacher?
- What is the specific area of difficulty (eg reading, writing, mathematics, poor attention span, difficulty completing a given task, difficulty retaining memory and/or facts)
- Which subjects does the child enjoy and why?
- What is the child good at?
- Does the child have any particular hobbies/interests?
- How do they get on with teachers and peers in school?

You need to determine whether the problem is a specific learning disorder (literacy and numeracy) or a more pervasive disorder, such as attention deficit hyperactivity disorder (ADHD).[1]

It is important to explore the child's social and home life. This can be done by:

- Exploring the nature of John's friendships at school.
- Determining if there is any bullying.
- Asking if parents have discussed the concerns with teachers/principal, whether the school has taken any actions and, if so, what were the outcomes.
- Exploring John's home environment, including family composition and sibling orders.
- Asking how he gets along with his siblings and if he has any behavioural issues at home.
- Asking about his degree of organisation at home, such as organising himself for school and the level of supervision required for doing homework.
- Determining how much screen time he is exposed to.[1]

You should take a thorough maternal pregnancy history including exposure in utero to drugs/alcohols and maternal depression. It is also important to take a perinatal history to consider prematurity and low birth weight.[1] Explore any past history of developmental or behavioural concerns, such as speech/language delay, hearing problems and difficulties with social interaction. Ask for any previous history of settling issues and sleeping/feeding difficulties as a baby.

Document the child's relevant past medical history such as immunisation, sleep history, dietary history, any chronic illness or prior significant medical illness. Exclude any history of neurological problems.

Family history is important, especially if John has first- or second-degree relatives with literacy difficulties at school or speech delays.[1]

The Royal Children's Hospital's guidelines[2] for assessment are shown in *Table 1*.

Table 1. Initial work-up assessment[2]

- Onset and course of symptoms
- Family history of similar patterns
- Hearing and vision assessment
- School history
- Contributing causes (eg anxiety, family dysfunction, auditory processing problems)
- Comorbidities (eg ADHD, other behaviour disorders, language disorders, developmental disorders, intellectual disability)
- PEDS Screening Tool (parents' evaluation of developmental status)

ANSWER 2

During physical examination, you should measure John's weight, height and head circumference. Check for any dysmorphic features and birthmarks that may suggest an underlying neurocutaneous disorder.[1]

Conduct a general system examination to assess:

- visual acuity
- strabismus
- ear, nose, throat
- muscle tone, muscle strength and coordination.

You can ask John to perform simple tasks to assess his fine motor skills. This could include undoing buttons or zippers, tying shoe laces, recognising left and right, and assessing writing skills, sentence construction and grammar skills.

During the assessment, you should observe John's social interaction and speech to determine if there is a receptive or expressive language delay. Also observe his ability to answer questions directly with complex sentences and his ability to hold an interactive conversation. Listen carefully for any mispronunciation of words.

You could also ask John to read an age-appropriate book to assess how accurately and fluently he can read. You can check John's comprehension by asking him questions from the book.

ANSWER 3

You could ask John's parents to provide any past and recent school reports to review his academic grades and the comments made by teachers. You could offer to speak directly to John's teacher regarding his school progress and what strategies/interventions have been tried to assist John. This may be done during an organised telephone consultation with the teacher in the presence of the parents. The child could also be present. Alternatively, you could ask for written reports from the teacher and/or give the teachers the option to contact you.

If the school has an educational psychologist, the GP or parents could request special assessment by the psychologist in class to identify areas of the child's weakness.

ANSWER 4

John has a specific learning disorder (SLD) in reading and writing (ie dyslexia).

According to the Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-5),[3,4] SLD is a neurodevelopmental disorder. This means an impaired ability to read, write and perform mathematics. SLD is a specific clinical diagnosis only. Not all children with a learning disability identified by the school meet the criteria of SLD.

The DSM-5 lists four diagnostic criteria to be met for a diagnosis of SLD. These criteria are summarised below.[3,4]

- Learning difficulties and impaired academic skills have persisted for ≥6 months despite extra assistance.
- The measured clinical assessment of academic skills is significantly below the chronological age of the patient (using standardised individual assessment) and this causes impairment in everyday living activities)
- Symptoms manifest in school-age children but can sometimes manifest in adults.
- Intellectual disability, visual/hearing impairment, mental/neurological disorders and psychosocial factors must be ruled out.

ANSWER 5

There is a range of other causes of learning difficulties:

- Biological and genetic factors should be considered and it is necessary to ask about the family history of genetic disorders or chromosomal abnormalities.[1]
- Organic medical conditions: ask about any significant chronic illness, epilepsy (especially absence seizures), neurological problems, poor sleeping quality, obstructive sleep apnoea, iron deficiency, congenital abnormalities (eg Kleinfelter's syndrome).[1]
- Social issues/psychological stressors: lack of parental stimulation, parental neglect, child abuse, multiple relocations, low socioeconomic class, parental conflicts, excessive screen time, lack of support at home.[1]
- School issues: ineffective school system, lack of exposure to academic work, English as a second language, school bullying.[1]
- Mental health: depression, anxiety, social anxiety disorder, panic attack, specific/general phobia, post-traumatic stress disorder (PTSD), acute stress event, grieving, drugs/alcohol issues, oppositional defiance disorder, conduct disorder, parasomnia.[1]
- Pervasive disorder: ADHD.[1]
- Underlying intellectual disability and autism spectrum disorder.[1]
- Vision/hearing impairment.[1]

Note that all of these symptoms and conditions can co-exist with a specific learning disorder.

ANSWER 6

John should be referred to a paediatric audiologist and a paediatric ophthalmologist for a formal hearing and vision assessment, respectively. This should be done for any child who is struggling at school.

Encourage John's parents to discuss his needs with his school and attend special learning support meetings with teachers. John's parents should be encouraged to find out what the school is able to offer and how often the school is able to provide help (eg individual assistance in a small group). The head of special education services at school can assess and plan alternative learning strategies/styles and offer catch-up individual sessions. The special education program is dedicated to support the educational needs of students with one or more disabilities, including:

- autism spectrum disorder
- hearing impairment
- intellectual disability
- physical impairment
- speech-language impairment
- vision impairment.

Referral for psycho-educational assessment by an educational or developmental psychologist is useful for assessing the extent of any learning difficulty and to exclude any underlying intellectual disability. This assessment usually involves testing intellectual functioning (IQ test) and academic ability, and assessing a child's attention and behaviour.

Other aspects of assessment include visual and verbal problem solving skills as well as auditory processing of information and memory processing. AUSPELD provides a list of appropriate psychologists (refer to *Resources*).

A psychologist will use a parent questionnaire as part of the assessment (eg the Autism Spectrum Rating Scales (ASRS), the Connors questionnaire for ADHD or the PEDS screening tools. The psychologist will provide specific parent training around managing behavioural and attention issues.

A referral to a speech therapist is worthwhile, even if John's speech and language seem adequate. A speech therapist is available privately, through public hospitals, speech pathologist visits to schools, or through community child health clinics. Speech therapy is effective for expressive phonology, expressive vocabulary and expressive syntax difficulties. It is less effective for treating receptive language disorders.[1]

Referral to an occupational therapist will be needed to assess John's fine motor skills and handwriting skills. This type of assessment is beneficial for children who have difficulty with written language.

Referral to a paediatrician is recommended if there are concerns about attention, organisation, behaviour and social skills, or if there were an underlying complex medical cause.

Assessment by a child psychiatrist may be necessary if there were complex behavioural and mental health concerns.

If available, referral to a multidisciplinary learning difficulty clinic should be considered.

External tutors could be used, tailoring to the child's strengths and weaknesses. You can recommend specific training in phonics, sightwords and decoding, which is beneficial for children with reading and spelling difficulties.[1]

You could recommend that John use the software spellchecker or ask others to read through his written work.

The Royal Children's Hospital's guidelines[2] recommend referral if:

- the child not functioning as expected in school
- the cause of the learning problems not clear
- routine school supports not effective or not sustained
- previous assessments are not well understood or integrated into school or homework programs
- the child develops anxiety or has low self-esteem
- there is significant parental concern (eg evident from the PEDS screening tool).

ANSWER 7

The GP has an important role in overseeing John's overall progress. It is important to support the whole family throughout John's school years, focusing on John's strengths and weakness in order to develop a comprehensive multidisciplinary approach.

As a GP, you can empower John and his family to ensure that community resources are used effectively. The GP's role includes:

- early referral to an educational psychologist or other appropriate allied health professional
- early referral for hearing and vision assessment
- follow-up of results
- providing clear communication and education for the parents
- regular monitoring of the child's progress
- direction/guidance on any changes in the level of input from different specialties, as needed.

ANSWER 8

John has a specific reading and writing disorder, which is a lifelong condition. These children are at a higher risk of problems with long-term academic and behavioural issues. [1]

John's parents need to be informed that this does not mean he will be an unsuccessful adult or have a poor quality of life. The parents should be reassured that John can still learn, but a different approach will be needed. Extra time should be given to assess John's knowledge.

John's long-term success will depend on the amount of support he receives from his family, school and future employers. Creating a specific management plan tailored to John's strength and weakness will also contribute to his future success. [1]

Choose a university that can accommodate students with learning difficulties, for example, by allowing extra time in exams, using laptops, and text-to-speech programs.

Other options for those who struggle at school would be a combined school program, work experience and vocational training. This provides extra opportunities of training to equip students for future employment.

CONCLUSION

For children with specific literacy difficulties (specifically, reading and writing), early identification and intervention is crucial. Reading and writing skills determine a child's academic success, future work success, self-esteem and confidence. [1]

Reading and writing is fundamental in determining the level of education a child may eventually achieve and ultimate future success.

It is important that GPs assess children holistically and not overlook assessing a child's literacy and numeracy skills at school. Early identification allows for early assessment and referrals to allied health professionals. The appropriate systematic phonic-based program can be started early to maximise benefits in reading and writing.

It is important that the GP, being the first point-of-contact for patients, continue to monitor the child's overall progress in conjunction with specialists and allied health professionals. Simple and effective assessment methods can also be used in the consultation at regular intervals to monitor a child's progress.

RESOURCES FOR DOCTORS AND PATIENTS

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- AUSPELD supports people with learning disabilities. Its website lists the state-based SPELD associations, http://auspeld.org.au
- Dyslexia Australia provides assessments, evaluations and solutions, www.dyslexia-australia.com.au
- The Department of Education, Training and Employment has a range of special education programs, http://education.qld.gov.au/studentservices/learning/disability/parentguide/programs-and-services/programs
- Speech Pathology Australia, www.speechpathologyaustralia.org.au

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ACTIVITY ID: 21109

STAGES OF LIFE: CHILDHOOD

This unit of *check* is approved for 6 Category 2 points in the RACGP QI&CPD program. The expected time to complete this activity is 3 hours and consists of:

- reading and completing the questions for each case study
- you can do this on hard copy or by logging on to the *gplearning* website, http://gplearning.racgp.org.au
- answering the following multiple choice questions (MCQs) by logging on to the *gplearning* website, http://gplearning.racgp.org.au
- you must score ≥80% before you can mark the activity as 'Complete'
- completing the online evaluation form.

You can only qualify for QI&CPD points by completing the MCQs online; we cannot process hard copy answers.

If you have any technical issues accessing this activity online, please contact the *gplearning* helpdesk on 1800 284 789.

If you are not an RACGP member and would like to access the *check* program, please contact the *gplearning* helpdesk on 1800 284 789 to purchase access to the program.

QUESTION 1

Jasper is 4 years of age and has had a 1-month history of coughing during the day and night, and episodes of wheezing about 3 nights a week. History taking and physical examination lead you to a diagnosis of asthma.

According to the National Asthma Council Australia definition, how would you classify Jasper's symptoms?

A. Mild persistent asthma

B. Moderate persistent asthma

C. Severe persistent asthma

D. Frequent intermittent asthma

QUESTION 2

How would you manage Jasper's asthma?

A. Commence treatment with a low dose of an inhaled corticosteroid as a preventer plus a β2-receptor agonist as a reliever and review Jasper in 4 weeks.

B. Commence treatment with an inhaled corticosteroid and magnesium supplementation and review Jasper in 2–3 months.

C. Commence treatment with an inhaled corticosteroid and montelukast.

D. Recommend lifestyle modifications to remove dust mite exposure.

QUESTION 3

James is 6 years of age and has tested positive for coeliac serology. He has come to see you today with his mother to discuss his management. What is the most appropriate next step?

A. He should commence a gluten-free diet.

B. He should commence a lactose-free diet.

C. He should be referred for a duodenal biopsy.

D. He should be referred to a paediatric dietitian.

QUESTION 4

James's mother is planning a second pregnancy and asks if there is anything she can do to prevent coeliac disease in her new baby. Which of the following statements is correct?

A. A gluten-free diet during the pregnancy will not alter the risk of the baby developing coeliac disease.

B. Research has shown that breastfeeding reduces the risk of developing coeliac disease.

C. Gluten should be excluded from the baby's diet if the baby develops symptoms of coeliac disease.

D. Gluten should be excluded from the baby's diet for the first 6 months.

QUESTION 5

Sally, 5 years of age, has had episodes of distressing abdominal pain since starting school 2 months ago. Which of the following additional features, if present, would support a diagnosis of idiopathic constipation?

A. Decreased bowel sounds

B. Weight loss

C. Vomiting

D. Encopresis

QUESTION 6

Lizzie is concerned about her baby, Timmy, and brings him to see you. Timmy is 6 weeks of age and for the past 2 weeks he has been crying more than usual, seems unsettled and irritable, and vomits occasionally. Timmy is being breastfed and has a feed every 2–3 hours.

What element of Timmy's history would exclude cow's milk protein allergy (CMPA) as a cause of his symptoms?

A. Timmy is being breastfed.

B. Timmy needs to be fed every 2–3 hours.

C. Timmy seems unsettled and irritable.

D. Timmy's age.

QUESTION 7

Which of the following is the best management option for a baby with uncomplicated reflux?

A. Introducing thickening feeds
B. Treatment with a prokinetic drug such as metoclopramide
C. Providing the parents with patient education, including feeding modifications and avoiding exposure to tobacco smoke, and monitoring the baby's growth
D. Treatment with a proton-pump inhibitor (PPI).

QUESTION 8

Which of the following sites of bruising in a mobile child should raise suspicion of abuse?

A. Shins and knees
B. Bony prominences on the front of the body
C. Back of the head
D. Forearm

QUESTION 9

What immediate course of action should you take for a pre-ambulant baby who presents with bruising on the arms and legs?

A. Contact the child protection helpline for your state.
B. Admit the baby to hospital for further assessment and to restrict parental contact until the cause of bruising has been identified.
C. Report the bruising to the police.
D. Assess whether the baby is being abused.

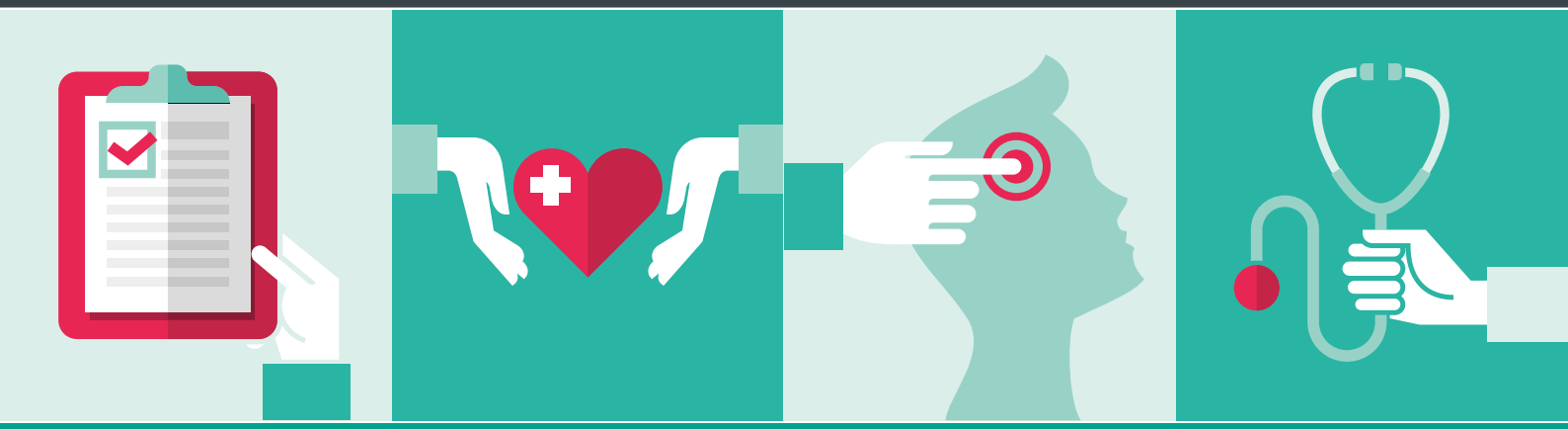
QUESTION 10

Which of the following is one of the Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-5), diagnostic criteria for specific learning disorders (SLDs)?

A. Learning difficulties have persisted for 3–4 months.
B. Assessment by the teachers indicates inadequate academic performance.
C. Symptoms manifest in school-age children but can also manifest in adults.
D. Symptoms are associated with intellectual disability.

check

Independent learning program for GPs



Unit 516 May 2015

Stages of life: Adolescent/ youth health

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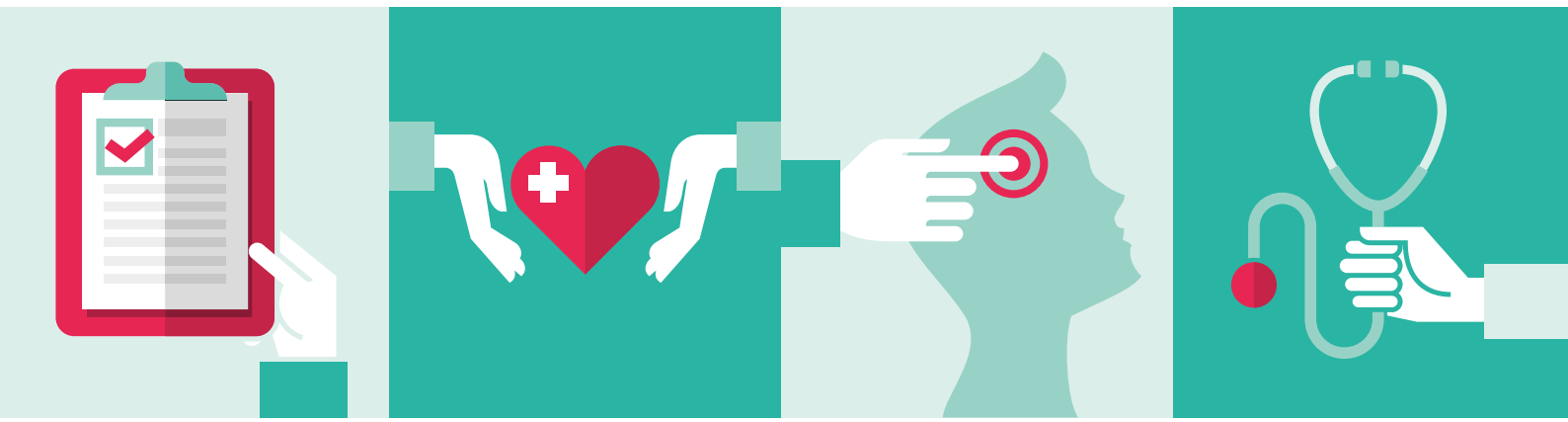

Stages of life: Adolescent/youth health

Unit 516 May 2015

The five domains of general practice

- Communication skills and the patient-doctor relationship
- Applied professional knowledge and skills
- Population health and the context of general practice
- Professional and ethical role
- Organisational and legal dimensions

RACGP

National indicators show significant improvements in the health and wellbeing of young Australians in the past two decades.[1] In particular, there has been a 50% decrease in the death rate, which is largely attributable to a decline in injury.[1] However, rates of sexually transmissible infections, teenage pregnancy, high-risk use of alcohol, substance use and mental health disorders remain at unacceptably high levels.[1] Many illnesses that affect young people are preventable[2] and health-related behaviours established during adolescence can have long-term consequences for health later in life. This presents an opportunity to promote and establish healthy practices in adolescence that will have long-term health benefits.[3] However, adolescents are under-represented in general practice encounters,[3] possibly for reasons including concerns about confidentiality and fear of not being treated with respect.[4]

This edition of *check* focuses on common problems affecting adolescents and considers approaches for effective engagement and management.

LEARNING OUTCOMES

At the end of this activity, participants will be able to:

- describe screening and management of an adolescent suspected of substance abuse
- outline options for the management of gender dysphoria in an adolescent
- discuss the assessment and treatment of irritable bowel syndrome in an adolescent
- list the forms of contraception available for teenagers and discuss the management of teenage pregnancy
- explain approaches to sexual health assessments and treatment of sexually transmissible infections in adolescents.

