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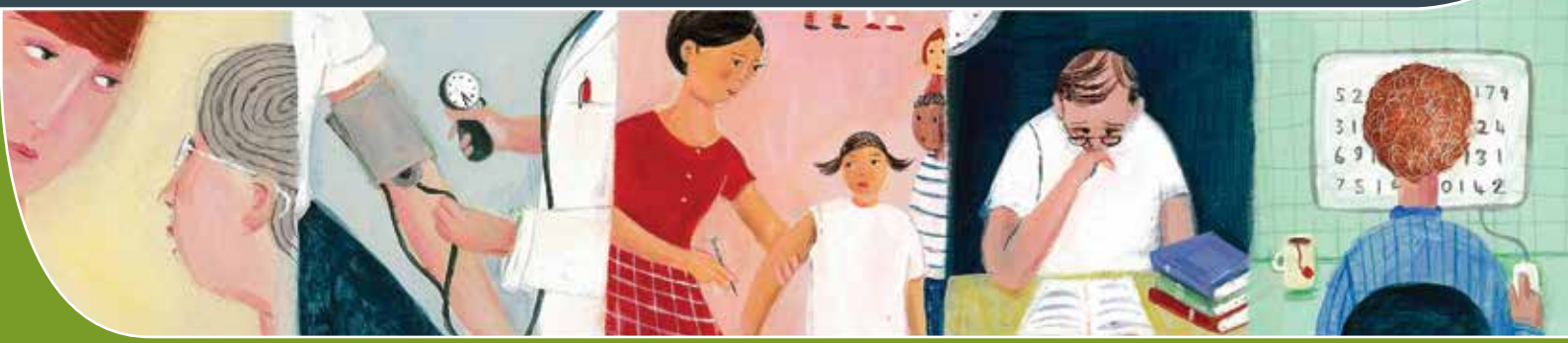
Independent learning program for GPs



Unit 496 July 2013

Sexuality and sexual health

RACGP

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Independent learning program for GPs

Sexuality and sexual health

Unit 496 July 2013

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

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This unit of *check* on sexuality and sexual health covers one of the more challenging and sensitive aspects of general practice. Often patients are reluctant to speak about their sexuality and may not be forthcoming about this topic. Asking patients about their sexuality in a non-threatening and comfortable way is not always easy, but GPs need to be respectful and non-judgemental of their patients' identities.

This issue of *check* looks at clinical scenarios in relation to various aspects of sexuality, and offers advice about ways to explore problems and issues of sexuality in different situations.

We would like to thank the author, contributors and reviewer for providing a wealth of information about sexuality and sexual health for this unit of *check*.

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The learning objectives of this unit are to:

- demonstrate a way of eliciting information about a person's sexuality in a non-threatening and non-judgemental way
- write a list questions that can be used for all patients when taking a sexual history
- develop a checklist of tests recommended for men having sex with men
- list the exceptions to confidentiality that need to be discussed with patients
- evaluate contraception methods for different life stages
- identify ways to make your practice more inclusive of gender diversity.

We hope this edition of *check* will be helpful when consulting about sexuality with your patients.

Kind regards

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ABBREVIATIONS AND ACRONYMS – SEXUALITY

FGM/C	female genital mutilation/cutting	HIV	human immunodeficiency virus	SDA	strand displacement amplification
FSH	follicle stimulating hormone	IUD	intrauterine device	STI	sexually transmitted infection
FtM	female to male	IV	intravenous	TMA	transcriptional mediated amplification
GLBTI	gay, lesbian, bisexual, transgender and intersex	LNG-IUD	levonorgestrel-releasing IUD		
HEADSS	Home and environment, Education and employment, Activities, Drugs, Sexuality, Suicide/depression assessment	MSM	men who have sex with men		
		MtF	male to female		
		NAAT	nucleic acid amplification test		
		PCR	polymerase chain reaction		

CASE 1

HALIMA NEEDS A TEST FOR CHLAMYDIA

Halima, aged 24 years, is an international student from Egypt, studying for a Masters degree at a local university. Halima hasn't attended your practice before. Halima seems a little embarrassed, and says that she needs a chlamydia test because she had treatment for chlamydia infection a few months ago and was advised to be tested again in 3 months. You ask her which clinic she attended for the chlamydia treatment and she tells you that it was a large clinic in the city where she had a termination of pregnancy.