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ACRONYMS

BMI	body mass index
CBT	cognitive behaviour therapy
CDAI	Crohn's Disease Activity Index
CRAFFT	car, relax, alone, forget, friends, trouble
DID	dissociative identity disorder
DSM-5	Diagnostic and Statistical Manual of Mental Disorders, fifth edition
dTpa	diphtheria, tetanus, pertussis
ECG	electrocardiogram
FBE	full blood evaluation
FTM	female to male
GHB	gamma-hydroxybutyrate
HEADSS	home and environment, education and employment, activities, drugs, sexuality and suicide/depression
HIV	human immunodeficiency virus
HSV	*Herpes simplex* virus
IBD	inflammatory bowel disease
IUD	intrauterine device
LFT	liver function test
MDMA	3,4-methylenedioxy-methamphetamine
MFQ	Mood and Feelings Questionnaire
MSM	men who have sex with men
NCPIC	National Cannabis Prevention and Information Centre
PBS	Pharmaceutical Benefits Scheme
PCR	polymerase chain reaction
PEP	post-exposure prophylaxis
SBIRT	Screening, Brief Intervention, and Referral and Treatment
SCARED	Screen for Child Anxiety Related Disorders
SDS	Severity of Dependence Scale
STI	sexually transmissible infections
TNFα	tumour necrosis factor alpha
UDS	urine drug screen

CASE 1

JENNY IS IRRITABLE AND WITHDRAWN

Heather has come to see you, as she is very concerned about her daughter Jenny, who is 16 years of age. Jenny is in Year 11 and her academic grades have deteriorated substantially in the past 15 months. Heather is also concerned that, lately, Jenny has been more irritable and secretive, and withdrawn from the family. Heather recently found a bong and an empty bottle of vodka in Jenny's room. Heather is concerned that Jenny may also be abusing other illicit drugs. Heather has asked you to see her with Jenny and to arrange for a urine drug screen (UDS). Jenny comes to see you very reluctantly with her mother.

QUESTION 1

How would you manage the consultation with Jenny?

QUESTION 2

How would you screen Jenny for suspected substance abuse?

QUESTION 3

How would you respond to Jenny's mother's request for a UDS?

QUESTION 4

How could you effectively engage Jenny to discuss and manage her substance use?

FURTHER INFORMATION

After you skillfully engage Jenny in conversation, she discloses to you that she has been smoking 1–2 g of cannabis daily during the week for the past 12 months. Jenny has also been binge-drinking alcohol at the weekends when she goes to parties. Jenny mentions that she tries not to mix different substances. On a few occasions, she has tried ecstasy (3,4-methylenedioxymethamphetamine [MDMA]), GHB (gamma-hydroxybutyrate) and ice (methamphetamine). Jenny denies any intravenous drug use.

QUESTION 5

How would you manage Jenny?

FURTHER INFORMATION

On further questioning, Jenny tells you that her longest period of abstinence in the past year was for 1 month, at which time she felt depressed and suffered panic attacks.

QUESTION 6

Are Jenny's symptoms suggestive of a comorbid condition?

CASE 1 ANSWERS

ANSWER 1

The use of tobacco, alcohol and illicit drugs in adolescents is a major health challenge in primary care and emergency departments, as well as for paediatricians and mental health professionals. Clinical guidelines suggest that all adolescents are screened yearly for substance use,[1] although this is rarely done in practice.

Barriers to screening adolescents for substance abuse in primary care have been identified as a lack of time, lack of training, lack of resources, unfamiliarity with screening instruments and parents who would not leave the consultation for the primary care clinician to assess the adolescent without them.[2] It is recommended that Jenny is first seen on her own (ie without Heather in the room).[2,3] Engaging Jenny using a non-judgmental, motivational interviewing approach is more likely to lead to useful information that will assist with further treatment. It is important to ask about tobacco and alcohol separately from other drugs as they are usually not considered to be 'drugs' by many adolescents. However, apart from their own risks, tobacco and alcohol may serve as a gateway to illicit drug use. The National Institute on Alcohol Abuse and Alcoholism (NIAAA) suggests opening the interview with Jenny by asking about her friends' use of alcohol, as a way of easing into a discussion about Jenny's possible substance use.[3]

The GP needs to consider where Jenny is on the spectrum of substance use – abstinence, experimentation, limited use, problematic use, abuse or drug dependence. The GP relying only on their impressions of Jenny's substance use is likely to underestimate the extent of her use.

ANSWER 2

Screening instruments are an evidence-based approach to assessing substance use.[4] Structured psychosocial interview schemes, such as the HEADSS (home and environment, education and employment,

activities, drugs, sexuality and suicide/depression) assessment tool, include screening for drug and alcohol use.[3,5] Other alcohol and drug screening questionnaires that can be used for adolescents include CRAFFT (car, relax, alone, forget, friends, trouble), RAFFT (relax, alone, friends, family, trouble), CAGE (cut down, annoyed, guilty and eye-opener), TWEAK (tolerance, worried. eye-opener, amnesia, cut down), SSI-AOD (simple screening instrument for alcohol and other drugs) and DAP-4 (drug and alcohol problem quickscreen) .[4] It has been reported that adolescents are more likely to answer truthfully to a paper-based questionnaire, or one completed on a computer, than face-to-face interview.[6]

CRAFFT

The best-studied screening tool for adolescents aged 14 years and older is CRAFFT, which is a mnemonic for six questions that are asked over a lifetime (refer to *Resources*). Scores obtained using CRAFFT have been correlated with levels of drug and alcohol use in adolescent populations.[4]

Scoring for CRAFFT

Each 'yes' answer is scored as 1 and 'no' as 0. A positive answer to a CRAFFT question requires the GP to consider engaging the parent in directly addressing the behaviour.

The adolescents are classified into:[7]

- CRAFFT-negative (summed scores of 0–1)
- high risk (summed scores of ≥2), suggesting that the adolescent requires further questioning.

Onset of drug use before the age of 15 years (early-onset drug use) is of particular concern. A CRAFFT score of ≥2 in younger adolescents (<15 years), in addition to daily drug use, and blackouts related to alcohol use are markers for regular review, intervention and referral to a specialist.[5]

If established, Jenny's cannabis use can also be addressed with the Severity of Dependence Scale (SDS).[8] This free, self-report questionnaire to determine cannabis use in adolescents and adults is available from the National Cannabis Prevention and Information Centre (NCPIC) website.[8]

ANSWER 3

Although a request for a UDS of adolescents by parents is not uncommon, the usefulness of a UDS in this setting is questionable. There are problematic UDS false-positive findings and false negative findings.[9] Further, arranging a UDS in the absence of a therapeutic relationship with the young person with possible drug problems is difficult for future treatment, regardless of the test findings. There are also ethical issues relating to the use of UDS with competent adolescents.

ANSWER 4

Principles in treating Jenny's substance use are:

- engagement
- assessment of the severity/extent of the problem
- psycho-education
- engagement of Jenny's parents
- consideration of referral to other specialist agencies/services.

A paternalistic approach with the expectation of abstinence, in which the GP instructs Jenny to make changes, is unlikely to be helpful and is not recommended.[10] The Stages of Change model and motivational interviewing are both promising tools in assisting with behaviour change for adolescent alcohol and drug use.[5,10–12]

The Stages of Change model

Understanding where Jenny is on the Stages of Change model is very helpful in offering Jenny advice and support. The stages of change described are from precontemplation (unready to stop), contemplation (thinking about it), preparation–action (ready for change, goal setting, plans) and maintenance (preventing relapse). Relapse is considered a learning stage in which the person re-enters the cycle, usually at the precontemplation or contemplation stages. Jenny may need to go through many cycles before sustaining abstinence.

Motivational interviewing

This approach has been used to address adolescent substance use.[5,12] Motivational interviewing is a focused and goal-oriented counselling approach that addresses the person's conscious and unconscious ambivalence about stopping their drug use. During the motivational interviewing process, patients are not instructed on what to do but are assisted in developing their own reasons to stop their drug use. The GP facilitates this by assisting them in strengthening this resolve. The motivational interviewing approach involves:

- open-ended questioning
- use of positive affirmations
- use of reflective listening and providing summary statements.

Even one or two sessions can have a positive impact on the adolescent.[12,13]

ANSWER 5

Psycho-education is an essential component of the GP's role. In the large US national epidemiological survey (2005–2008) on drug use and health, 37% of adolescents had used drugs or alcohol, and nearly 8% met the criteria for a substance related disorder.[14] How adolescents cope with stress is likely to influence how they respond to stress as adults. Drug use in early age has been consistently found to relate to a higher risk of developing substance use disorders.[15] Adolescents are more likely than children or adults to engage in risk-taking behaviour, including illicit drug use and abuse. The NCPIC website is an excellent resource for patients, parents, schools and professionals (see *Resources*).

The Screening, Brief Intervention, and Referral and Treatment (SBIRT) is an often-cited approach, which has gained currency in the US as the standard for detecting and addressing teenage alcohol and drug use in primary care.[3] The American Academy of Pediatrics and NIAAA recommend the use of SBIRT in routine care. SBIRT is an algorithmic approach that incorporates the CRAFFT

screening tool and then assigns a risk based on the CRAFFT score and other risk factors including age of the adolescent, number and frequency of hospital visits, pattern of drug use. There is, however, mixed evidence for the effectiveness of SBIRT in adolescent alcohol abuse.[16]

Depending on where Jenny is on the spectrum of drug use, a referral to a specialist drug and alcohol counsellor needs to be considered. Convincing Jenny of the need for the specialist referral would form part of the GP's motivational interviewing. Treatment options include outpatient treatment, individual counselling, cognitive behaviour therapy (CBT), family therapy, group counselling or inpatient treatment.

There may be a role for medication in adolescents with drug dependence, although this might be best managed in specialist settings. N-acetylcysteine has been shown to assist in reducing cannabis use.[17] Another medication that can have a role in the treatment of drug dependence in adolescents are nicotine replacement (transdermal patches and gum) for smokers.[18] Naltrexone and acamprosate have been used for adult alcohol abuse, although the role of these medications in adolescents is unclear.[18] Methadone and buprenorphine have been found to be helpful in adolescents with heroin use, but may lead to relapse in the medication tapering phase.[19]

ANSWER 6

Drug use across the spectrum is associated with mental health problems.[15,20] The teenage brain is very susceptible to the toxic effects of illicit substances. Anxiety disorders, depression, conduct disorder, schizophrenia, bipolar affective disorder, anti-social and borderline personality disorders have been associated with drug abuse. Consider using the Screen for Child Anxiety Related Disorders (SCARED), which is available from University of Pittsburgh[21] for screening adolescent anxiety, and the Mood and Feelings Questionnaire (MFQ) available from Duke University[22] for screening adolescent depression. The co-occurrence of drug use and mental health problems adds complexity to the clinical picture and requires separate referrals for both mental health and drug and alcohol treatment.

RESOURCES FOR PATIENTS AND DOCTORS

- National Cannabis Prevention and Information Centre, https://ncpic.org.au

RESOURCES FOR DOCTORS

- The Center for Adolescent Substance Abuse Research (CeASAR) website provides the CRAFFT screening tool, www.ceasar-boston.org/CRAFFT

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CASE 2

ASHLEY IS UNHAPPY ABOUT HER BODY

Ashley, a woman aged 18 years, presents to your general practice and tells you she is feeling depressed. After some discussion about why Ashley may be depressed, she finally discloses that she feels she has always been male and wants to start hormone treatment to transition from female to male (FTM). She has been feeling increasingly unhappy about her body since puberty and feels she can no longer put up with things as they are.

QUESTION 1

What further information would you like from Ashley?

QUESTION 2

What term might describe Ashley's feelings about her gender identity?

QUESTION 3

What other assessment/examination is appropriate?

FURTHER INFORMATION

On further history taking you elicit that Ashley prefers to be called Ash and prefers 'him' to 'her'. Ash has felt all his life that he is male. He played with the boys in school and now prefers dressing as a man. He has never used any hormones in the past. He reports significant distress and depression since development of breasts and from having a period every month. He does his best to hide his breasts behind loose clothing but still feels significant anxiety about it. He smokes to help with the anxiety but has never used illicit drugs. He does not have a partner but would like one in the future. He lives at home but his parents are not supportive and feel it is 'just a phase'. He has a few online friends but no close friends in the area.

Ash has short hair, no acne and is dressed androgynously. On examination, his vital signs are within normal limits. His body mass index (BMI) is 26 kg/m^2. There are no signs of virilisation and the remainder of the examination is unremarkable.

Ash's short-term goal is to continue to live in his desired gender full-time, but also to begin hormone therapy. His long-term plan is to have chest reconstruction surgery to remove his breast tissue. He has not decided on further sexual reassignment at this stage. He is quite positive that he does not want children of his own.

QUESTION 4

What differential diagnoses would you consider?

FURTHER INFORMATION

As his GP, you feel Ash is clearly transgender and experiencing gender dysphoria but you lack experience in the area and so you decide to confirm the diagnosis and rule out other causes of gender dysphoria. You explain that referral to your colleague, a clinical psychologist, is not to diagnose him as transgender, but to confirm gender dysphoria, rule out alternative causes and provide an ongoing relationship with a professional experienced in the psychological care of 'transitioning'. Ash is happy with the explanation.

Ash returns to your clinic with a confirmed diagnosis of gender dysphoria due to being transgender. Although Ash has already made some changes in his life to live as his desired gender, he still wants to transition physically with the aid of testosterone therapy.

QUESTION 5

What investigations would you consider?

FURTHER INFORMATION

Ash has no significant medical history and no family history of early cardiovascular disease. His vital signs and examination were unremarkable. He is mildly overweight (BMI 26 kg/m^2). His basic laboratory tests, including lipids, full blood evaluation (FBE), liver function tests (LFTs) and kidney function testing are within normal limits. His electrocardiogram (ECG) shows sinus rhythm and a rate of 80 beats per minute.

Ash decides to begin hormone therapy to help reduce symptoms of gender dysphoria and feel more comfortable with his body. You explain to Ash, however, that hormone therapy is only part of the holistic care required and he may need to involve a multi-disciplinary team from the start of his treatment to give him the best care possible. You suggest he attends a sexual health service. As his GP, you are happy to provide ongoing care and act as the primary healthcare provider.

QUESTION 6

Who should be involved in the care of Ash?

FURTHER INFORMATION

Ash decides to attend a sexual health service and to continue seeing you as his primary healthcare provider. He returns from the sexual health service, where he has been started on hormone therapy for transition. The transition therapy is intramuscular testosterone enanthate, 0.5 mL of 250 mg/mL (half the dose in the full injection), to be given every 2 weeks at the general practice. After a few months, Ash may elect to change to the long-acting testosterone undecanoate, which can be given as a 1 g/4 mL depot preparation every 3 months. This is an expensive option unless Ash changes his sex marker with Medicare, which would make him eligible for Pharmaceutical Benefits Scheme (PBS) subsidy of testosterone therapy.

QUESTION 7

As his GP, how would you monitor and review Ash?

CASE 2 ANSWERS

ANSWER 1

It is vital for the initial consultation and for providing ongoing care that the GP should begin by establishing the individual's preferred name and gender label.[1] For example, Miss Stephanie Jones may prefer to be called Mr Steve Jones and prefer the male pronoun rather than the female. These simple and initial questions will establish understanding and trust in the ongoing therapeutic relationship.

An important part of the history is determining the duration of symptoms, as a diagnosis of gender dysphoria requires that symptoms have been present for at least 6 months.[2] However, people often present much later, for various reasons. It is important to assess the degree of dysphoria, as this will determine short-term risks to the individual. Finally, it is important to discuss their short- and long-term goals:[3]

- Are they currently living in their preferred gender role?
- Are they planning on making changes?
- Have they changed their name or sex on legal documents?
- Do they want hormones?
- Do they want sexual reassignment surgery?

ANSWER 2

Gender dysphoria is the term used to describe people whose gender at birth is different from the gender they identify as being, and which must cause significant distress to the individual.[2] The *Diagnostic and Statistical Manual of Mental Disorders*, fifth edition (DSM-5),[2] states that the difference between the 'experienced/expressed' and 'assigned' gender must have been present for at least 6 months and be manifested as two or more of the following criteria, for a diagnosis of gender dysphoria in adolescents/adults (there are separate criteria for children):

- a clear difference between one's perceived gender and their physical sex characteristics
- an intense need to do away with their physical sex features (or, in the case of young teenagers, to avert the maturity of the likely secondary features)
- an intense desire to have the physical sex features of the other gender
- a deep desire to transform into the other gender
- a profound need for others to identify them as the other gender
- a powerful assurance of having the characteristic feelings and responses of the other gender.

It is also important to specify if the individual has a disorder of sex development (ie such as congenital adrenal hyperplasia) and if they post-transition (whether living permanently in the role, accessing hormones, or surgically reassigned).

ANSWER 3

Individuals who experience gender dysphoria are at higher risk of mental illness and suicide, compared with the general population.[4]

A HEADSS (home and environment, education and employment, activities, drugs, sexuality and suicide/depression) assessment should be performed to help identify any risks as part of an initial consultation with anyone experiencing gender dysphoria.[5] Although the HEADSS assessment has not been validated in gender dysphoria, it does serve to cover important psychosocial aspects of a consultation in a group of individuals who often present during adolescence and in their twenties.

Substance misuse data in Australia's transgender population is scarce. The most common substance misused was reported to be anabolic steroids and was predominantly related to a desire to transition to a male role rather than the classical definition of abuse.[6]

In our experience it is common for younger patients to report little-to-no history of sexual activity. However, other individuals may have risks for sexually transmissible infections (STIs), particularly those who may engage in receptive anal sex or sex work.[4] A few simple questions avoid the possibly intrusive experience of blanket testing.

People with gender dysphoria are often uncomfortable with their bodies, particularly their secondary sexual characteristics.[7] They may avoid seeking healthcare to avoid a genital and/or breast examination.[3] A genital examination is not part of the routine assessment unless there is suggestion or evidence of intersex or genital mutilation.[7] However, vital signs are important to provide a baseline for future hormone therapy if this is something they desire.

ANSWER 4

Gender nonconformity is different from gender dysphoria, as the former does not cause distress to the individual. In the DSM-5, the term gender dysphoria has now replaced gender identity disorder to remove the associated stigma.[2]

Gender dysphoria may occur uncommonly as part of a mental health disorder and should be differentiated from people who are transgender, if clinically suspected by an experienced mental health professional. A diagnosis of gender dysphoria can be made by a GP with experience in mental health but should be confirmed by any mental health professional with experience in the area of gender dysphoria.[3,7] Unfortunately, such professionals may not be easily accessible in many parts of Australia. Many of the professionals who are experienced with, or have an interest in gender issues are best found by contacting the Australian and New Zealand Professional Association for Transgender Health (see *Resources for doctors*), support groups, or even with an internet search.

The following differential diagnoses could be considered.[8]

Transvestic disorder involves cross-dressing as a sexual urge or fantasy. Individuals do not consider themselves the opposite gender and do not want surgery or hormones. Outside of these times, their dress and behaviour are congruent with their natal sex and gender.

Body dysmorphic disorder is a distressing or impairing preoccupation with an imagined or slight defect in appearance. Individuals with this condition do not consider themselves as being of a different gender, but find parts of the body (possibly the genitalia or breasts) to be abnormal and want them removed.

A patient with **psychosis** may report a delusion telling them they are a different gender. However, this is uncommon in practice and the individual may have a history of a psychotic disorder.

Borderline personality disorder is defined as disturbance in self-identity and this may include sexual orientation and/or gender dysphoria. If a patient shows symptoms of borderline personality disorder, or is known to have the disorder, then a mental health professional should be involved to aid in assessment.

Individuals with **Asperger's syndrome** are prone to obsessive preoccupations that may include gender confusion. If Asperger's syndrome is previously diagnosed or suspected, then review by an appropriate mental health professional may be warranted to differentiate true gender dysphoria from a manifestation of Asperger's syndrome.

Rarely, individuals with **dissociative identity disorder** (DID) may experience a different sex as one of their identities. However, the patient is likely to have a history of DID and consultation with a mental health professional will help elucidate whether gender dysphoria is distinct from DID in this setting.

ANSWER 5

Laboratory testing is not required to make a diagnosis of gender dysphoria. Testing for chromosomal abnormalities or endocrine disorders should only be considered if there is clinical suspicion (eg congenital adrenal hyperplasia, intersex conditions such as ambiguous genitalia, or androgen insensitivity syndrome), but is not routine for gender dysphoria.[7]

A risk assessment and baseline tests should be performed for individuals who wish to consider hormone therapy, as this therapy can exacerbate some medical conditions and may be contraindicated in others. For example, testosterone is contraindicated in pregnancy, uncontrolled polycythaemia with a haematocrit >55%, unstable coronary artery disease, and possibly oestrogen responsive breast cancer.[7] Therefore, testing and consultation with experienced specialists such as an endocrinologist, cardiologist, or obstetrician/gynaecologist would be advisable before referral for commencement of hormone therapy, to check for any possible contraindications to such treatment.

For FTM individuals considering testosterone therapy, a suggested series of baseline tests, prior to initiation of therapy, should include:[9]

- FBE for polycythaemia
- LFTs for baseline prior to testosterone
- fasting lipids (as testosterone may increase lipids)
- fasting blood sugar (if there is family history of diabetes)
- HbA1c (if diabetic)
- ECG, as testosterone may increase the risk of cardiovascular disease.

ANSWER 6

Some or all of the following health professionals and services may be involved with the GP in holistic management of a patient with gender dysphoria. Requirements are individualised, depending on locality, GP experience and patient preference.

- **Experienced mental health professionals (psychologist or psychiatrist)** may provide help when the diagnosis is not certain, assess comorbid depression/anxiety, and provide ongoing care for those during the transition period if required.
- **Sexual health clinic or gender clinics** often have experience dealing with transgender people as a 'one-stop-shop' with doctors, counsellors and social support. However, not all will accept transgender patients for this sort of care so it is wise to check.
- **Endocrinologists** are helpful when prescribing hormones if the GP is unfamiliar or if the patient is complex or has multiple medical comorbidities.
- **Social workers** are invaluable for assistance with the paperwork involved with changing sex on documents, and accessing government services.

Support groups are a useful source of information, guidance and help with changing documents, accessing appropriate services and for family support. There are many support groups, especially online, for people who are transgender and/or suffering from gender dysphoria (refer to *Resources for patients*). There are a number of evidence-based resources for GPs interested in transgender health (refer to *Resources for doctors*). For primary care protocols, the Center of Excellence for Transgender Health (US) provides clear and concise healthcare intended for GPs (transhealth.ecsf.edu). The Endocrine Society (US) has published clinical guidelines for hormone management and follow-up advice entitled 'Endocrine treatment of transsexuals'. Finally, the most comprehensive guidelines are provided by the World Professional Association for Transgender Health (WPATH), which covers diagnosis, psychosocial assessment, medical and surgical care, and is available online.

ANSWER 7

Medication review

Testosterone is safe in the long term but levels need to be monitored to avoid overdosing.[10] To monitor hormone levels and monitor for adverse effects, it is recommended that regular clinical and laboratory testing, including monitoring hormone levels, be performed every 3 months for the first year and then once or twice yearly.[9] Routine laboratory testing for FTM individuals, including serum testosterone, haemoglobin, and LFTs, should occur every 3 months for the first year and then every 6 months if stable after this time. Lipids and fasting blood sugar (if there is a family history of diabetes) or HbA1c (if diabetic) testing should occur yearly.[9] Hormone levels for FTMs should be kept within the normal physiological range for their desired gender (12–24 nmol/L testosterone and <200 pmol/L oestradiol).[9] Supratherapeutic levels lead to an increased risk of adverse effects and provide no beneficial effects.

Benefits

Testosterone is administered to induce male characteristics and this should be enquired about during a follow-up consultation.

For example, growth of facial hair, increased muscle mass, fat redistribution and deepening of the voice should begin within 6 months of initiating treatment. However, these processes are highly variable and may take longer.[9]

Adverse effects

The adverse effects most significantly associated with testosterone therapy include clinical and laboratory changes.

Laboratory changes may include polycythaemia, hyperlipidaemia and elevated liver enzymes, which should be monitored and addressed, if required, in consultation with a specialist with experience in the field.[9] Clinical changes may include acne, clitoromegaly, alopecia and irritability. These should also be addressed if they become burdensome to the patient.[4]

Mental health

Transitioning can be a difficult time for transgender individuals with gender dysphoria and although they may be consulting a mental health professional, a GP can also monitor mental health and assist where required.[3]

Ongoing preventive care

It is important to note that transgender individuals still need to undergo general practice preventive health measures applicable to their sex at birth. For example, FTM individuals should continue to have Pap smears and breast screening (if mastectomy has not been performed) as per current Australian guidelines.[9]

CONCLUSION

Ash returns to see you 6 months after initiating hormone therapy, as part of his regular 3-monthly review. He is much happier in himself and enjoys his deeper voice. He is starting to develop facial hair, increased muscle bulk and mild acne vulgaris. He has changed his sex on some of his documents such as his driver's licence and Medicare card. He has some ongoing symptoms of depression but these are improving with the help of his regular counselling sessions with an experienced psychologist. He also has a new girlfriend, with whom he enjoys spending time, and has found work in a local café, where he is accepted as a male.

His blood pressure is 125/70 mm/Hg and his BMI has reduced to 24 kg/m^2. His testosterone level is 15 nmol/L, which is physiologically appropriate. Ash is reminded that a Pap smear is still important in the future and that regular follow-up with you is an important part of the holistic care. Ash's family are still not fully supportive of his decision to start hormone therapy but are currently seeking counselling for help. Ash thanks you for all your help and says that he now can see a happy and productive future for himself – something that he had thought impossible just a few months earlier.

RESOURCES FOR PATIENTS

National and state services and support groups include:

- Ausgender, www.ausgender.com.au
- A Gender Agenda, http://genderrights.org.au
- The Gender Centre Inc, www.gendercentre.org.au
- Trans Health Australia, www.transhealthaustralia.org
- FTM Australia, www.ftmaustralia.org
- Genderqueer Australia, http://www.genderqueer.org.au
- The Royal Children's Hospital's Gender Identity Service, http://ww2.rch.org.au/outpatient/directory/index.cfm?fuseaction=home.full&id=127
- Prahan Market Clinic, www.prahranmarketclinic.com
- Northside Clinic, http://northsideclinic.net.au/trans-health-2
- Transgender Victoria, www.transgendervictoria.com
- Seahorse Victoria, http://seahorsevic.com.au/main
- Butch Femme Trans Melbourne, www.genderqueer.org.au vicbutchfemmetrans
- Rainbow Network Victoria, www.rainbownetwork.com.au
- Taylor Square Private Clinic, www.tspc.com.au
- Twenty10, www.twenty10.org.au
- Goldcoast Sexual Health, www.health.qld.gov.au/sexhealth
- Transbridge – Townsville, www.qgroups.com.au/listing/transbridge-support-townsville
- Sexual Health Service Tasmania, www.dhhs.tas.gov.au/sexualhealth/sexual_health_service_tasmania
- Working it out, www.workingitout.org.au
- Canberra Sexual Health Service, www.health.act.gov.au/our-services/sexual-health
- ATSAQ (Australian Transgender Support Associations of Queensland), www.atsaq.com
- Brisbane Gender Clinic, http://brisbanegenderclinic.org.au
- Cairns Sexual Health Service, www.health.qld.gov.au/sexhealth/help/cairns.asp
- South Australia Gender Dysphoria Clinic, www.anzpath.org/about/service-providers/south-australia

RESOURCES FOR DOCTORS

- BMJ Best Practice website provides guidelines for diagnosis, treatment and follow-up; http://bestpractice.bmj.com/best-practice/monograph/992/treatment/details.html
- Center of Excellence for Transgender Health (US), transhealth.ecsf.edu.
- The Endocrine Society (US). Endocrine treatment of transsexuals, http://press.endocrine.org/doi/pdf/10.1210/jc.2009-0345
- Standards of Care version 7, www.wpath.org/site_page.cfm?pk_association_webpage_menu=1351

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CASE 3

DAN HAS ABDOMINAL PROBLEMS

Dan, aged 18 years, is a high-achieving university student in a large country town. He comes to see you for his abdominal discomfort and diarrhoea. He was diagnosed with Crohn's disease 2 months ago.

Dan says he feels quite lethargic and cannot get much work done because of his frequent trips to the toilet, spending up to 1 hour there per day because of frequent bowel motions. He has tried to 'sit it out' for almost 2 weeks now.

You see that he recently presented to the local emergency department with similar symptoms, which led to an admission of 3 days duration. The follow-up appointment with the gastroenterologist resulted in the diagnosis of Crohn's disease on the basis of colonoscopy findings.

QUESTION 1

What further information would you enquire about? What physical examination would you perform?

FURTHER INFORMATION

On further questioning, you find out that Dan frequently has blood and mucus in his otherwise loose bowel motions. He finds it hard to quantify amounts, but has had 8–12 motions a day. He is able to keep up his fluid intake, but has not been eating as much lately. He tried loperamide for the diarrhoea but it had little effect. He describes abdominal cramps associated with bowel motions, but no nausea or vomiting. His specialist started him on a dose of prednisolone, 50 mg daily, and 5-aminosalicylic acid therapy 4 weeks ago. The dose of prednisolone has been gradually reduced and he is currently taking 12.5 mg of prednisolone daily. His symptoms started to progress when he dropped below 25 mg. His weight has dropped by approximately 5 kg over the past 3 months. He is unsure of the foods he can eat. He is concerned that whatever he eats might make his Crohn's worse. He tries to be brave but has not really understood what Crohn's disease is.

His physical examination reveals a tired-looking young man with a non-distended, soft abdomen, no clear mass identified but increased bowel sounds. His vital signs are within normal limits:

- temperature 36.5°C
- heart rate 70 beats per minute, regular
- blood pressure 120/80 mmHg
- respiration rate 16 breaths per minute
- oxygen saturation 100% room air
- blood sugar level 4.5 mmol/L
- haemoglobin 140 g/L
- urine dipstick test is normal.

Dan declines a digital rectal examination, as it feels 'too sore'. Visual inspection reveals a mildly erythematous and inflamed anal region.

QUESTION 2

What is your differential diagnosis for Dan's condition? What tests will you order?

FURTHER INFORMATION

Dan is keen to accept any help as he is quite fed up with being so lethargic and spending so much time in the toilet.

QUESTION 3

What will you do as an immediate management plan for Dan?

FURTHER INFORMATION

Dan was admitted to hospital. His gastroenterologist started him on metronidazole and intravenous (IV) hydrocortisone to treat his *Clostridium difficile* infection and Crohn's-related inflammation. He was discharged again with a follow-up appointment with the specialist in 2 weeks. He was told to also follow-up with his GP, so he comes to see you a few days after discharge. Dan has concerns about different issues that can arise inside and outside the gut in patients with Crohn's disease. He has read that some people might need surgery and even have one of 'those bags'.

QUESTION 4

What advice/information would you provide to help Dan?

FURTHER INFORMATION

The specialist has advised Dan of the next treatment option if the steroids no longer work. Dan asks you to clarify treatment options such as 'biologics', as he is concerned about the possible side effects.

QUESTION 5

How would you respond?

QUESTION 6

What screening should be requested before commencing treatment with biologics such as infliximab?

FURTHER INFORMATION

Dan went to see the specialist, who ordered a range of blood tests before commencing infliximab. Dan had an excellent response within days of receiving the infusion. He comes to see you after 1 week and tells you enthusiastically that he is now in remission. He asks for advice on helping him improve his symptoms and stay in remission, and the impact on his ability to work and travel, and his chances for intimacy.

QUESTION 7

What will you tell Dan?

QUESTION 8

What is the GP's role in the management of Crohn's disease in young adults?

CASE 3 ANSWERS

ANSWER 1

It is important to ask Dan to describe what occurs when he has diarrhoea. It is useful to enquire about the presence of blood or mucus in the stool, indicating a possible flare-up of his Crohn's disease. Frequency and duration of symptoms are also important aspects of the presenting complaint. History items of particular interest are associated symptoms such as nausea or vomiting, abdominal pain or systemic symptoms such as fatigue, fever and weight loss. Extra-intestinal manifestation of Crohn's disease include mainly joints, eyes and skin, but can have renal and lung manifestations as well.[1]

The usual history items include:

- past medical history (in particular tuberculosis)
- past surgical history
- family history (inflammatory bowel disease [IBD], coeliac disease, colorectal cancer)
- allergies (including food intolerances)
- medications
- vaccination history
- social history (including sexual and travel history, and smoking).

In addition, it is good to focus on the impact of the condition and disease on Dan's life, and his understanding of the disease.

As per the Australian IBD guidelines[2], a physical examination should include the following:

- review of general wellbeing and vital signs:
  - weight and body mass index (BMI)
  - heart rate, blood pressure
  - body temperature
  - signs of anaemia and fluid depletion
- abdominal region:
  - tenderness
  - distention
  - palpable masses
- perianal region
  - tags, fissures, fistulae, abscess
  - digital rectal examination
- oral inspection
- inspection of eyes, skin and joints.

ANSWER 2

Dan is particularly at risk of developing infections because he is on immunosuppressive medication. He had a recent hospital admission. His condition is most probably a combination of an ongoing disease process (inflammation/flare-up) in addition to an infective component such as *Clostridium difficile*. It would be prudent to order some baseline tests such as a full blood evaluation (FBE), electrolytes, liver function tests (LFTs), renal function tests, inflammatory markers and stool samples, but these should not delay necessary treatment.[2] In the Australian IBD guidelines,[2] GPs are encouraged to call for advice from a local gastroenterologist if they are uncertain about which tests are necessary before referral. *C. difficile* is more prevalent in patients with IBD so treatment of the disease with immunosuppression without addressing bacterial pathogens can be extremely dangerous. This could lead to a greater risk for emergency colectomy.[2]

ANSWER 3

The Australian IBD guidelines[2] suggest that the aim of any tests done for patients who are unwell should be to define disease activity and severity. The Crohn's Disease Activity Index (CDAI)[3] can be used to estimate the clinical severity of disease.

The Australian IBD guidelines[2] suggest the following definitions:

Disease activity

- mild: CDAI 150–220
- moderate: CDAI 220–450
- severe: CDAI >450

Remission

- CDAI <150 for at least a year

Relapse

- a flare-up of symptoms in a patient with established Crohn's disease who is in clinical remission

Recurrence

- reappearance of lesions after surgical resection.

You can calculate Dan's score on the CDAI (*Table 1*). The score of 259 indicates moderate disease. In this case, hospital admission is advisable. An appropriate referral to hospital care should not be delayed while waiting for test results.[2] You can tell Dan that the main goal is to treat the acute disease, reduce inflammation, minimise side effects, eliminate symptoms and improve his overall wellbeing. Nutritional deficiencies will need to be corrected as well.[2]

Please refer to the *Therapeutic Guidelines* for currently accepted medical treatment approaches.[4]

Table 1. Adult Crohn's disease activity index[3]

	Factor	Subtotal
Number of liquid or soft stools per week = 12 x 7	2	168
Abdominal pain rated from 0–3 on severity = 3	5	5
General well-being, from 0–4 for seven days = 3	7	21
Presence of complications = 0	20	0
Taking loperamide or similar for diarrhoea = 1	30	30
Presence of an abdominal mass: 2 (none = 0; possible = 2; yes = 5)	10	20
Haematocrit (<0.47 in men; <0.42 in women)	6	0
Weight: deviation from standard weight:	100 X (1 – current/ standard weight)	5
Total CDAI score: 259		

Generally speaking, when disease activity is severe or extensive, or the patient is not well enough to require IV drug therapy, hospital admission is advisable.[2,5] The CDAI can assist in quantifying severity but is not a measure of inflammation.[2,3]

ANSWER 4

This question provides an opportunity to discuss the classification and natural history of Crohn's disease, exacerbation and periods of remission, and development of potential complications. It is also an appropriate time to reinforce the treatment goal of inducing and maintaining remission, and provide relevant information about prognosis.[6]

Classification of Crohn's[7,8]

Crohn's disease activity can be classified either as mild, moderate or severe, on the basis of the CDAI score (refer tp *Answer 3*). This score is a measure of clinical severity; it does not correlate with inflammation activity. A patient is in 'remission' when the CDAI score is less than 150 CDAI for 12 months. A relapse is a flare of symptoms in a patient who was in clinical remission. A relapse should be confirmed by investigation results (imaging, lab or endoscopy results). A recurrence is defined as reappearance of lesions after surgical resection.[2]

Initially, the Vienna classification was used to characterise the clinical pattern of the disease.[7] The Montreal modification of this classification now divides Crohn's disease into three principal patterns, which are somewhat sequential in disease progression:[7]

1. primarily inflammatory
2. primarily stenotic or obstructing
3. primarily penetrating or fistulising.

The Montreal is a subclassification of Crohn's disease using predominantly phenotypic elements; its reproducibility for an indication of disease activity is still being studied.[9,10]

Complications and medical emergencies

The inflammatory process can affect any area of the gastrointestinal tract from mouth to anus and can involve all or some of the associated layers. Complications specific to Crohn's disease include abscesses, fistulae, fissures and strictures. Pancolitis is a medical emergency requiring hospital admission and sometimes surgery. Extra-intestinal manifestations of Crohn's disease include mainly joints, eyes and skin, but can have renal and lung manifestations as well.[7,8]

Patient-specific information is available from Crohn's and Colitis Australia.[11]

Surgery

It is good to explain to Dan that surgery is generally only considered when medical therapy has failed to control symptoms. There is a role for surgery when mechanical complications, such as stricture, obstruction, perforation, abscess or bleeding have occurred; however, a stoma ('the bag') is rarely needed. Upfront, early resection can also be a reasonable option in patients with isolated short-segment ileal Crohn's disease.[2] The National Institute for Health and Care Excellence (NICE) guidelines[6] state that 50–80% of people with Crohn's disease will eventually need surgery for strictures that cause symptoms of obstruction, and other complications such as fistula formation, perforation or failure of medical therapy.[6]

Prognosis and prognostic factors

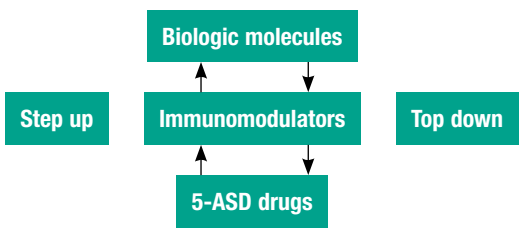
Without treatment, approximately 3 in 20 people with Crohn's disease have frequent and/or severe flare-ups. A few people would have just one or two flare-ups in their lives, but for most of their lives have no symptoms. Most people fall somewhere in between, with occasional flare-ups and long spells without symptoms.[11] A systematic review and meta-analysis concluded that age at diagnosis, perianal disease, initial use of steroids and localisation of the disease seem to be independent prognostic factors of disabling disease.[12]

ANSWER 5

Outline to Dan the natural history of Crohn's, and the treatment options and associated side effects, focusing on the class of 'biologics'. Acknowledging Dan's concerns, it would be good to provide an overview of management and common side effects.[6] A 'top-down treatment approach' has been described by Morrison et al[13] (*Figure 1*). However, treatment is also based on severity of the disease.[4]

Specialist-prescribed biologic treatment options covered by the Pharmaceutical Benefits Scheme (PBS) are infliximab and adalimumab. These agents are monoclonal antibodies against tumour necrosis factor alpha (TNFα) and have a 60–70% response rate for refractory disease.[4] Important side effects include an increased risk of infection or reactivation of tuberculosis or hepatitis, and worsening of cardiac failure. Rare but serious side effects include lymphoma, demyelinating syndromes and hepatotoxicity.[4] It is worth noting that most serious infectious complications in patients with IBD who were on an anti-TNFα agent occurred early in treatment, and most cases were associated with steroid co-therapy.[2]

Figure 1. Top-down versus step-up strategies in IBD management



What the 'top' of the top down approach should be is still under debate but usually implies use of biological molecules from the outset. This means starting biologics on first presentation in an attempt to change the history of the disease and ensure healing. It is not currently in widespread practice and most patients are managed by starting at the bottom of the treatment control and/or evidence if active disease. The main use of top down is in the first presentation of acute severe disease where biologic therapy can be used as a 'bridge' to maintenance therapy (usually an immunomodulator).

Rapid escalation of therapy to gain effective disease control should be the strategy from the point of diagnosis.

Reproduced with permission from The Royal Australian College of General Practitioners from Morrison G, Headon B, Gibson P. Update in inflammatory bowel disease. Aust Fam Physician 2009;38:956–61.

ANSWER 6

An initial assessment should include sources of potential infection (sepsis), baseline LFTs, tuberculosis and human immunodeficiency virus (HIV) screens and a risk assessment for complications and provision of appropriate preventive measures such as vaccinations. The Therapeutic Guidelines are shown in *Table 2*.[4]

Table 2. Recommendations for screening and monitoring patients commencing anti–tumour necrosis factor therapies*

Screening assessments before commencing anti–tumour necrosis factor (anti-TNF) therapy

- clinical history and examination to exclude current sepsis
- exclusion of contraindications (eg demyelination, cardiac failure, malignancy)
- clinical assessment of patient demographics and past exposure to, or risk factors for, particular infections (eg TB, HBV, HIV, VZV, HPV)
- chest X-ray, TB-specific interferon-gamma release assay or tuberculin skin test, HBsAg and anti-HBc
- prophylaxis/treatment should be offered to patients testing positive for TB or HBV
- assessment of vaccination status and vaccination where required, including for HBV, HPV, influenza,
- *Streptococcus pneumoniae* and VZV [NB1] [NB2]
- Papanicolaou (Pap) smears for women

Monitoring during anti-TNF therapy

- clinical review every 3 months to assess efficacy of therapy and any adverse effects, especially sepsis
- ongoing preventive health programs (eg Pap smears for women)

anti-HBc = antibodies to the HBc (core) antigen; HBsAg = hepatitis B s (surface) antigen; HBV = hepatitis B virus;

HPV = human papillomavirus; TB = tuberculosis; VZV = varicella-zoster virus

NB1: Although suggested before anti-TNF therapy, proactive vaccination of patients should be considered before any immunosuppressive therapies, including thiopurine immunomodulatory drugs, methotrexate and corticosteroids.

NB2: VZV vaccine is a live virus and cannot be given to patients already taking immunomodulatory drugs.

Other live vaccines include yellow fever, measles/mumps/rubella and Bacille Calmette-Guérin vaccine for TB (BCG)

Reproduced with permission from Gastrointestinal Expert Group. Recommendations for screening and monitoring patients commencing anti–tumour necrosis factor therapies (Table 6.2) [revised 2011 Feb]. In: eTG complete [electronic]. Melbourne: Therapeutic Guidelines Limited; 2014 Nov.

*The content for the gastrointestinal guidelines is being revised and the updated guidelines will be released in March 2016.

ANSWER 7

Give Dan advice on:

- dietary intake to avoid nutritional deficiencies
- avoiding triggers such as smoking
- the effects of fats and bile salts, lactose and enzyme activity, gluten and low-fibre diets, short- and long-term implications, malabsorption of elements such as iron, zinc, magnesium, vitamin B12, calcium loss secondary to treatment and also vitamin D deficiency states
- prebiotics, probiotics, supplements and herbal medication[2]
- bone health – some of the risk factors for low bone mass in this setting are chronic inflammation, corticosteroid therapy, extensive small bowel disease or resection, age, smoking and low physical activity.[2]

Discuss preventive measures, such as vaccination, including influenza vaccination, lifestyle measures, and physical and mental wellbeing strategies. There is a good question and answer section on the Crohn's and Colitis Australia website covering these topics to some extent.[11]

Outline the implications on occupational and personal lifestyle (intimacy, family planning, etc) Also outline the principles of Crohn's disease classification and associated prognosis, referring to the natural history of Crohn's, flare-ups, remission and goals of treatment.

Toilet access can be a major concern regardless of where one is – technology may offer some assistance with finding toilets through 'toilet map apps'. Travel can be challenging, particularly when going to 'exotic' countries where yellow fever vaccination is required. Patients on immunosuppressive therapy cannot receive the yellow fever vaccination unless they can stop medication for at least 4 months.[2]

ANSWER 8

GPs play a major role in the overall management of IBD, from early diagnosis, supporting patients with psychological comorbidities, assisting with smoking cessation and managing intercurrent issues such as maintenance therapy, monitoring and adherence, sexuality, fertility, family planning and pregnancy, iron deficiency and anaemia.[2]

Colorectal cancer surveillance after initial colonoscopy evaluation should be offered based on risk profile:[14]

- Low risk: offer colonoscopy with chromoscopy at 5 years
- Intermediate risk: offer colonoscopy with chromoscopy at 3 years
- High risk: offer colonoscopy with chromoscopy at 1 year.

Osteoporosis prevention is also important. Australian dietary recommendations include intake of calcium 1000 mg per day and maintenance of vitamin D levels above 27.5 nmol/L.

A particular focus should be on the quality of life and practical implications of IBD, as outlined in *Table 3*. GPs may wish to refer to resources available from organisations such as Crohn's and Colitis Australia for topic-specific information such as 'School and IBD.'[11]

Table 3. The overlooked issues in IBD patient care

Issue	Comment
Employment	The ACCESS report revealed over three-quarters of patients noticed a change in work life as a result of IBD. This included time off, restriction of duties, travel restriction and loss of income.
Education	Similar findings to above, as well as a lack of understanding or not being believed about their illness.
Quality of life	Many studies have shown a lower quality of life in IBD patients and this has been associated with disease activity.
Anaemia	Common in IBD and often multifactorial. Iron deficiency is common and responds poorly to oral iron. Intravenous iron is particularly useful in this situation.
Psychological health	Stress, depression and poor psychological health are associated with chronic disease and increased disease activity.
Sexual dysfunction	The potential for incontinence and wind, and a resistance to discus sexual health concerns makes these issue common and challenging.
Functional GI symptoms	Common in IBD and require careful assessment. Dietary interventions (via a specialist dietician) have proven useful.
Smoking	Strongly associated with negative disease outcomes in CD. Cessation should be actively encouraged and awareness of available help and resources given.
Nutrition and development	Key priorities in all patients, but should be particularly focused on children, adolescents and young adults.

Reproduced with permission from the Royal Australian College of General Practitioners from Morrison G, Headon B, Gibson P. Update in inflammatory bowel disease. Aust Fam Physician 2009;38:956–61.

RESOURCES FOR PATIENTS

- Healthdirect Australia, www.healthdirect.gov.au/symptoms-of-crohns-disease-and-colitis
- Crohn's and Colitis Australia has sections on financial aspects of IBD, and other patient-relevant resources such as 'students with IBD', www.crohnsandcolitis.com.au

RESOURCES FOR DOCTORS

- Morrison G, Headon B, Gibson P. Update in Inflammatory bowel disease. Aust Fam Physician 2009;38:956–61.
- Digestive Health Foundation and Gastroenterological Society of Australia. Australian guidelines for the general practitioner and physicians: inflammatory bowel disease, 3rd edn 2013, www.gesa.org.au/files/editor_upload/File/Professional/33859_b-2.pdf
- Gastrointestinal Expert Group. Therapeutic guidelines: Gastrointestinal. Version 5. Chapter on Inflammatory Bowel Disease. Melbourne: Therapeutic Guidelines Limited, 2011
- Mill J, Lawrance IC. Preventing infective complications in inflammatory bowel disease. World J Gastroenterol 2014;20:9691–98.
- Lucendo AJ, De Rezende LC. Importance of nutrition in inflammatory bowel disease. World J Gastroenterol 2009; 15: 2081–88. This considers the specific implications of Crohn's disease in childhood.
- Improving Inflammatory Bowel Disease care across Australia a report by PricewaterhouseCoopers Australia (PwC 2013), www.crohnsandcolitis.com.au/site/wp-content/uploads/PwC-Report-2013-Executive-Summary.pdf. This report provides information about IBD statistics and models of care used in Australia.

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14. National Institute for Health and Clinical Excellence. Colonoscopic surveillance for prevention of colorectal cancer in people with ulcerative colitis, Crohn's disease or adenomas. London: NICE, 2011. Available at www.nice.org.uk/guidance/cg118# [Accessed 11 March 2015].

CASE 4

JESSICA HAD UNPROTECTED SEX

Jessica, 16 years, comes to an appointment alone, reporting that she had unprotected sex last night, with a boy in her year at school, and does not want her mother to know.

QUESTION 1

What laws guide decision making with regards to consent and privacy? How might these laws apply to this consultation?

QUESTION 2

What are your priorities for this consultation?

QUESTION 3

What sexual health testing is appropriate?

QUESTION 4

What contraceptive options are available for Jessica?

FURTHER INFORMATION

A self-administered swab is done today and you advise Jessica that it will need to be repeated at her next visit. She requests contact on her mobile phone for results. She decides on having an etonogestrel implant. You write a prescription for her and arrange a follow-up appointment to coincide with the onset of her next period. You suggest she might like to bring her mother along, but does not have to.

Jessica misses her next appointment but promises to re-book when contacted by the practice nurse. She returns 6 weeks later, having missed her last period. Her urine pregnancy test is positive.

QUESTION 5

What are the next considerations for this appointment?

FURTHER INFORMATION

You ask Jessica to return in a few days to discuss her decision making. In the meantime, Jessica's chlamydia test returns positive.

QUESTION 6

What are the options for antibiotics in pregnancy?

FURTHER INFORMATION

Jessica decides to continue with the pregnancy and returns to see you with her mother. She will have her baby at the local public hospital and is interested to hear about the midwifery team for high-risk women (given the psychosocial risks associated with being an adolescent parent) who can provide support throughout the pregnancy and in the early days of going home with her baby.

QUESTION 7

What issues of particular relevance to teenage mothers should be considered?

FURTHER INFORMATION

You give Jessica contact details for the youth education service, which provides youth-specific antenatal classes and have a child health nurse on site to assist with baby care after the birth. You arrange her antenatal screening and a follow-up appointment after her 12-week ultrasound. At her next appointment she brings her consent form to have her year-10 diphtheria, tetanus, pertussis (dTpa) vaccination.

QUESTION 8

Should Jessica be given the dTpa vaccination?

FURTHER INFORMATION

Jessica progresses well through her pregnancy, engages with the midwifery program and continues intermittent visits with you, her GP. She remains at school until well into her third trimester at which time you provide a certificate for her to be excused for the remainder of the year. She expresses some concern about breastfeeding.

QUESTION 9

What are the advantages of breastfeeding?

FURTHER INFORMATION

Jessica breastfeeds successfully and attends your clinic regularly for vaccinations and baby checks. She accepts your advice of having a hormone-containing intrauterine device (IUD) inserted. She continues her involvement with the youth service, who coordinate a new mothers' group for teenage mothers. She returns to school the following year to study two Year 11 subjects and her mother helps with childcare.

QUESTION 10

What is the outlook for Jessica and her baby?

CASE 4 ANSWERS

ANSWER 1

Minors are entitled to confidentiality and, as children grow older, they have increasing capacity to give consent with regards to their medical care. Parental authority cannot be assumed. Only New South Wales and South Australia have specific legislation.

In 1986, the Gillick principle was established in Britain and allows for minors with adequate maturity to give consent for their own medical treatment.[1,2] The principle has never been tested in Australian courts, but it is widely assumed the principle would hold. Finding a minor to be mature (Gillick competent) is situation specific, but overrides any parental decision (refer to *Resources for doctors*).

Privacy of medical information should also be assumed for legally competent minors. Parents do not automatically have access to their child's medical records. Young people can be reassured about their entitlement to confidentiality; however, there are a few exceptions where there are serious concerns for their safety. This should be balanced with the knowledge that adolescents who have parental support are psychologically more protected and, where appropriate, young people should be encouraged to involve their parents in their care as a useful support and to reduce the risk of family dispute.[3]

It is a valuable routine practice to note who attended a consultation with a child or adolescent and what information young people are comfortable having disclosed to parents.

Jessica can be reassured about being able to make her own health decisions in this context and that she is entitled to complete confidentiality, except in special circumstances (eg significant risk of harm). We would encourage her to involve her parents if it is safe to do so, but the decision is hers to make.

ANSWER 2

It is important to ensure that you first engage Jessica. Teenagers may be difficult to engage but, like all patients, benefit from a trusting relationship with a regular GP. Listening to the young person and identifying their concerns is the highest priority. Teenagers may be unfamiliar with the consultation process and worry about confidentiality. They identify staff attitudes of respect and friendliness, good communication, medical competency, guideline-driven care and involvement in their own healthcare as important determinant of satisfaction with their care.[4]

Jessica will require levonorgestral, the morning-after pill (emergency contraception), to reduce her risk of pregnancy. This is available over the counter as a single tablet of 1.5 mg or 2 x 750 µg tablets taken 12 hours apart. A prescription alternative is 25 x 30 µg levonorgestral progestin-only minipill tablets repeated after 12 hours.[5]

There are no medical contraindications to the use of levonorgestrel but the cost can be prohibitive for adolescents. Practices might consider keeping their own stock for this situation or being aware of local non-government organisations that have a youth focus and may be able to provide brokerage.

ANSWER 3

Jessica will require screening for sexually transmissible infections (STIs). She is particularly at risk for chlamydia, as this STI occurs at a rate of over 4 per 1000 in the 15–19 year age group.[6] Reporting of chlamydia has increased 4-fold in the past decade. Jessica's same-age partner has a low risk for other STIs.[7]

While practitioner-administered cervical swab for chlamydia polymerase chain reaction (PCR) is the most reliable test,[8] a self-administered swab or first-pass urine are reasonable alternatives and usually much more acceptable to young women.[8] Screening for gonorrhea, syphilis, human immunodeficiency virus (HIV) or trichomonas might be considered, depending on risk.[9]

Jessica can also be reassured that she will not need a Pap smear until she is 18–20 years of age. There is no benefit for women under the age of 20 years to have Pap smear screening and it increases the risk of over-treating lesions with little invasive potential.[10]

ANSWER 4

All reversible methods of contraception can be used by adolescents. Use of condoms in conjunction with emergency contraception should be covered in detail. Further counselling about contraceptive options should cover efficacy, patient preferences and barriers to use. The oral contraceptive pill remains popular among young women. The recent addition of the ethinyloestradiol pill (20 µg) to the Pharmaceutical Benefits Scheme (PBS) has made it affordable for low-income earners. Use of the very low dose pill continuously reduces bleeding, dysmenorrhea, iron deficiency and, potentially, reduces the incidence of endometriosis.[11] However, compliance is particularly poor in this age group and pregnancy prevention can

be better achieved with long-acting reversible contraceptives.[12,13] These methods offer a high level of reliability and include:

- etonogestrel implants
- hormone-containing and copper intrauterine devices (IUDs)
- medroxyprogesterone acetate injection.

Nulliparity and adolescence are no longer contraindications for IUD use. The risk of pelvic inflammatory disease or infertility is not increased in IUD users.[14] Adolescent women who have had an IUD inserted for contraception report a high level of satisfaction.[15]

ANSWER 5

Young people engaging in early sexual activity are at a greater risk of behavioural and mental health issues[16] so, apart from following-up with chlamydia testing, there are now major psychosocial issues to explore.

A non-judgmental conversation about Jessica's wishes and options for the pregnancy will be the focus. It is possible for Jessica to give consent for an abortion if she is judged to be a mature minor. She would benefit from having a parent or guardian involved, or a least a supportive adult she trusts. Her termination options include either surgical or medical procedures. The choice between the two options is very much a personal one and complications rates are not significantly different.[17]

An ideal way of assessing the psychosocial situation of a teenager is to use the HEADSS (home and environment, education and employment, activities, drugs, sexuality and suicide/depression) mnemonic:[18]

- Home and environment (eg Whom do you live with?)
- Education and employment (eg How is school for you?)
- Activities (eg What do you do outside of school?)
- Drugs (eg Have you ever tried cigarettes, alcohol or any other drugs?)
- Sexuality (eg Have you ever been sexually involved with anyone? Have you identified who you are sexually attracted to?)
- Suicide/depression (eg How are you going emotionally? Have you ever self-harmed or thought of killing yourself?).

In the context of being reassured about confidentiality, most teenagers are very comfortable answering such questions with a GP.

ANSWER 6

Azithromycin 1 g stat, the usual treatment for chlamydia, is category B1 in pregnancy and would still be the treatment of choice.[19] Doxycycline can be used in the first 18 weeks of pregnancy, after which dental complications may occur. Test of cure should be performed in pregnant women and, given the high risk of re-infection, you might repeat the test in the third trimester. No single technique for contact tracing or partner treatment seems better than any other, although partner-initiated therapy reduces re-infection with chlamydia,[20] but success rates can be quite low.

ANSWER 7

Jessica is at risk of disengaging from education and living in poverty. Teenage pregnancies are more likely to result in adverse neonatal outcomes[21] such as inadequate antenatal care, lower birth-weight babies, premature births and major congenital defects. There is also a higher risk of perinatal mortality and postnatal depression.[22] Young women have a high rate of disordered eating and pregnant teenagers are more likely to be using drugs and alcohol than older women.[21]

ANSWER 8

Proceeding with the dTpa vaccination may help protect Jessica's baby from whooping cough in the early months of life, but giving Jessica the vaccination should be delayed until the third trimester or immediately postpartum.[23]

ANSWER 9

There are many advantages to breastfeeding. In Jessica's case, there would be a cost saving, as she would not need to buy formula, and an improved attachment between mother and baby.[24]

Teenage mothers may be from families of origin that are more chaotic, have poor emotional attachment and an increased risk of domestic violence.[22] Such teenagers may have the most to gain from improved emotional attachment with their infant. The Edinburgh Postnatal Depression Scale has been validated for use in adolescent mothers[25] who are at increased risk of depression and post-traumatic stress disorder. Successful breastfeeding has long-term beneficial effects in reducing these risks.[26–29]

ANSWER 10

Young mothers who continue their education and have good family and other social supports record outcomes as good as those for older mothers.[30,31]

Keeping Jessica well engaged with good antenatal care has completely changed her outlook for the better.

RESOURCES FOR DOCTORS

- The Royal Children's Hospital, Melbourne, www.rch.org.au/clinicalguide/guideline_index/Engaging_with_and_assessing_the_adolescent_patient
- Australian Government, Australian Law Reform Commission, www.alrc.gov.au/publications/68.%20Decision%20Making%20by%20and%20for%20Individuals%20Under%20the%20Age%20of%2018/capacity-and-health-info
- Headspace, Psychosocial Assessment for Young People, www.headspace.org.au/what-works

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CASE 5

ISAAC HAS A BURNING SENSATION

Isaac is a plumbing apprentice aged 17 years and is new to your practice. After a brief introduction you ask him what you can help him with today. He seems a little embarrassed and states, 'It burns when I piss'.

QUESTION 1

What are some of the general principles you adhere to when taking a sexual history in a case like this? What information do you need to obtain from Isaac?

FURTHER INFORMATION

After reassuring Isaac that this is quite a common problem, you explain that you need to ask him more questions to work out what the problem is. In reply to your questions, Isaac states that he has had this burning for about 5 days. He did not make an appointment at the onset of his symptoms because he was embarrassed and hoped it would just go away. He thinks he may have had some clear watery discharge but is not sure. He has not noticed any sores or blisters on his penis. Other than the dysuria, he has not felt unwell. He does not have urinary frequency. He has never had similar symptoms before.

When you ask about his sexual history, he informs you that about 6 months ago he started experimenting with male-to-male sex. He does not have a boyfriend, but has had sex with a handful of men, most of whom are a few years older than him. He does not usually ask them about their human immunodeficiency virus (HIV) status. He does try to use condoms for anal sex, but does not always remember to do so, particularly after he has had a couple of drinks. He tends to be the receptive partner during anal sex, and he sometimes finds it difficult to insist on the use of condoms. He last had receptive anal sex without using a condom about 1 week ago. He has not had any female partners. Isaac does not inject drugs, but a couple of times he has smoked crystal meth when it was offered to him during sex.

Isaac agrees to being examined and you notice some slight erythema of his urethral meatus, with a small amount of clear watery urethral discharge. Otherwise, there are no genital lesions. He does not have swelling or tenderness of the testes or epididymis. There is no inguinal lymphadenopathy.

QUESTION 2

What is the likely diagnosis for Isaac's condition? What tests will you perform to confirm the diagnosis?

QUESTION 3

Isaac does not seem adequately informed about the risks associated with condomless sex. What information would you give him at this stage?

QUESTION 4

You suggest to Isaac that he should return in about 1 week for his results and to follow up his progress. How do you manage him in the meantime?

FURTHER INFORMATION

Table 1. Isaac's results

Test	Result
Meatal swab microscopy:	
Leukocytes	1+
Gram-negative intracellular cocci	+
Meatal swab culture	
N. gonorrhea	+
Beta-lactamase	–
Meatal swab PCR	
N. gonorrhoea	+
C. trachomatis	–
Anal swab PCR	
N. gonorrhoea	+
C. trachomatis	–
Pharyngeal swab PCR	
N. gonorrhoea	–
C. trachomatis	–
Syphilis enzyme immunoassay (EIA)	–
Hepatitis B	
core antibody (cAb)	–
surface antigen (sAg)	–
surface antibody (sAb)	120 IU/ml
Hepatitis C antibody (Ab)	–
HIV antigen/antibody combination (4th generation)	Not detected

QUESTION 5

Isaac returns 1 week later for his results. What follow-up measures would you advise for him?

FURTHER INFORMATION

Isaac returns 3 weeks later with the same symptoms. He states that he has not had any sexual contact since you treated him.

QUESTION 6

How would you manage this?

CASE 5 ANSWERS

ANSWER 1

In general, care is needed to try to make a young person feel at ease during a sexual health consultation. If they feel judged, then this reduces the probability that they will provide accurate information about their sexual behaviour patterns and risks.

It is important to be mindful of the language you use, so as not to include any assumptions in your questions:

- Do not ask 'Do you have a boyfriend/girlfriend?', but ask 'Do you have a partner?'
- If the reply is 'yes', then ask 'What is your partner's name?'
- If they do not have a partner, ask 'Are your sexual partners usually female, male or both?'
- If they have a partner, ask if they have any sexual contact outside of the relationship.

Isaac's presentation with dysuria suggests that he is at risk of other sexually transmissible infections (STIs), so you need to know more detail about his sexual practices in order to determine what other STIs he may be at risk of.

In terms of his presenting complaint, you need more information about the duration and nature of his dysuria, and any associated symptoms such as the presence of any genital discharge, genital ulcers, general rash, fever and systemic symptoms.

ANSWER 2

Diagnosis

Isaac has urethritis. The most likely causative organisms of urethritis are *Chlamydia trachomatis* or *Neisseria gonorrhoea*. Chlamydia tends to cause urethritis with a watery discharge, whereas gonorrhoea tends to cause a more profuse and purulent discharge.

Less likely causes for his urethritis are *Mycoplasma genitalium, Ureaplasma urealyticum*, *Herpes simplex* virus (HSV) and anaerobes. Mycoplasma and ureaplasma may present in this way, they are less prevalent than chlamydia and gonorrhea.[1] HSV can present with only dysuria, but usually it presents with some visible lesions. Also, this is Isaac's first episode and primary HSV infection often presents with constitutional symptoms.

Unlikely causes for his urethritis include *Trichomonas vaginalis* and adenovirus. Trichomonas is an uncommon cause for urethritis in men and is seen only in men who have female sexual partners.[2] Adenovirus usually presents with impressive meatal erythema and oedema, and is often accompanied by conjunctivitis and constitutional symptoms.[3]

Tests to perform

To investigate his urethritis, Isaac should be tested with a meatal swab for microscopy and culture, and a meatal swab for polymerase chain reaction (PCR) for chlamydia and gonorrhoea.[4] The culture result is important to assess for antibiotic resistance if gonorrhoea is confirmed. If Isaac had no symptoms of urethritis, then a first-pass urine PCR for chlamydia and gonorrhoea would be a preferred alternative.[5,6] It would be reasonable to also test the PCR swab for *M. genitalium* in a symptomatic case such as Isaac's, but this test is currently not routinely available at most commercial laboratories in Australia.

Isaac should be offered a pharyngeal swab and anal swab to test for chlamydia and gonorrhoea by PCR at these sites, as colonisation at these sites can often be asymptomatic. Collection of the anal swab also allows for examination of the peri-anal area for warts.

Isaac reports significant sexual risk, so he should be offered full STI testing, including serology for HIV, hepatitis B and syphilis. Hepatitis C is not generally considered an STI, but you could offer to test for it in case there was any unreported intravenous drug use.[4]

ANSWER 3

There are a few issues that need to be addressed with Isaac at this stage:

- Isaac has some understanding of the need to use condoms, but probably does not realise how much risk he is taking. In Australia, the HIV transmission rate is currently the highest it has been since the mid 1990s; in 2013, there were 1236 new diagnoses. The majority of these cases were in men who have sex with men (MSM).[7]
- Although he has some understanding of the need to use condoms, Isaac reports that he sometimes does not feel empowered to insist on condom use. He may benefit from referral to a sexual health counsellor or psychologist to further explore this.
- Before ordering an HIV test, you should discuss with Isaac whether he understands the implications of a positive HIV result. Also, a negative HIV result needs to be interpreted with an understanding of the test's 'window period'.
- As Isaac's behaviour pattern places him at significant risk of HIV, it is important that he knows about post-exposure prophylaxis (PEP) or non-occupational PEP. He needs to know when and where to access PEP. This is available from most hospital emergency departments and sexual health clinics, and some general practices that specialise in HIV treatment. PEP should be started within 72 hours of possible HIV exposure, although sooner is better. It consists of 4 weeks of antiretroviral treatment.[8]

ANSWER 4

Isaac should be treated at the current visit, on the basis of his symptoms alone. To delay treatment would increase the risk of complications such as epididymo-orchitis, prostatitis and urethral strictures. Delay of treatment also increases the risk of transmission to others.

Syndromically, Isaac is likely to have chlamydia, but epidemiologically, gonorrhoea is also quite likely, as this is increasingly common among men who have sex with MSM.[7] Australian guidelines differ in empirical treatment of urethritis, some suggesting treating for chlamydia only while awaiting the results,[4] whereas others recommend treating for both chlamydia and gonorrhoea if the patient is a man who has sex with men.[9] Given the high incidence of gonorrhoea among MSM in Australian cities,[7] it is reasonable to treat for both chlamydia and gonorrhoea when these patients present with urethritis,[9] with a combination of azithromycin 1 g PO stat and ceftriaxone 500 mg IM stat (dissolved in 2 mL of 1% lignocaine).[4]

Isaac should inform all his sexual partners that they will need to be tested for chlamydia and gonorrhoea. He can do this either through the method by which he usually contacts them, or he could use one of the web-based services that provide some anonymity. These include www.thedramadownunder.info and www.letthemknow.org.au

Isaac should refrain from having any sexual contact for 1 week after treatment and after that week he should avoid having sex with any of the people with whom he's had sex over the past 6 months until after those sexual contacts have been tested and treated.[4]

ANSWER 5

Isaac had urethral and anal gonorrhoea, which have been treated. It is recommended that patients be followed-up 1 week after treatment (which is now) to:

- assess for symptoms resolution
- confirm that contact tracing has been undertaken and offer assistance if needed
- provide further sexual health education.[4]

For pharyngeal, cervical and anal gonococcal infections, a test of cure using PCR testing is recommended at 2 weeks after treatment, as treatment failure is thought to be more common at these sites.[4]

It is recommended that Isaac has repeat STI testing at 3 months, as there is a significant risk of re-infection. The Sexually Transmissible Infections in Gay Men Action Group (STIGMA) guidelines recommend that someone in Isaac's situation has STI testing every 3 months.[5,6]

Isaac also needs repeat HIV and syphilis testing, as he had a significant risk exposure 1 week before his test so these infections may have been missed. Repeat HIV and syphilis tests 6 weeks later would be advisable.

ANSWER 6

Re-infection due to re-exposure is generally the most likely cause of repeat presentations with urethritis. However, if Isaac had no sexual contact, including oral sex, then we must consider the possibility of treatment failure. Treatment failure of urethral gonorrhoea is uncommon when the patient has been treated with the recommended treatment regimen, particularly if the culture result indicated adequate antibiotic sensitivity.

In this case, it is possible that a concurrent case of urethral *M. genitalium* has been missed. The recommended treatment regimen for *M. genitalium* urethritis is azithromycin 1 g PO stat[4] but, unfortunately, mycoplasma infections have fairly high treatment failure rates; one study reported a failure rate of 28%.[10]

In this situation it would be worthwhile repeating his tests and including a first-pass urine test for mycoplasma PCR and ureaplasma PCR.

If Isaac tests positive for mycoplasma, and if he has had no new sexual contacts since he was treated with azithromycin, then he is considered a treatment failure and should be referred to a sexual health centre for further management. Some sexual health centres are currently conducting trials of novel antibiotic agents for the treatment of genital *M. genitalium* infections.

RESOURCES FOR PATIENTS

- Partner notification can be assisted through online platforms such as www.thedramadownunder.info (for MSMs) and www.letthemknow.org.au.
- The Melbourne Sexual Health Centre has published a library of multilingual patient handouts on their website, http://mshc.org.au/healthpro/FactSheets/tabid/253/Default.aspx

RESOURCES FOR DOCTORS

- The Australian STI Management Guidelines can be found at www.sti.guidelines.org.au

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ACTIVITY ID: 23837

STAGES OF LIFE: ADOLESCENT/YOUTH HEALTH

This unit of *check* is approved for 6 Category 2 points in the RACGP QI&CPD program. The expected time to complete this activity is 3 hours and consists of:

- reading and completing the questions for each case study
- you can do this on hard copy or by logging on to the *gplearning* website, http://gplearning.racgp.org.au
- answering the following multiple choice questions (MCQs) by logging on to the *gplearning* website, http://gplearning.racgp.org.au
- you must score ≥80% before you can mark the activity as 'Complete'
- completing the online evaluation form.

You can only qualify for QI&CPD points by completing the MCQs online; we cannot process hard copy answers.

If you have any technical issues accessing this activity online, please contact the *gplearning* helpdesk on 1800 284 789.

If you are not an RACGP member and would like to access the *check* program, please contact the *gplearning* helpdesk on 1800 284 789 to purchase access to the program.

QUESTION 1

Juliette and Frank see you for advice about their son Nate, 16 years of age, whom they fear has been using illicit drugs. After speaking to you they convince Nate to see you. Which of the following is likely to give you the most useful information in assessing Nate?

A. A urine drug screen

B. Asking Nate about his friends' use of drugs

C. Asking Nate open-ended questions and giving positive affirmations

D. Your impressions of Nate during the consultation

QUESTION 2

General principles in treating adolescent substance use include:

A. Psycho-education

B. Clear instructions on how to make changes

C. Engagement of the parents in enforcing abstinence

D. Regular urine drug screens to monitor substance use

QUESTION 3

Deena, 17 years of age, comes to see you for advice about breast reduction surgery. She tells you she hates her breasts and wishes she could get rid of them altogether. As you engage her in conversation, she breaks down in tears and tells you she has she has felt depressed since the age of 12 years, when she started having periods and developing breasts. She says, 'I feel male and would give anything for a male body.' She finds it upsetting when her parents tell her she would look pretty in a dress instead of always dressing like a boy.

Which element of Deena's history best supports a diagnosis of gender dysphoria?

A. She hates her breasts and wants them removed.

B. She identifies as male although her assigned gender is female.

C. The difference between her assigned gender and experienced/expressed gender has caused significant distress since she was 12 years of age.

D. She dresses like a boy.

QUESTION 4

How would you monitor an individual who has commenced testosterone therapy to transition from female to male?

A. Hormone levels should be monitored every month for the first 6 months and then every 6 months if stable.

B. Hormone levels should be monitored every 3 months for the first year and then every 6–12 months if stable.

C. Laboratory testing, including serum testosterone, haemoglobin and liver function tests, should be monitored every month for the first year and then every 6 months if stable.

D. Laboratory testing, including serum testosterone, haemoglobin and liver function tests, should be monitored every 3 months for the first year and then every 12 months if stable.

QUESTION 5

Lennie is 17 years of age and was diagnosed with Crohn's disease 6 months ago. At the time of diagnosis, Lennie commenced corticosteroid therapy, which was effective for the first few months. However, his symptoms recurred and he now presents with worsening abdominal pain, diarrhoea, weight loss and general lethargy. You calculate his Crohn's disease activity index (CDAI) score, which is 300. This score indicates

A. Moderate inflammation activity

B. Severe inflammation activity

C. Moderate disease activity

D. Severe disease activity

QUESTION 6

How would you manage Lennie, given his CDAI?

A. Order baseline tests to determine if Lennie has an infection and treat on the basis of the test results.

B. Assess disease activity and treat as appropriate.

C. Increase the corticosteroid dose.

D. Admit Lennie to hospital for treatment.

QUESTION 7

Roxanne is 16 years of age and comes to see you to discuss options for contraception. She is particularly interested in an intrauterine device (IUD), as she doesn't like taking pills.

Which of the following statements about the use of IUDs in adolescents is true?

A. Hormone-containing and copper IUDs do not provide a high enough level of reliability in adolescents.

B. IUDs are not contraindicated in adolescents.

C. The risk of pelvic inflammatory disease or infertility is increased in IUD users.

D. Adolescent women who have IUD inserted report poor satisfaction.

QUESTION 8

What advice would you give Roxanne about the need to have Pap smears?

A. She should start having Pap smears within 1 year of having sexual intercourse.

B. She should not delay having a Pap smear if she is already sexually active.

C. She does not need to have a Pap smear until she is over 21 years.

D. She does not need to have a Pap smear until she is 18–20 years.

QUESTION 9

How would you manage a patient with symptomatic urethritis?

A. Investigate the cause by polymerase chain reaction (PCR) testing of a first-pass urine sample and treat on the basis of the causative agent.

B. Take a meatal swab for PCR testing and gonococcal culture, and treat on the basis of the causative agent.

C. Take a meatal swab for PCR testing of chlamydia/gonorrhea and for gonococcal culture, and start treatment on the basis of the symptoms while waiting for the results.

D. Take a meatal swab for PCR testing and start treatment for gonorrhoea while waiting for the results.

QUESTION 10

What is the recommended timing for follow-up and repeat STI testing of a patient with urethral gonorrhea?

A. Follow up 1 week after treatment and repeat STI testing at 3 months

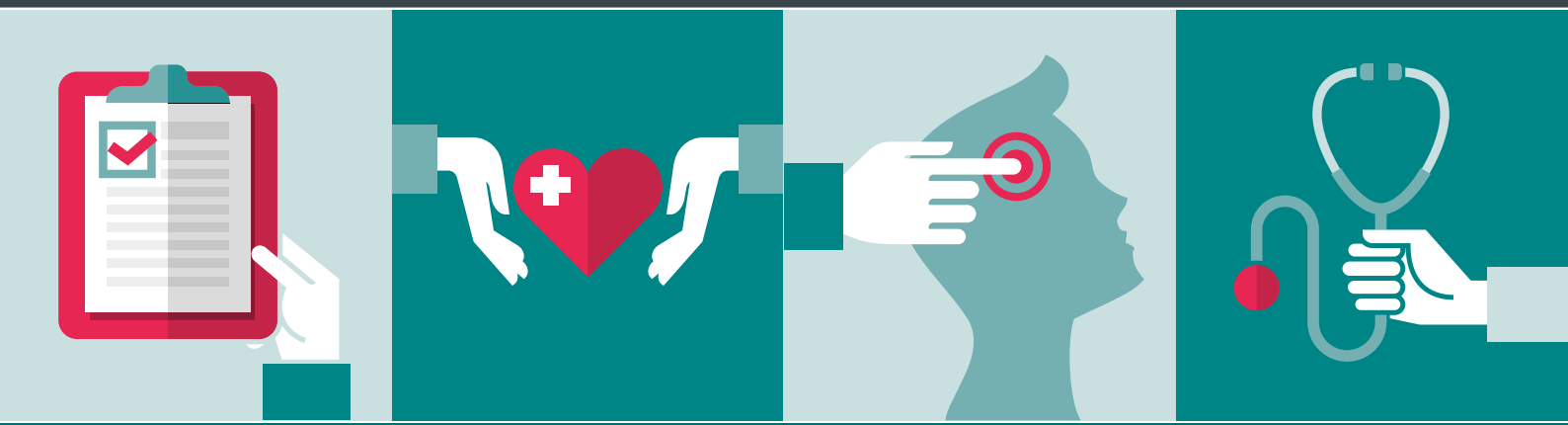
B. Follow up 1 week after treatment and repeat STI testing at 1 month

C. Follow up at 1 week after treatment and repeat STI testing at 6 weeks

D. Follow up at 2 weeks after treatment and repeat STI testing at 6 weeks

check

Independent learning program for GPs



Unit 517 June 2015

Stages of life: Midlife

www.racgp.org.au/check

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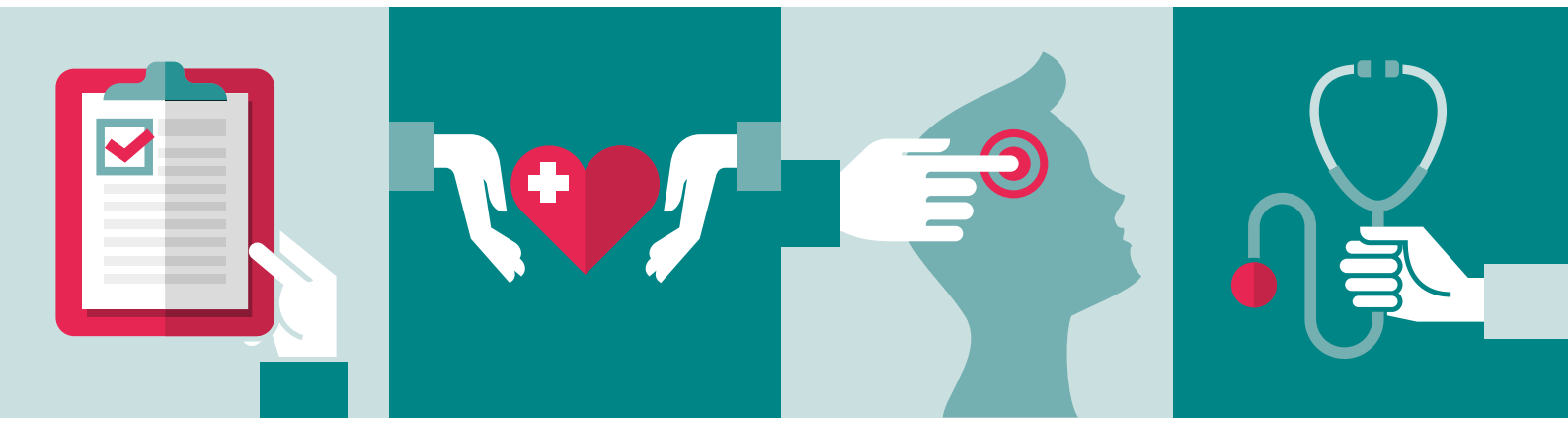

Stages of life: Midlife

Unit 517 June 2015

The five domains of general practice

- Communication skills and the patient-doctor relationship
- Applied professional knowledge and skills
- Population health and the context of general practice
- Professional and ethical role
- Organisational and legal dimensions

RACGP

Midlife can be a time of major life changes, which can have adverse effects on physical and mental wellbeing for many people. Menopause, for example, which generally occurs at the age of 45–55 years, can cause distressing symptoms for many women.[1] In addition to life changes, chronic diseases become more common in midlife[2] and patients aged 45–64 years represent more than one-quarter of the presentations to general practice.[2] Patients in this age group are more likely to rate their health as fair or poor, compared with those aged 25–44 years.[1] Cardiovascular disease and cancer, in particular, continue to be leading causes of morbidity and mortality in midlife.[1] For men, prostate cancer is one of five most diagnosed cancers and is a frequent cause of cancer death.[3]

This edition of *check* explores health issues encountered in general practice that are specifically related to midlife. The cases provide guidance about the management of these issues.

LEARNING OUTCOMES

At the end of this activity, participants will be able to:

- outline treatment options for the symptoms of menopause
- list options for contraception in perimenopausal women
- describe the diagnosis and management of patients with sexually transmissible infections in midlife
- explain the risks and benefits of screening for prostate cancer, and discuss follow up and surveillance protocols for prostate cancer
- summarise the diagnostic findings for dilated cardiomyopathy.

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ACRONYMS

BMI	body mass index	**FSH**	follicle stimulating hormone	**OCP**	oral contraceptive pill
BP	blood pressure	**HRT**	hormone replacement therapy	**OTC**	over-the-counter
CAM	complementary and alternative medicine	**ICD**	implantable cardiac defibrillator	**PBS**	Pharmaceutical Benefits Scheme
COPD	chronic obstructive pulmonary disease	**JVP**	jugular venous pressure	**PDE-5**	phosphodiesterase-5
DCM	dilated cardiomyopathy	**LH**	luteinising hormone	**PSA**	prostate-specific antigen
ECG	electrocardiogram	**LNG-IUD**	levonorgestrel intrauterine device	**SNRI**	serotonin-noradrenaline re-uptake inhibitor
FBE	full blood evaluation	**MBS**	Medicare Benefits Schedule	**TSH**	thyroid stimulating hormone
FOBT	faecal occult blood test	**mpMRI**	multiparametric magnetic resonance imaging	**VTE**	venous thromboembolic disease

CASE 1

LINDA'S HOT FLUSHES ARE EMBARRASSING AT WORK

Linda is a teacher aged 52 years. You have seen her a few times for cervical screening and travel vaccinations. Linda says, 'I'm not ill, it's my age – these hot flushes are just getting so embarrassing when I'm teaching, but I don't suppose you prescribe hormones any more'.

QUESTION 1

What information do you need to obtain from Linda?

FURTHER INFORMATION

Linda last had a period 6 months ago. She says her bleeding has lightened over the last 18 months and her periods have been 8 weeks to 6 months apart. The flushes occur about 3 times per day and 3–4 times per night, and are sometimes associated with pricking sensations on her skin. Her weight has been fairly steady for the past few years. She has been married for 25 years, uses condoms for contraception and has had no other sexual partners in that time. She did a pregnancy test a few months ago, 'just in case', and this was negative. She has never smoked. Her cervical screening test was negative 18 months ago (all Pap smears have been normal); she has not yet had a mammogram.

QUESTION 2

What examination and investigations, if any, does Linda need?

FURTHER INFORMATION

Linda's blood pressure (BP) is 132/76 mmHg and her body mass index (BMI) is 24 kg/m^2. Physical examination is unremarkable and her blood tests and other investigations are within normal limits.

QUESTION 3

What management options would you discuss with Linda?

FURTHER INFORMATION

Linda decides to think about the options and to read more about hormone replacement therapy (HRT). She comes back 3 weeks later and advises she would like to try oestrogen for a few months. Linda asks for your opinion on the risks of HRT.

QUESTION 4

What would you advise Linda about HRT risks?

QUESTION 5

Which formulation of HRT is most appropriate for Linda? What information should you give her about how to take the medication?

QUESTION 6

Linda decides to try oral cyclical HRT and asks whether she needs contraception. How do you reply?

QUESTION 7

What is your follow-up plan for Linda?

CASE 1 ANSWERS

ANSWER 1

Linda is certainly at an age to be having climacteric (or perimenopausal) symptoms. The history at this point should include an exploration of any other menopausal symptoms, while ensuring Linda's hot flushes are not likely to be due to another cause. You should advise Linda you will be asking her a number of questions that may not seem relevant to the hot flushes, but that are necessary to help you understand her symptoms.

Questions should be asked about:

- the timing and severity of the hot flushes
- timing of periods and date of the last menstrual period
- whether there is any intermenstrual or postcoital bleeding
- whether Linda is sexually active, her obstetric and sexual history (including contraception) and if she experiences any dyspareunia or urinary symptoms
- whether sleep is affected – does she have night sweats?
- whether her weight is fluctuating or steady
- any symptoms of thyroid disease including palpitations
- any particular stresses at present or symptoms of anxiety or depression
- past medical history including any venous thromboembolic disease (VTE), breast disease
- family history, in particular, cardiovascular disease, osteoporosis, breast cancer
- smoking status and alcohol intake
- medication including over-the-counter (OTC) treatments
- her ideas and concerns about her symptoms.

ANSWER 2

If Linda has not had a 50-year-old health assessment, then this is a good time to offer it. Examination should include height and weight

measurement, waist circumference measurement and calculation of BMI, BP measurement and cardiovascular system checks. Although some guidelines recommend breast, pelvic and thyroid examination,[1] these should not be done as screening tests, but in relation to symptoms and past history.[2]

Given Linda's history, there is no need to check follicle stimulating hormone/luteinising hormone (FSH/LH) or oestrogen levels,[1] as these will not affect management. The 50-year-old health assessment includes lipids and urinalysis for protein.[2] If there are any symptoms to suggest other causes for the hot flushes then thyroid stimulating hormone (TSH), renal and liver function, and full blood evaluation (FBE) should be requested as appropriate for help with diagnosis, not as screening tests.[2] Fasting blood glucose should be done if there is a high risk of diabetes.[2]

Linda does not currently need a cervical smear but should be advised to have a mammogram and faecal occult blood test (FOBT) if she has not had these tests within the last 2 years.[2]

ANSWER 3

Given Linda's menstrual history and age, she is perimenopausal.[1] Linda should be advised that vasomotor symptoms such as hot flushes affect about 80% of women during the menopause transition[1] and about one-quarter of those affected will have severe symptoms.[3] There is no way of predicting when her periods or the hot flushes will stop. Perimenopausal vasomotor symptoms last 4–5 years.[4]

Her options include:

- Lifestyle interventions (eating a healthy diet, getting physical activity, losing weight, stopping smoking, reducing or stopping alcohol and caffeine,[5] reducing stress), where appropriate. This may help some women, although the evidence is limited.[6] In this instance, Linda already has a healthy lifestyle.
- Non-hormonal treatment, such as selective serotonin re-uptake inhibitors (SSRIs), selective noradrenaline re-uptake inhibitors (SNRIs), clonidine and gabapentin, for the vasomotor symptoms. However, while short randomised controlled trials have shown such medication to be more effective than placebo, there have been no long-term trials and side effects are common.[6]
- Complementary and alternative medicine (CAM) therapies.[6] Studies on the use of phytoestrogens for vasomotor symptoms are ongoing.[6] Current evidence of efficacy is conflicting for phytoestrogens and black cohosh, and studies on evening primrose oil, ginseng and St John's wort have shown no symptom control.[6]
- HRT. The therapeutic medication is oestrogen but as Linda has an intact uterus, she will need to take a combination of oestrogen and progestogen to reduce the risk of endometrial cancer.[7] If Linda decides to start HRT now, she will need to take continuous oestrogen with cyclical progestogen for 14 days. If Linda waits until she is postmenopausal (ie she has not had a period for 12 months), she could take continuous combined oestrogen and progestogen. Cyclical HRT causes a monthly bleed[8], which may be off-putting for women with infrequent periods. It is not contraceptive. Continuous HRT can cause breakthrough bleeding for 3 months but then amenorrhoea can be expected. Bleeding after 6 months should be investigated.[8] Mastalgia can occur.[8]
- Oestrogen in combination with a levonorgestrel intrauterine device (LNG-IUD). This regime can cause irregular bleeding for 3 months after insertion but then usually leads to amenorrhoea and so is beneficial for women with heavy bleeding.[3]

If she waits until she is postmenopausal, Linda also has the option of tibolone, which is a non-hormonal medication that alleviates vasomotor symptoms and helps prevent bone loss.[9] Side effects are uncommon but may include mild weight loss and fluid retention. As Linda is 52 years of age, a low-dose combined oral contraceptive is not recommended.[10]

ANSWER 4

A Cochrane review has indicated that HRT is likely to improve vasomotor symptoms.[7] Moreover, the 2013 Global Consensus Statement recommends that HRT is the most effective treatment for vasomotor symptoms such as hot flushes.[10] Linda can be advised that benefits are more likely to outweigh any risks for women under the age of 60 years, although randomised controlled trials have shown no significant increase or decrease in the risk of cardiovascular disease.[11] The absolute risk of VTE with oral oestrogen in women under 60 years of age, especially in the absence of other risk factors, is low.[12] The risk is even lower, almost non-existent, for women using transdermal oestrogen. Combined HRT increases the risk of breast cancer after 4–5 years of use, and as it increases breast density there is the risk of having an abnormal mammogram.[3] Linda's health profile suggests she is not at risk of osteoporosis, but HRT will prevent bone loss and fracture at her age.[8] Recent research has shown an increased risk of ovarian cancer, even when taken for <5 years, such that for every 1000 women over the age 50 years taking HRT, there may be an extra case of ovarian cancer.[13] Ovarian Cancer Australia has responded to this evidence with a statement stressing that ovarian cancer is a rare disease and that this increased risk still reflects a low lifetime risk for Australian women.[14] Common side effects of HRT include nausea, headache and breast tenderness (oestrogen effects), lowered mood and irritability (progestogen effects) and irregular or heavy bleeding (combination effects). HRT does not cause weight gain.[3]

ANSWER 5

As Linda still has her uterus, she cannot take unopposed oestrogen at this time. Therefore, she needs combination treatment with oestrogen and progestogen. The lowest effective dose of HRT should be prescribed.[3]

The options for delivery of the HRT are:

- Oral medication. There are a number of formulations of cyclical oral HRT available.[8,14,15] They differ in the types of oestrogen and progestogen, as well as dosage:
  - 1 mg oestradiol/10 mg dydrogesterone (low dose)
  - 2 mg oestradiol/10 mg dydrogesterone (medium dose)
  - 1 and 2 mg oestradiol/1 mg norethisterone (medium dose).
- Transdermal patches applied once or twice a week:[8,14,15]
  - 50 mg 17-β-oestradiol/140 mg norethisterone acetate (twice weekly application – sequential)
  - 50 mg 17-β-oestradiol/250 mg norethisterone acetate (twice weekly application – sequential).

These have the advantage of little or no risk of VTE and a lower total dose. Nausea is less common than with the oral tablets. They may cause skin irritation and, rarely, an allergic reaction.

- In combination with LNG-IUD:
  - Oral:
    - 1 mg 17-β-oestradiol
    - 1 mg oestradiol valerate
    - 0.3 mg conjugated equine oestrogen.
  - Transdermal oestrogen:
    - 25 mg/24 hours 17-b-oestradiol weekly
    - 25 or 37.5 mg/24 hours 17-β-oestradiol twice weekly.[8,15]

ANSWER 6

Most women are infertile during the perimenopause,[16] but Linda should still use a method of contraception until 1 year after her last period, as she is over 50 years of age.[17] She should continue to use condoms if she and her partner are happy to do so. As she will have bleeding on the HRT, she will not know when her last period would have been. She should therefore use condoms until age 55.[17]

ANSWER 7

Three months of treatment should be prescribed and Linda should be asked to monitor her hot flushes during this time. She should be reviewed a few weeks before the end of the course. If Linda reports symptom relief and no major side effects, and her BP is within the recommended range, she should be followed up again in 6 months. If there has been no symptom relief or if Linda has problematic side effects, discuss a change in dose or medication.[1]

Once Linda is happy with her treatment she should be reviewed every 12 months, and you should ask how long she wishes to continue the treatment. She should be advised that there is no specific recommended duration of treatment but because the risk of breast cancer is increased with the length of combined HRT treatment, staying on medication for more than 5–7 years should only be considered if the benefits outweigh the risks.[11] She should continue to have cervical smears and mammograms at the recommended intervals. Any abnormal vaginal bleeding needs investigation. If there is excessive or prolonged bleeding after 6 months of HRT, a transvaginal ultrasound is required, with endometrial biopsy as appropriate.[1]

RESOURCES FOR PATIENTS

- Contraception around the menopause. Available at www.patient.co.uk/health/contraception-around-the-menopause

RESOURCES FOR DOCTORS

- Jane FM, Davis SR. A practitioner's toolkit for managing the menopause. Climacteric 2014; 17: 1–16, http://informahealthcare.com/doi/pdf/10.3109/13697137.2014.929651
- The Royal Australian and New Zealand College of Obstetricians and Gynaecologists, College Statement C-Gyn 16. Hormone replacement therapy advice, www.ranzcog.edu.au/doc/hormone-replacement-therapy-advice.html
- The Royal Australian and New Zealand College of Obstetricians and Gynaecologists, College Statement C-Gyn 9. Management of the menopause, www.ranzcog.edu.au/doc/management-of-the-menopause.html

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CASE 2

BILL IS WORRIED ABOUT HIS PROSTATE

Bill, 55 years of age, is new to your practice. He presents explaining that he is worried about having prostate cancer. Bill's father has recently been diagnosed with metastatic prostate cancer at 79 years of age, and his uncle passed away from prostate cancer at the age of 75 years.

Bill is in generally good health and has no urinary symptoms or haematuria. He has essential hypertension, which is well controlled with lifestyle measures and amlodipine. Bill is slightly overweight but otherwise has no relevant comorbidities. He works as a librarian, is a non-smoker and drinks alcohol only socially.

QUESTION 1

What would you advise Bill about his risk of prostate cancer?

QUESTION 2

What would you explain to Bill regarding prostate cancer testing?

QUESTION 3

What is the value of prostate-specific antigen (PSA) testing for identifying cancer?

QUESTION 4

What can Bill do to improve the accuracy of the PSA test? What other blood tests may be useful?

FURTHER INFORMATION

Bill elects to have PSA screening. You order a PSA test and instruct Bill to abstain from sexual activity for the 2 days preceding the test. Bill declines a digital rectal examination.

Bill returns to the clinic the following week to discuss his results. The PSA is 2.5 µg/L. You subsequently choose to order a free PSA test, which is measured at 10.5%.

QUESTION 5

How would you interpret these results? Would you recommend any further actions?

FURTHER INFORMATION

Bill has a repeat PSA test 9 weeks later, which reveals a total PSA of 2.8 µg/L. He reassures you that he refrained from sexual activity in the days prior to the test and is not taking any undisclosed medications. You decide to order further diagnostic investigations before referral to a urologist for biopsy.

QUESTION 6

What further investigations might aid with the diagnosis of prostate cancer before referral for prostate biopsy?

FURTHER INFORMATION

Bill proceeds to a 3T multiparametric magnetic resonance imaging (mpMRI) scan of his prostate, which identifies no suspicious lesions and a prostate volume approaching the upper limit of normal at 35 cm^3. Because of Bill's concerns and family history, he also undergoes a 12-core random transperineal prostate biopsy performed by the urologist. This reveals 1/12 cores positive for Gleason 3 + 3 cancer in 5% of the biopsy core length. Bill's urologist discusses with him the management options and the decision is made to commence an active surveillance protocol.

QUESTION 7

What is included in an active surveillance protocol? What is the role of the GP?

FURTHER INFORMATION

Bill begins on an active surveillance program with no change in circumstances for several years. After 4 years of active surveillance, Bill decides to undergo a prostate MRI. A 3T mpMRI of the prostate identifies a 1-cm lesion of the right base peripheral zone. The urologist performs a targeted biopsy of the lesion, which detects a Gleason 4 + 3 carcinoma occupying 80% of the core length. This represents clear disease progression.

QUESTION 8

What are the treatment options available to Bill? What are the risks and benefits of these approaches?

FURTHER INFORMATION

After discussion with his urologist Bill proceeds to robotic assisted laparoscopic radical prostatectomy. His operation is uneventful with successful removal of the prostate with clear surgical margins. A follow-up PSA level at 6 weeks is less than 0.01 µg/L. Bill returns to you for a check-up at 6 weeks, complaining of erectile dysfunction and small amounts of urine loss requiring the use of one pad daily.

QUESTION 9

What advice would you offer Bill regarding his postoperative symptoms? What can be expected in a typical postoperative course following radical prostatectomy?

CASE 2 ANSWERS

ANSWER 1

The incidence of prostate cancer in men rises rapidly after 40 years of age.[1] The incidence in Australia is approximately 2 per 100 men at 55 years of age.[2] By the age of 85 years, almost 20% of men will be diagnosed with prostate cancer.[2] Additionally, the risk of prostate cancer is strongly influenced by family history. The relative risk of disease in men with one affected first degree relative is 2.46, compared with a relative risk of 3.71 in men with two affected first-degree relatives.[3] Higher risk of prostate cancer is also associated with second-degree relatives with the disease, such as uncles.

Bill is at a greater-than-average risk for prostate cancer. He is 55 years of age with one first-degree relative with the disease and one second-degree relative with the disease.

ANSWER 2

The optimal prostate cancer test is unclear. A method that accurately identifies clinically significant tumours while avoiding the detection of indolent cancers, in which risks of treatment outweigh benefits, remains elusive. Although randomised trial data demonstrate reduced prostate cancer-specific mortality by 21–44% in the least contaminated screened arms, the absolute mortality benefit of screening is very low and the likelihood of overdiagnosis or overtreatment is high.[4–7]

Currently, the typical screening tests would include a PSA test and possibly digital rectal examination.[8] In their latest guidelines, published in 2012, The Royal Australian College of General Practitioners advises against screening men for prostate cancer unless the patient specifically asks for it, at which time it would be appropriate to discuss the risks and benefits of screening with the patient.[8]

Testing for prostate cancer is not without risk. Patients will often undergo further investigations and treatment following an elevated PSA test. Prostate biopsy can be complicated by infection, bleeding and psychological distress. Furthermore, many men are identified with low-grade cancer, which will never become clinically significant, and are therefore exposed to risks of unnecessary treatment.[9]

The National Health and Medical Research Council (NHMRC) provides information for health practitioners on the benefits and risks of PSA testing for prostate cancer in asymptomatic men (refer to *Resources for doctors*).

In 2013, a set of consensus statements was released at the Prostate Cancer World Conference held in Melbourne.[10] A panel of experts in urology, oncology, general practice and epidemiology met to generate a list of guidelines that clarifies the current evidence on PSA screening, and presents reasonable and practical advice for general practice. The five consensus statements are:

1. For men aged 50–69 years, level 1 evidence demonstrates that PSA testing reduces prostate cancer-specific mortality and the incidence of metastatic prostate cancer.
2. Prostate cancer diagnosis must be uncoupled from prostate cancer intervention.
3. PSA testing should not be considered on its own, but rather as part of a multivariable approach to early prostate cancer detection.
4. Baseline PSA testing for men in their 40s is useful for predicting the future risk of prostate cancer.
5. Older men in good health with over a 10-year life expectancy should not be denied PSA testing on the basis of their age.

Bill should be educated about the benefits and risks of screening. It is worth informing him that most clinical guidelines and authorities, such as the Australian Cancer Council, do not support mass population screening but do recommend individualising the decision on the basis of an individual's risk and personal concerns.[7] Bill should be informed that he is at an elevated risk of cancer relative to the population. In Bill's case, the benefits of testing may be greater than the risks.

ANSWER 3

PSA, a glycoprotein produced by the prostate, is currently used for prostate cancer testing. PSA levels rise because cancer disrupts tissue barriers between the prostate and contiguous capillaries, facilitating an increase in serum PSA. Using a cut off of 3 µg/L, the PSA sensitivity for prostate cancer is approximately 32%, which rises to 68% for high-grade tumours. Its specificity for cancer of any grade is 91%.[11]

There are a number of explanations for an elevated PSA other than cancer. PSA may rise in the presence of benign prostatic hyperplasia, infection, sexual activity or perineal trauma.[12–14]

ANSWER 4

To avoid a falsely raised PSA result, patients should be advised to avoid sexual activity or masturbation for several days preceding the test, and to have the sample obtained in the morning because of diurnal fluctuation of PSA levels.[15] Conversely, PSA may be falsely low in patients taking 5-alpha-reductase inhibitors, thiazide diuretics or statins.[16]

There are several other blood markers that can be helpful in the evaluation of a patient with possible prostate cancer; however, no consensus has been reached on whether their measurement improves clinical outcomes.

- One option is measurement of free PSA levels. PSA is present as both a free unbound form as well as a form bound to other macromolecules. Patients with prostate cancer have lower relative levels of the free form. Measurement of free PSA following an initial positive PSA test increases cancer detection rates, particularly if free PSA is <10%.[17]
- A second, potentially helpful, option is a test referred to as prostate health index (PHI). This blood test measures several isoforms of PSA simultaneously and combines them into a single score derived with a mathematical equation. One constituent of the PHI is pro-PSA, a precursor substance of PSA, which preferentially leaks

into the bloodstream in men with prostate cancer. PHI is more predictive of clinically significant cancer than standard PSA.[18] This test is not subsided by the Pharmaceuticals Benefits Scheme (PBS) in Australia and would cost patients approximately $95.[19]

ANSWER 5

The reference ranges for PSA vary with patient age. The historically accepted normal range for a man aged 55 years is a PSA of up to 3.5 µg/L.

Bill's PSA of 2.5 µg/L is within normal limits. However, Bill's PSA result substantially exceeds the median PSA of 1.2 µg/L for a man aged 55 years.[20] The sensitivity of a PSA measurement above the upper limit of normal for prostate cancer is roughly 60%, meaning that up to 40% of cancers will be discovered in men within the normal PSA range.[20] By definition, those men with a result above the median, but still within the normal range, will have greater than average risk for prostate cancer. In a man such as Bill, whose pre-test probability for cancer is already high, a PSA above the age-related median adds to his risk profile.

There is still no accepted standard for the place of free PSA testing. Studies show that the lower the percentage of free PSA, the higher the likelihood of prostate cancer. The likelihood of cancer is small if free PSA is greater than 25%, a level often used as an indicator for or against the need for biopsy.[17] At 10.5%, Bill's free PSA is low. However, trials on free PSA have not validated its accuracy in patients with a total serum PSA below 4 µg/L. The significance of a low free PSA in Bill is therefore uncertain.[17,21]

Although Bill's PSA is not above the reference range, it is more than double the median level for his age. Given Bill's young age and prominent family history, additional investigations and follow-up would be reasonable. In the authors' experience, many clinicians will repeat the PSA test in 6–8 weeks to confirm the level remains elevated.

Asymptomatic prostatic inflammation may cause false-positive PSA readings. Consequently, some clinicians would also suggest that evaluation for asymptomatic bacteriuria be performed in concert with PSA screening.[22] This is accomplished with either urine dipstick or microscopy.[23]

ANSWER 6

There are several new imaging technologies that can provide vital information to the GP and specialist, which may guide treatment decisions.

- mpMRI is a recent technological advance that has improved the diagnostic approach to prostate cancer. The addition of functional diffusion-weighted imaging studies represents a significant enhancement in the ability to detect high-grade cancers. It also potentially avoids overdiagnosis of low-grade tumours, as these lesions are frequently undetectable by MRI at low volume.[24,25] A normal mpMRI in a patient with elevated PSA or an abnormal rectal examination is associated with a risk of clinically significant cancer of <10%. Similarly, an abnormal mpMRI indicates a >85% probability of cancer, most of which have intermediate or high-grade histology.[26] Another benefit of this technique is that it identifies a target area for biopsy, increasing biopsy yield and reducing the need for random biopsies.[26] That notwithstanding, high-quality data must be maintained or this technology will not deliver on its promise. Although there is no restriction regarding a need for specialist referral to obtain a prostate MRI, there is currently no Medicare rebate and irrespective of who requests it, prostate MRI will cost the patient in excess of $500.[27]
- Urinary tract ultrasound has a low positive predictive value for prostate cancer, but can provide other useful information such as prostate gland volume.
- Transrectal ultrasound alone has limited benefit in the early diagnosis of prostate cancer. A hypoechoic area sonographically is suggestive of prostate cancer although most cancers are invisible on ultrasound in the early stages. New three-dimensional Doppler techniques are currently being studied to address this pitfall.[28]

ANSWER 7

Bill has low-volume, low-grade prostate cancer. A Gleason score of 3 + 3 signifies the early histological phase of prostate cancer where prognosis is favourable and associated with a low disease-specific mortality over the next 10 years. Similarly, the more biopsy cores that contain cancer, the greater the disease burden: only one-twelfth of Bill's cores showed adenocarcinoma. Such tumours are likely to evolve slowly and it therefore may be preferable to avoid radical therapies and their side effects. Active surveillance is the method of postponing definitive therapy until evidence of disease progression arises. It is an increasingly accepted approach for low-risk disease because of its ability to minimise overtreatment. The risk of mortality from a favourable-grade cancer such as Bill's is <3% over 10 years on an active surveillance regimen.[29]

A typical active surveillance program involves regular PSA testing and surveillance biopsies. PSA testing is recommended every 4 months for the first year after diagnosis then every 6 months thereafter.[9] A surveillance biopsy should be performed by the urologist at 12 months to exclude histological progression of disease despite stable PSA, followed by biopsies every 2–3 subsequent years.[9] Digital rectal examination (DRE) is generally not incorporated into active surveillance. The role of prostate MRI in active surveillance is yet to be defined but may help avoid unnecessary biopsies in the future.[26]

Indications for curative intervention in a patient on active surveillance include:[9]

- progression to a high-grade tumour on biopsy
- progression to a high-volume tumour on biopsy
- PSA doubling time of <3 years
- significant PSA rise
- significant lesion on surveillance mpMRI
- change in patient preference towards definitive therapy.

GPs are central to an active surveillance program, where they may be responsible for regular patient reassessment and PSA monitoring.

ANSWER 8

Most prostate cancers detected with PSA are clinically localised and are amenable to treatment with any of radical prostatectomy, brachytherapy or external beam radiotherapy.[30] The presence of a high-grade tumour with a suspicious lesion on MRI is a clear sign of disease progression and warrants intervention.

Radical prostatectomy is a robust treatment with excellent outcomes for long-term cancer control. Prostate cancer survival at 23 years following early radical prostatectomy is 82%.[31] There is ongoing debate about the superiority of the various techniques, including robotic, laparoscopic and open surgery. The uptake of robotic surgery is growing but there are few comparative studies at present. The principal complications of radical surgery, including impotence and urinary incontinence, are probably influenced more by surgeon experience and skill than the technology by which the prostate is removed. However, laparoscopic and robotic surgery are associated with lower rates of infection, postoperative pain and bleeding than open surgery and result in earlier discharge from hospital.[32]

Brachytherapy is also a successful treatment modality. Brachytherapy is the direct implantation of radioactive seeds into the prostate, minimising irradiation of surrounding structures while maximising radiation dose delivery to the prostate. Brachytherapy is frequently associated with urinary tract toxicity, causing more irritative voiding symptoms and higher rates of urethral strictures than surgery. Salvage surgery for local recurrence is difficult following brachytherapy.[33]

External beam radiotherapy is associated with good cancer-specific survival, although treatment of local recurrence is difficult. Side effects are generally favourable, but may include radiation proctitis or cystitis.

Focal ablation therapy is an emerging treatment for prostate cancer and may become an alternative to standard therapies in future. Although long-term data are absent, early studies on focal treatment of a tumour with high-intensity focused ultrasound (HIFU) or electroporation (NanoKnife) have shown promising results. Focal therapy remains an experimental treatment not yet suitable for use outside clinical trials.[34]

ANSWER 9

Bill should be reassured that impotence and urinary incontinence are common early problems following prostate surgery.

Approximately 90% of patients will have returned to continence by 12 months following the operation.[35,36] Some patients will require a long-term safety pad for urinary losses, but the probability of severe incontinence requiring surgical correction is <5%. Return of urinary control is accelerated with early postoperative referral by the GP to a physiotherapist for pelvic floor exercises.[37] Although there is no clear evidence of benefit in the literature, instigation of a pelvic floor exercise regime prior to the operation is generally advocated.[38,39]

Impotence slowly improves with time but in some men, sexual potency never fully returns. Approximately 50% of patients still report erectile dysfunction at 2 years.[35] Rates of impotence are lower following bilateral nerve-sparing surgery. Men should be educated that optimal recovery of sexual function is usually attained by 2–3 years following the operation. Sexual rehabilitation with oral phosphodiesterase-5 (PDE-5) inhibitors taken 3 times weekly for up to 12 months improves recovery of erectile function.[40–42] There are no standardised protocols, but the authors would propose commencing a phosphodiesterase-5 (PDE-5) inhibitor at half dose for the first 2 weeks, followed by full dose if there are no side effects. Intracavernosal therapy may also be instituted and is usually encouraged if improvement is minimal on the PDE-5 inhibitors.

CONCLUSION

Prostate cancer is common and potentially life threatening. Mass population screening for prostate cancer remains controversial but individualised testing is appropriate in certain situations, especially in men with a family history of the disease or in those who are particularly concerned. The diagnosis of prostate cancer must be uncoupled from intervention. PSA testing remains the fundamental baseline investigation.

The introduction of mpMRI may potentially transform the way prostate cancer is diagnosed and managed. By improving the diagnostic yield of prostate biopsies and restricting the number of unnecessary biopsies being performed, mpMRI should improve detection of significant tumours and reduce both the overdiagnosis and overtreatment of low risk disease. The role of mpMRI in prostate cancer screening is yet to be determined.

There are a variety of treatments available for men with localised cancer. The choice between active surveillance and immediate curative therapy depends on clinical circumstances and tumour characteristics, as many lower grade tumours never progress to clinically significant cancers. When the decision is made for definitive treatment, robotic-assisted laparoscopic radical prostatectomy is assuming a prominent role in contemporary urological practice. It has the potential for less bleeding, less pain and earlier discharge from hospital compared with open surgery.

RESOURCES FOR DOCTORS

- National Health and Medical Research Council, PSA testing for prostate cancer in asymptomatic men, www.nhmrc.gov.au/_files_nhmrc/publications/attachments/men4d_psa_testing_asymptomatic_men_140304.pdf
- The RACGP Red Book, guidelines for preventative activities in general practice 8th edition, prostate cancer, www.racgp.org.au/your-practice/guidelines/redbook/early-detection-of-cancers/prostate-cancer/

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CASE 3

SARA REQUESTS A PAP TEST

Sara is 45 years of age and usually attends your practice with one or more of her children, who are aged 12, 10 and 8 years. She presents today for a routine Pap test. Her last test, 2.5 years ago, was reported as negative and her notes state she never had an abnormal test.

QUESTION 1

What are the current guidelines for initiation, cessation and frequency of cervical cancer screening in Australia?

QUESTION 2

Apart from a general medical history, what further history should you take as part of a Pap test consultation?

FURTHER INFORMATION

Sara's last menstrual period was 2 weeks ago. She has a regular 5/28–30 day cycle with no postcoital or intermenstrual bleeding, dysmenorrhea, pelvic pain or vaginal discharge. While sensitively asking about pain during or bleeding after intercourse, you find that Sara has been single for 2 years following her divorce; however, she had a 'one-night stand' with a male sexual partner at a work conference 3 months ago. Sara says she is deeply embarrassed about this episode and on gentle questioning, she tells you he did not use a condom. She is very relieved to talk to you as she has recently met a potential new sexual partner through an online dating site. Sara tells you she was prompted to come for a Pap test because she was hoping it will give her 'the all clear'. You explain that the Pap test does not check for STIs and advise her that she should consider other tests.

QUESTION 3

What questions should you ask to assess Sara's risk of human immunodeficiency virus (HIV) and other bloodborne viruses?

FURTHER INFORMATION

You confirm Sara has no history that would indicate a high risk of HIV, syphilis or hepatitis B but advise that, although she is at a low risk for these infections, you can still offer her testing.

QUESTION 4

What tests for sexually transmissible infections (STIs) would you recommend as part of an asymptomatic screen for Sara?

FURTHER INFORMATION

Sara has never smoked, has no personal or family history of venous thromboembolism (VTE) and no contraindications to any hormonal or non-hormonal method of contraception. She would like more information about the hormonal intrauterine device (IUD) as she likes the idea that she does not need to remember to take a pill each day and that it will reduce her menstrual blood loss.

QUESTION 5

What factors influence a woman's options for contraception?

QUESTION 6

What advice should Sara be given on the use of the hormonal IUD?

FURTHER INFORMATION

You order Sara's blood tests for HIV, syphilis and hepatitis B. You also perform a speculum examination to view the vagina and cervix, and to take a Pap test and endocervical swab for chlamydia nucleic acid amplification test (NAAT).

QUESTION 7

Do you perform a bimanual pelvic examination at the time of the Pap test?

FURTHER INFORMATION

You receive Sara's test results 2 days later. All test results are normal except for her chlamydia test, which is positive.

QUESTION 8

How will you manage Sara's positive chlamydia diagnosis?

QUESTION 9

Does Sara's diagnosis of uncomplicated chlamydial cervicitis preclude her from having an IUD inserted?

QUESTION 10

You arrange for Sara to see one of the GPs in your practice who inserts IUDs. Sara asks you about her risk of infection related to IUD use, what do you tell her?

CASE 3 ANSWERS

ANSWER 1

The current National Health and Medical Research Council (NHMRC) guidelines[1] recommend that women who have ever been sexually active have Pap tests every 2 years from the age of 18–20 years, or 2 years after first sexual activity, whichever is later. Women are advised to continue biennial Pap tests until 70 years of age, at which time they can stop if they have had two negative tests within the previous 5 years.[2]

New recommendations for cervical cancer screening by The Medical Services Advisory Committee (MSAC) are currently under consideration by the Australian government.[3] Changes to the screening program are not expected to be implemented until 2017, so it is important for women to continue 2-yearly Pap tests until the new recommendations are released.

ANSWER 2

Important aspects of Sara's history to obtain include:

- menstrual history: last menstrual period, cycle length, duration and heaviness of bleeding; presence of dysmenorrhoea, any intermenstrual bleeding or postcoital bleeding
- any abnormal vaginal discharge
- any pelvic pain including dyspareunia.

It is important to specifically ask about postcoital and intermenstrual bleeding, as they may indicate cervical pathology.[4] If intermenstrual bleeding persists, chlamydia testing, transvaginal ultrasonography and referral to a gynaecologist are advisable. Persistent postcoital bleeding requires exclusion of other causes, such as chlamydia, and referral for colposcopy regardless of the Pap test result.[4]

A Pap test consultation also provides an ideal opportunity to enquire about your patient's sexual relationship history, her contraceptive needs and risk of sexually transmissible infections (STIs). Additionally, cardiovascular, bone and breast health are important issues to address opportunistically with women in midlife.[5]

ANSWER 3

Ask Sara:

- about any intravenous drug use
- about any past partners who may have been intravenous drug users or were men who have sex with men
- whether past partners were from countries with a high prevalence of HIV
- whether she has a history of STIs

ANSWER 4

The New South Wales STI Programs Unit (STIPU) STI testing tool (*http://stipu.nsw.gov.au/wp-content/uploads/147045_GP_STI_Testing_Tool_2012.pdf*) recommends:

- chlamydia polymerase chain reaction (PCR) NAAT on an endocervical sample. A single swab can be taken after cytology sampling (PCR testing can be performed on a liquid-based cytology sample without the need for an additional swab)*
- HIV, syphilis and hepatitis B serology tests.

*A self-collected vaginal swab or first-pass urine sample (first part of the urine stream taken at any time of day, preferably ≥1 hour since last passing urine, although as little as 20 minutes is acceptable) for NAAT testing is an adequate screening test for asymptomatic women who are not having a speculum examination.

You should explain each of the STI tests you are recommending and their window period. As 3 months have passed since exposure, Sara does not require follow-up testing. You should also discuss how the patient will get the results and the need for contact tracing if any of the results are positive. The STIPU contact-tracing tool is a useful resource (refer to *Resources for doctors*). As with any test it is important to obtain informed consent for HIV testing.[6] You explain that there are very effective treatments for HIV although there is no cure.

In considering Sara's sexual health, it is important to address her contraceptive needs. Although Sara is 45 years of age and her fertility is likely to be low, she is menstruating regularly and therefore at risk of unintended pregnancy, which can be especially challenging for a woman nearing the end of her reproductive life.

ANSWER 5

There are many factors that influence a patient's choice of contraception. These include medical eligibility, method effectiveness, impact on sexual spontaneity, the need for STI protection, the impact of side effects and desire for non-contraceptive hormonal benefits on factors such as menstrual blood loss, acne and hirsutism, as well as personal preference.[7]

Medical eligibility

It is important to first identify any contraindications to methods of contraception and to then discuss the suitable options so women (and their partners) can make an informed decision about what suits them best. The Medical Eligibility Criteria (MEC) for contraceptive use provides a framework for the safe prescribing of contraception and is an invaluable guideline for practitioners. First developed by the World Health Organization, it has been adapted by the Faculty of Reproductive and Sexual Health in the UK[8] and is included in *Contraception: an Australian clinical practice* handbook.[7] It categorises contraceptive methods according to medical conditions.

Table 1 provides a summary of MEC categories and examples in each category.

It is important to ask about contraindications, particularly for combined hormonal contraception. Risk factors for, or a past history of, VTE, smoking (as she is aged over 35 years), migraine with aura or other risk factors for stroke, hypertension, obesity and breast cancer history are just some of the contraindications to combined hormonal contraception.[7,8]

Efficacy

There is strong evidence that long-acting, reversible contraception (LARC) methods (intrauterine methods, contraceptive implants and, to a lesser extent, contraceptive injection) are more effective with typical use than shorter acting methods[9] (the pill and vaginal ring), barrier methods (male or female condom and diaphragm) or fertility-awareness-based methods.[10] The LARC methods do not require the user to 'remember to do something' every day or for every act of sex.

The GP's role is to provide evidence-based information to support informed choice and some middle-aged women like Sara may find a less effective method acceptable given the relatively low fertility risk at this age.

Useful patient tools are available to help explain contraceptive efficacy (refer to *Resources for patients*).

STI protection

Male and female condoms are the only methods that offer both STI protection and contraception but as they have high contraceptive failure rate, women at risk of STIs should be advised to use condoms as well as an additional more effective contraceptive method.[7]

Women of all ages should be made aware that the 1.5 mg single-dose levonorgestrel emergency contraceptive pill (ECP) is available without a prescription at pharmacies. The ECP should be taken as soon as possible after unprotected sexual intercourse and, although licensed for use up to 72 hours after unprotected sexual intercourse, its use can be effectively extended to 96 hours.[7]

Table 1. Medical eligibility criteria for contraceptive use[7]

MEC Category	Examples
MEC 1 No restriction for use	Nulliparity and IUD use Past PID or past asymptomatic chlamydia or gonorrhoea assuming no current risk factors for STIs and IUD use
MEC 2 Can generally be used, but more careful follow-up may be required	Previous VTE and progestogen-only method Migraine without aura or migraine with aura current or within the last 5 years and hormonal IUD
MEC 3 Use of the method is not usually recommended unless other methods are not available or not acceptable; may require expert clinical judgement and/or referral to a specialist contraceptive provider	Smoking <15 cigarettes per day in a woman aged 35 + years and combined hormonal method. Consistently elevated systolic blood pressure of 140–159 or diastolic blood pressure of 90–94 mmHg and combined hormonal methods
MEC 4 Use poses an unacceptable health risk.	Migraine with aura and combined hormonal method Past history of VTE and combined hormonal method

ANSWER 6

As she is over 45 years of age, Sara should be advised that the hormonal IUD can be used as an effective method of contraception for 7 years.[7] She should be reminded that she can combine the hormonal IUD with condoms to simultaneously prevent unintended pregnancy and STIs in the future.

ANSWER 7

While a bimanual examination is essential before an IUD insertion to determine method eligibility, there is ongoing debate about the role of routine bimanual pelvic examination in asymptomatic women during cervical screening, but it can still be offered if the patient is informed about its limitations.[11–13]

A bimanual examination is, however, essential for all women with gynaecological symptoms suggestive of upper genital tract pathology, including pelvic pain, unscheduled bleeding or heavy menstrual bleeding.[7]

ANSWER 8

You can support Sara by providing:

- **Information** – Explain that chlamydia is a common infection that responds well to simple treatment and provide Sara with a patient information sheet such as the fact sheet on chlamydia from the Let them know website (www.letthemknow.org.au).
- **Treatment** – As Sara has no signs or symptoms of pelvic inflammatory disease (PID), pelvic pain, deep dyspareunia, cervical excitation, cervical/vaginal discharge, fever, she can be treated immediately with a single oral dose of azithromycin 1 g.[14]
- **Information on contact tracing** – Advise Sara that she needs to let any sexual partners in the past 6 months know that they need testing and treatment. The NSW STIPU contact tracing tool has useful strategies to facilitate this contact tracing. The *Let Them Know* website is a useful tool that supports the generation of anonymous SMS messages for partners of index cases infected with chlamydia or other STIs.
- **Prevention advice** – Discuss the importance of using condoms (together with effective contraception) in the future to reduce her chance of further STIs and HIV.
- **Retesting** – Repeat Sara's chlamydia test in 3 months to detect reinfection.[14]

The new *STI Management Guidelines*[14] are an invaluable GP resource for managing STIs (www.sti.guidelines.org.au).

Chlamydia is a notifiable infection for public health purposes. This is largely the responsibility of the diagnosing laboratory but depends on local legislation and varies between states and territories (in South Australia, Western Australia and Victoria the treating clinician is also responsible for the notification in a dual notification process).

ANSWER 9

No, Sara is still eligible for an IUD (MEC 1).

If the woman has not developed symptoms or signs of PID, consideration can be given to inserting the IUD 7 days from the time she and her partner have been treated, providing pregnancy can be excluded.[7] Women infected with chlamydia may have a false positive chlamydia PCR NAAT result for up to 6 weeks after successful treatment[14] and waiting for a negative test result may place a woman at unnecessary risk of an unintended pregnancy.[15]

ANSWER 10

All women who have an IUD inserted need to be aware that there is an increased, but low, risk of infection (1 in 300) in the first 20 days after

insertion after which this risk returns to baseline.[7] Suspected infection in women using an IUD can be treated with antibiotics, often without needing to remove the IUD, as long as symptoms settle. As for all women who have had an IUD inserted, Sara should be advised to return for review 4–6 weeks after insertion to assess for potential insertion-related complications including expulsion perforation and infection. She should be advised to use condoms with new partners and have STI screening as per the routine recommendations.[7,14]

CONCLUSION

Sara is very satisfied to know that she has a negative Pap test result, that her chlamydia infection has been successfully treated and that she has a plan for effective contraception that will also reduce her menstrual blood loss. She is now aware of the importance of condom use with new sexual partners and that STI testing is available if possible exposure occurs.

RESOURCES FOR PATIENTS

- The let them know website supports contact tracing and provides frequently asked questions, fact sheets, examples of conversations, emails, text messages (SMS) or letters patients can use to inform their partner/s of an STI diagnosis and the need for partner treatment and testing. An SMS or email can be sent directly from the site, either personally or anonymously, www.letthemknow.org.au

RESOURCES FOR DOCTORS

Cervical screening

- Screening to prevent cervical cancer: guidelines for the management of asymptomatic women with screen-detected abnormalities www.nhmrc.gov.au/guidelines-publications/wh39
- Australian Government Department of Health cancer screening website www.cancerscreening.gov.au. This website provides information on cancer screening programs including the Cervical Screening program. It includes information for patients in many different languages and information for health professionals including useful resources and publications.

STIs

- The new Australian STI Management Guidelines for use in primary care is an invaluable GP resource for managing STIs. This online resource can be used on a smart device and is extremely user-friendly, providing a quick reference for diagnosing and managing STIs, www.sti.guidelines.org.au
- The NSW STIPU website has an excellent general practice resources section, which includes the STI testing tool and the STI contact tracing tool for general practice. It also has links to online education on sexual health, stipu.nsw.gov.au/general-practice-resources/sti-clinical-management/

Contraception

- Contraception: an Australian clinical practice handbook. 3rd edn, contraceptionhandbook.org.au
- Family Planning Alliance Australia website includes contact details and web links for each member state's Family Planning Organisation with factsheets, resources and information about clinical services on each state's site, fpallianceaus.org.au
- The efficacy of contraception methods card is a useful resource to use with patients to discuss the different methods of contraception in the framework of efficacy, fpallianceaus.org.au/wp-content/uploads/2014/11/FPAA_Efficacy_SCREEN.pdf
- Guidance for management of troublesome vaginal bleeding with progestogen-only long-acting reversible contraception (LARC), www.fpnsw.org.au/fpaa_guidance_for_bleeding_on_progestogen_only_larc.pdf
- Bateson D, McNamee K, Harvey C, Stewart M. Contraception for women aged over 40: an important but neglected area. Medicine Today 2012;13:27–36, www.medicinetoday.com.au/2012/august/article/contraception-women-aged-over-40-important-neglected-area#.VNvgk9L9mM8
- The website from the Faculty of Sexual and Reproductive Healthcare of the Royal College of Obstetricians and Gynaecologists in the UK faculty has a wealth of information and latest updates. The clinical guidance section is particularly useful, www.fsrh.org

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CASE 4

JIM IS SHORT OF BREATH

Jim, aged 38 years, presents to you with periods of shortness of breath and fatigue on exertion of the body. He is a regular soccer player and has difficulty breathing while running. He describes being easily fatigued and unable to catch his breath. He has not had any symptoms in the past year.

QUESTION 1

What are some possible causes for Jim's shortness of breath? What additional information would you ask from Jim?

FURTHER INFORMATION

As Jim has been actively playing soccer, you assess whether these symptoms could be due to exercise-induced asthma. A chest radiograph reveals cardiomegaly. Jim's electrocardiogram (ECG) is normal apart from non-specific, frequent, premature ventricular contractions of multiple morphologies. You refer Jim to a cardiologist, who conducts an echocardiogram.

QUESTION 2

How would an echocardiogram be helpful in this case? What is assessed on the echocardiogram?

QUESTION 3

What echocardiogram features are supportive of dilated cardiomyopathy (DCM)?

FURTHER INFORMATION

Jim was diagnosed with DCM on his echocardiogram. His echocardiography showed a severely dilated left ventricle with severe global hypokinesis and mild atrial enlargement. His ejection fraction was 25%.

QUESTION 4

What causes DCM?

QUESTION 5

How else may Jim have presented?

QUESTION 6

What treatment options are available?

CASE 4 ANSWERS

ANSWER 1

Common causes of chronic dyspnoea include:[1]

- asthma
- chronic obstructive pulmonary disease (COPD)
- interstitial lung disease
- myocardial dysfunction
- obesity/deconditioning

You should also ask Jim if he has had any recent exertional chest pain, to exclude angina or ischaemic heart disease. A smoking history may indicate COPD, whereas a history of asthma may indicate an exacerbation of asthma. Ask Jim about his occupational history including any exposure to toxins that may lead to interstitial lung disease. You should also ask Jim about any family history of cardiovascular disease.

ANSWER 2

An echocardiogram provides more detailed information than that provided by a standard X-ray. In Jim's case, an echocardiogram was ordered as there were signs of cardiomegaly on his chest X-ray. An echocardiogram can also be performed for other indications including suspected left ventricular heart failure or pulmonary hypertension. Systolic heart failure can also be visualised as a dilated left ventricle with a reduced ejection fraction.

The left ventricular volume is an important prognostic indicator for patients with ischaemic or DCM.[2] Colour flow Doppler echocardiography provides further information for patients where pulmonary embolism, pulmonary hypertension, or diastolic dysfunction are being considered. Diastolic dysfunction manifests on an echocardiogram as diminished early diastolic filling and reduced ventricular compliance and clinically with dyspnoea on minimal exertion.[3,4]

ANSWER 3

Cardiomyopathies are diseases of the cardiac muscle that lead to a deterioration in heart function.[5] In DCM, a part of the ventricle expands, resulting in impaired systolic function and, subsequently, further enlargement and remodelling of the heart.[5,6] A dilated ventricle requires more energy for effective contraction.[7]

A diagnosis of DCM requires evidence of dilation and impaired contraction of the left ventricle or both ventricles (such as ejection fraction <40 %).[8,9] The echocardiogram in DCM should show lower ventricle cavitary dilatation and poor wall motion. In addition to changes in the lower ventricle, other findings include left atrial enlargement. The enlargement of the remaining heart chambers is primarily due to lower ventricular failure, but may be secondary to the primary cardiomyopathic process.[10]

Idiopathic DCM is the primary indication for cardiac transplantation.[11] The prevalence of idiopathic DCM is underestimated and recent estimates are 1 in 250 individuals.[10]

ANSWER 4

Some causes of DCM are listed in *Table 1*.

Table 1. Some causes of DCM[11–13]

Cause	Examples	
Ischaemic heart disease	• Coronary heart disease	• Myocardial infarction
Structural heart disease	• Pressure or volume overload	• Valvular • Left-to-right shunts
Drugs	• Anthracyclines (eg doxorubicin) • Chemotherapeutic agents	• Cocaine • Imatinib • Sympathomimetics
Endocrine	• Acromegaly • Cushing's disease • Hypothyroidism	• Phaeochromocytoma • Thyrotoxicosis
Immune-mediated	• Autoimmunity (eg systemic lupus erythematosus, Churg-Strauss syndrome)	• Hypersensitivity myocarditis (allergen, serum sickness, vaccines) • Transplantation rejection
Infiltrative	• Amyloidosis	• Sarcoidosis
Infectious	• Bacterial (Staphylococcus, Streptococcus) • Viral (Coxsackievirus, Enteroviruses, HIV, Influenza, Parvovirus)	• Fungal • Mycobacterial • Parasitic (toxoplasmosis, trichinosis, Chagas disease) • Rickesttsial (Q fever, Rocky Mountain spotted fever)
Metabolic	• Electrolyte disturbances (hypocalcaemia, hypophosphatemia)	• Nutritional deficiencies (carnitine, selenium, thiamine)
Toxins	• Cadmium • Carbon monoxide • Cobalt	• Ethanol • Lead • Mercury
Others	• Radiation	• Tachycardia-mediated

As there are many causes of DCM,[12] finding a specific cause for an individual case may be difficult. Common causes include viruses and gene mutations, which are now recognised to be common among patients with idiopathic DCM. Other factors include infection, toxins and alcohol exposure.

ANSWER 5

Other presenting manifestations can include atrial and/or ventricular arrhythmias.[10] Jim describes mainly an exertional dyspnoea and reduced exercise capacity. He could have also presented with symptoms of orthopnoea, paroxysmal nocturnal dyspnoea and peripheral oedema. Some patients may only present with vague constitutional symptoms and non-specific weight loss, and may complain of fatigue.[14]

On further examination, Jim may have had signs of congestive cardiac failure, such as hypotension, elevated jugular venous pressure (JVP), pulsatile liver, displaced and diffuse apex beat, third and fourth heart sounds, and bibasal crepitations. Pulmonary oedema is thought to be a result of increased hydrostatic pressure in the right side of the circulation as a result of the failing left ventricle.[15]

ANSWER 6

Jim will not be able to play competitive soccer and will also need to consider lifestyle changes. Non-pharmacological interventions are the cornerstone of heart failure therapy.[16] You give Jim strict instructions to significantly reduce his sodium and red meat intake. A diet restricted to 2 g of sodium a day and 1.5 litres of fluid is imperative and may eliminate the need for diuretics. Jim should enrol in cardiac rehabilitation involving aerobic exercise.[17]

Treatment for individuals with symptomatic DCM is recommended. It is aimed at management of heart failure symptoms as well as prevention of the natural progression of the disease.[18] Angiotensin converting enzyme inhibitors, beta-blockers and implantable cardiac defibrillators (ICD) are considered when indicated.

Jim is prescribed carvedilol 3.125 mg twice a day and spironolactone 12.5 mg once a day. As he is affected by light-headedness and dizziness, his first doses of carvediolol were titrated. He is also being worked up for a surgical implantation of an ICD with cardiac resynchronisation therapy.

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CASE 5

JENNY IS HAVING NIGHT SWEATS

Jenny, 47 years of age, works full time in a high-profile position. She is fit and well and has no significant family history or previous medical history. She has three adult children. She explains that when she originally made this appointment 3 weeks earlier, she had not had a period for 3 months and was experiencing hot flushes and night sweats, which were interfering with her sleep and daily functioning. However, she now feels she is wasting your time as she has recently had a period and all her symptoms have completely resolved.

QUESTION 1

What is the most likely explanation of Jenny's fluctuating symptoms?

QUESTION 2

How would you explain to Jenny what physiological processes are occurring in her body?

QUESTION 3

What hormone tests would you order to diagnose menopause?

FURTHER INFORMATION

Jenny and her husband use condoms for contraception. She wonders whether she needs to continue using contraception if she is now 'menopausal'.

QUESTION 4

Does Jenny require contraception? If so, what are her options?

FURTHER INFORMATION

Jenny returns 6 months later with symptoms of fatigue, heightened anxiety, mood swings and a loss of libido. Her husband was recently retrenched and has admitted that he had an affair with a much younger woman 12 months ago. Two of her children have recently moved out of home and her elderly mother is now in care after falling and fracturing her hip. Jenny continues to experience erratic periods, occasional flushes and night sweats.

QUESTION 5

What are the possible causes of Jenny's symptoms?

QUESTION 6

What options for management of Jenny's symptoms do you discuss?

FURTHER INFORMATION

Jenny commits to a regular walking program and commences yoga classes. Her employer adjusted her workload without significantly affecting her income. She and her husband attend regular relationship counselling and make time to have a regular 'date night'. She enlists the help of her siblings and children to assist with the care of her elderly mother. Jenny is not keen to use medications or hormones unless absolutely necessary.

Jenny returns after 6 months feeling much better. Her physical symptoms are manageable and not interfering with her daily activities. Her periods are becoming increasingly erratic and sparse. She attends to discuss what she should be doing now and what to expect.

QUESTION 7

What advice would you give Jenny now?

CASE 5 ANSWERS

ANSWER 1

The most likely explanation for Jenny's symptoms is that she is experiencing menopausal transition. Although she is not yet menopausal, her natural ovarian function is starting to wane, ovulation is erratic and she has fluctuating hormone levels.

Menopause is defined as the final menstrual period a woman experiences following cessation of ovarian function. A woman is considered postmenopausal after 12 consecutive months of amenorrhoea that is not due to other factors such as hysterectomy, progesterone intrauterine device (IUD) or endometrial ablation.[1,2]

The average age of menopause is 51.5 years and usually occurs at 45–55 years. However, 1 in 10 women become menopausal before the age of 45.

The menopausal transition is defined as the period between the onset of menstrual irregularity to final menses.[1] The transition from full ovarian function to cessation of function can last 4–6 years.[2] It is often referred to as a time of 'hormonal chaos' as erratic ovarian activity results in fluctuating hormone levels and symptoms.

ANSWER 2

Confirmation of Jenny's understanding of the normal process is essential, particularly as there is a substantial amount of information available via the media, internet, friends, family, advertising and health professionals.[3] These sources vary considerably in accuracy and motive. A simple explanation of the physiology underlying the menopausal transition, including the functions of hormones and the effects of hormonal deficiencies on short- and long-term health, may eliminate many concerns.[2]

A way to explain menopause might include the following information:[4]

Women are born with a finite number of ova, which decline from birth. From puberty, the ovaries usually release one ovum each month, which triggers the hormonal changes resulting in regular periods and cyclical changes. As the supply of ova diminishes, the ovaries begin to release them erratically, which in turn results in erratic hormone levels and erratic periods. This is the stage of hormonal chaos where hormone levels are unpredictable and fluctuate. Symptoms such as hot flushes occur when the ovary has not released an ovum at the usual time and oestrogen levels drop – then suddenly the hot flushes stop because your ovary has spontaneously released an egg and given you a natural 'dose of hormones'. This period of time, called the menopausal transition, can continue for 4–6 years. Very rarely do the ovaries 'switch off' overnight (unless removed surgically). Eventually, when no active ova remain, ovarian function ceases completely and hormone levels remain persistently low.

ANSWER 3

There are no blood tests to diagnose menopause. In postmenopausal women, with no ovarian reserve, anovulation results in follicle stimulating hormone (FSH) and luteinising hormone (LH) levels becoming persistently

elevated and oestradiol levels declining. In premenopausal women, hormone levels will vary according to the phase of the menstrual cycle and may also vary from cycle to cycle. During the menopausal transition, hormone levels will be variable, depending on current ovarian activity, and are therefore of limited value in the diagnosis of menopause.[2,5,6]

Salivary hormone tests, often used to prescribe the unregistered compounded 'bio identical hormone products', are costly and there is no scientific evidence that they are accurate or relevant to menopausal symptoms.[5,7,8]

Anti-Müllerian hormone (AMH) levels, often used to measure ovarian reserve in infertility treatments, is currently not considered a reliable marker or predictor of menopause. Levels of this hormone can be undetectable for several years before menstrual cycle irregularities and the last menstrual period occur.[6,9–11]

Diagnosis of menopause is based on clinical presentation alone and is defined retrospectively after 12 consecutive months of amenorrhoea not due to any other medical or surgical process.[1,2] Management of menopausal symptoms depends primarily on the impact of symptoms on daily life and not on blood test results.[2]

Hormone levels may be of some use in assessing premature ovarian failure or in women who have had a previous hysterectomy, endometrial ablation or are using a levonogestrel IUD Hormone levels are of no use in women who are current users of the oral contraceptive pill (OCP) or 'bio-identical' hormone preparations (troches and creams).

ANSWER 4

Yes, Jenny does require contraception for at least 12 months from her last natural period. During the menopausal transition, ovulation is still occurring sporadically and unpredictably. Women whose menopause occurs before the age of 50 should be advised to use contraception for 2 years after their last period. Women whose menopause occurs after the age of 50 should use contraception for 12 months after their last period.[12,14]

Contraceptive options will depend on symptom profile and risk factor analysis.[12,13] Women who experience menorrhagia or menstrual irregularity may benefit from a levonogestrel IUD, which will also provide endometrial protection if oestrogen therapy is required for menopausal symptoms. Presuming there are no cardiovascular contraindications, a low-dose OCP will provide cycle control, contraception and relief of menopausal symptoms, if required. Women are then advised to cease the OCP at the age of 51 years, because of increased cardiovascular risks, and to use barrier methods of contraception until menopausal status is defined.[12] If Jenny remains asymptomatic, she can safely continue to use condoms for contraception. Hormone replacement therapy (HRT) is not contraceptive as doses are not high enough to suppress ovarian function.[12,13]

ANSWER 5

Jenny's symptoms may be directly related to fluctuating hormone levels associated with the menopausal transition. Medical conditions such as anaemia, thyroid disease and unstable diabetes may mimic menopausal symptoms and can be excluded with simple blood tests such as thyroid function tests, full blood evaluation and fasting blood glucose tests.[2]

Midlife is also a time in a woman's life where many other psychosocial factors may affect her mood and symptoms.[15,16] Jenny is currently experiencing significant changes in her personal life.

Further conversation with Jenny will help determine possible factors in her personal life that may contribute to her different symptoms. These include:

- financial or relationship issues following her husband's retrenchment
- experiencing the effects of an 'empty nest' where her role as a mother has altered as her children leave home. Alternatively, women can become frustrated with 'full nest' or 'revolving door' syndromes where children either will not leave home or come and go as they want[23]
- insecurity in her marriage, particularly as she sees physical changes of ageing in her body such as fat redistribution, dry skin, loss of muscle tone, urinary incontinence, loss of fertility and libido. Her altered body image will be compounded with the revelation that her husband has previously 'sought greener pastures'[17]
- being the primary carer for her elderly mother, who is now dependent on her for care and support (ie her role as a daughter has changed)
- having a full-time job while caring for her family and elderly mother, resulting in inadequate time allowed for her own relaxation and self-care, resulting in fatigue[18]
- sleep deprivation due to night sweats or depression/anxiety.

Libido may be influenced by a range of factors. Declining oestrogen levels during the menopausal transition, may cause a dry vagina, pelvic floor dysfunction, loss of sexual desire and sleep deprivation. However, psychosocial factors such as relationship status, body image, self-esteem and depression will also significantly affect libido.

Jenny's hormone changes and external stressors may have contributed to the development of depression, particularly if she has previously suffered with postnatal depression.

ANSWER 6

Jenny requires a multidisciplinary approach as her hormonal status is only one factor among various external stressors common in midlife. These may include family and relationship issues, socio-economic concerns, ability to adapt to changes associated with ageing, and general health and wellbeing.

- Reinforce lifestyle interventions such as diet, exercise,[19] smoking cessation and reduction or cessation of alcohol intake.
- Stress the importance of time management and life balance. This may require the support and input of other family members and employers.[18]
- Suggest counselling to assist with relationships, improve self-esteem, teach relaxation and stress management techniques to manage depression/anxiety disorders.
- Hot flushes may be managed simply by avoiding potential triggers such as caffeine, alcohol and spicy foods, or wearing appropriate clothing (ie layers).
- Hormone therapies such as the OCP or HRT may be helpful.

- Antidepressant/antianxiety medications such as selective serotonin reuptake inhibitors (SSRIs) and serotonin-noradrenaline reuptake inhibitors (SNRIs) may also be appropriate.

ANSWER 7

It is important for Jenny to understand that every woman's experience of menopause is unique. Some women have symptoms, some do not, some will need HRT, others will not, some need investigations, others do not. It is not possible to predict which women will experience disabling symptoms and which women will experience minimal symptoms. Information must be specific to the woman's particular situation and based on a thorough assessment of all interplaying factors – hormonal, psychosocial, cultural, general health, external stressors and lifestyle.[4,20]

Midlife is also an important time to address preventive health issues and assess potential risk factors that may affect Jenny's short- and long-term health. These include cardiovascular risk profile, cancer risks, osteoporosis and fall risk. Jenny needs to be particularly aware of the long-term consequences of oestrogen deficiency such as osteoporosis, pelvic floor dysfunction and the increased risk of cardiovascular disease and breast cancer with age.[20, 24]

Once a thorough history and physical examination have been completed, the majority of women will not need further investigations other than updating routine preventive health screening status (Pap smear, mammogram, fasting lipids, glucose).[24] Women could be offered the option of having a dual energy X-ray absorptiometry (DXA) scan at this time to assess their baseline risk of osteoporosis (note, DXA is not covered by Medicare Benefits Schedule (MBS) for routine screening purposes). Additional investigations should be judiciously chosen and targeted to investigate a specific finding or for analysis of risk factors.[21]

Once all information has been gathered, a list of issues relevant to Jenny can be determined and, from there, her overall management plan can be defined. She will then be able to make informed decisions and take control of her own health management.[4,20]

RESOURCES FOR PATIENTS AND DOCTORS

- International Menopause Society, www.imsociety.org
- Australasian Menopause Society, www.menopause.org.au
- The Jean Hailes Foundation, www.jeanhailes.org.au
- National Heart Foundation, www.heartfoundation.org.au
- RACGP Guidelines for preventive activities in general practice 8th edition (the red book), www.racgp.org.au/redbook

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ACTIVITY ID: 25263

STAGES OF LIFE: MIDLIFE

This unit of *check* is approved for 6 Category 2 points in the RACGP QI&CPD program. The expected time to complete this activity is 3 hours and consists of:

- reading and completing the questions for each case study
- you can do this on hard copy or by logging on to the *gplearning* website, http://gplearning.racgp.org.au
- answering the following multiple choice questions (MCQs) by logging on to the *gplearning* website, http://gplearning.racgp.org.au
- you must score ≥80% before you can mark the activity as 'Complete'
- completing the online evaluation form.

You can only qualify for QI&CPD points by completing the MCQs online; we cannot process hard copy answers.

If you have any technical issues accessing this activity online, please contact the *gplearning* helpdesk on 1800 284 789.

If you are not an RACGP member and would like to access the *check* program, please contact the *gplearning* helpdesk on 1800 284 789 to purchase access to the program.

QUESTION 1

Clementine, 46 years of age, presents for advice about contraception. She has a history of migraine with aura. Which of the following forms of contraception would be listed under medical eligibility criteria category 3 or 4 (MEC 3/4) for Clementine?

A. Combined hormonal contraception
B. Hormonal intrauterine device (IUD)
C. IUD
D. Progestogen-only method

QUESTION 2

Clementine returns to see you 2 years later for her routine Pap smear. She and her partner decided to use condoms for contraception but she has not had a period for the past 10 months and asks if she still requires contraception. What advice would you give her?

A. If Clementine does not have any periods for the next two months she will no longer require contraception.
B. Clementine can now be considered menopausal and no longer requires contraception.
C. If Clementine does not have any periods in the next 2 months, she should continue to use contraception for a further 2 years.
D. If Clementine does not have any periods in the next 2 months she should continue to use contraception for a further 12 months.

QUESTION 3

Clementine returns to see you 6 months later. She has not had any periods since her last visit but has been experiencing hot flushes during the day and night, which she finds distressing. She has heard about hormone replacement therapy (HRT) but does not fully understand if it is considered a safe treatment option or would be effective in controlling her hot flushes. What can you tell Clementine about the risks and benefits of HRT?

A. HRT may improve her symptoms and as she is under 60 years of age, the benefits are more likely to outweigh any risks.
B. Randomised controlled trials have shown a significant increase in the risk of cardiovascular disease.
C. Randomised controlled trials have shown a significant decrease in the risk of cardiovascular disease.
D. There is a high risk of venous thromboembolism even in women without other risk factors.

QUESTION 4

Which of the following non-hormonal treatment options has been shown to be beneficial in alleviating postmenopausal vasomotor symptoms?

A. Phytoestrogens
B. Tibolone
C. St John's wort
D. Ginseng

QUESTION 5

Louise, aged 51 years of age, is tested for STIs and found to be positive for chlamydia. She has no other infections or symptoms of pelvic inflammatory disease (PID). How would you manage this diagnosis?

A. Treat with a single oral dose of azithromycin 1000 mg and re-test in 3 months to detect re-infection.
B. Treat with doxycycline 200 mg twice a day for 7 days and re-test if symptoms persist.
C. Advise Louise that sexual partners she has had only in the past 3 months will need testing for chlamydia.
D. Advise Louise that sexual partners she has had only in the past 3 months will need treatment for chlamydia.

QUESTION 6

Which of the following is one of the Melbourne consensus statements on early detection of prostate cancer?

A. For men aged 50–69 years, there is no evidence that prostate-specific antigen (PSA) testing reduces prostate cancer-specific mortality or the incidence of metastatic prostate cancer.

B. For men in their 50s, level 1 evidence shows that PSA testing alone is reliable for early prostate cancer detection.

C. Baseline PSA testing for men in their 40s is useful for predicting the future risk of prostate cancer.

D. Older men in good health with over a 10-year life expectancy should not be subjected to PSA testing.

QUESTION 7

Which of the following can falsely elevate PSA levels?

A. Sexual activity in the days preceding the test

B. 5-alpha reductase inhibitors

C. Thiazide diuretics

D. Statins

QUESTION 8

A typical active surveillance program for a patient diagnosed with low-grade prostate cancer includes:

A. PSA testing and digital rectal examination (DRE) every 6 months after diagnosis and a surveillance biopsy at 12 months if PSA levels are elevated

B. PSA testing and DRE every 4 months for the first year after diagnosis every 12 months thereafter

C. PSA testing every 4 months for the first year and every 6 months thereafter, and a surveillance biopsy at 12 months after diagnosis and every 2–3 years thereafter.

D. PSA testing every 4 months for the first year and every 12 months thereafter, and a prostate MRI at 12 months after diagnosis.

QUESTION 9

A diagnosis of dilated cardiomyopathy (DCM) requires:

A. Evidence of increased wall motion.

B. Evidence of impaired contraction of both ventricles.

C. Evidence of dilation and impaired contraction of the left ventricle or both ventricles.

D. Evidence of decreased wall thickening.

QUESTION 10

Which of the following is recommended as a non-pharmacological treatment for DCM?

A. Fluid intake of at least 2 L/day

B. Regular, moderate physical activity

C. Sodium intake of <1 g/day

D. A high-protein diet