QUESTION 1

Halima has presented for her sexual health. What are important attitudes and preliminary discussions for taking a sensitive sexual and reproductive history in general practice?

QUESTION 2

In taking a sexual history, what useful questions can you ask about risk factors for sexually transmitted infections (STIs) (including HIV and syphilis)?

QUESTION 3

What questions can you ask about symptoms of STIs?

QUESTION 4

What questions can you ask a female patient about reproductive history?

FURTHER INFORMATION

Halima doesn't currently have a regular sexual partner and last had vaginal sex using a condom with a casual male partner 6 weeks ago. Her last period was 3 weeks ago and was normal in timing, bleeding pattern and associated symptoms. She has had two other male partners in the last 12 months and used withdrawal when she had vaginal intercourse. She had an unplanned pregnancy, which resulted in a termination of pregnancy, 3 months ago. Her chlamydia infection was picked up on screening and she was asymptomatic. Halima also had a Pap test, which was normal. Halima didn't start any ongoing method of contraception at the time of the termination of pregnancy as she didn't have a regular sexual partner. Halima seems surprised that you are willing to talk about her sexual health with her as she didn't realise that GPs could help with this.

QUESTION 5

Halima has presented for a sexual health consultation. In general practice, do you need to take a comprehensive sexual history prior to offering STI screening or contraceptive advice?

FURTHER INFORMATION

Halima comes from country where female genital mutilation/ cutting (FGM/C) may be practised.

QUESTION 6

How can you sensitively ask a woman about FGM/C?

CASE 1 ANSWERS

ANSWER 1

It is most important that your attitude is non-judgemental.

Before asking any questions, it is important that you explain:

- about confidentiality/privacy (and exceptions – if she is at risk of harm, suicide or harming someone else)[2]
- why you are asking the questions that you will be asking (e.g. to assess risk, to help work out what tests are needed)
- that some questions may be quite personal.

Ask permission to take the history and reassure the person that they do not have to answer a question if they prefer not to.

It is important not to assume anything about sexual history, attraction, identity or behaviour. A patient's gender, age or cultural background (or even marital status) doesn't enable you to know their sexual behaviour and potential sexual health issues.[3]

Normalise your questioning (e.g. 'I ask all my patients about these things') so that your patient knows that they are not being judged and so that you are confident and practised.

ANSWER 2

Questions about risk factors for STIs include the following.

- Are you sexually active?
- When did you last have sex?
- When did you last have sex with someone else (change of partner)?
- Are your partners male, female or both? (Men who have sex

with men have higher rates of most STIs, including human immunodeficiency virus (HIV) and syphilis.)

- Are any of your partners from overseas (high prevalence countries)? Have you had sex overseas?
- Are any of your partners men who have sex with men, intravenous (IV) drug users, HIV positive or have an STI?
- Have you had an STI?
- What type of sex did/do you have – oral, vaginal, anal? Receptive or insertive (give or receive, top or bottom)?
- Was the sex consensual?
- Do you use condoms? What percentage of the time? For what type of sex? Do you use the condom for all of the intercourse, or just for ejaculation? Have you had any condoms break? Are you able to negotiate condom use with your partner/s?

Other risk assessment questions include asking about tattoos, blood transfusions, drug and alcohol use, and number of sexual partners in the past 3 months and the last 12 months.

ANSWER 3

Questions that need to be asked about symptoms of STIs include asking about:

- discharge (urethral, vaginal) or stained underwear
- itch
- pain (including superficial or deep dyspareunia)
- lumps or bumps
- sores, ulcers or fissures
- the site of symptoms – anal, vaginal, urethral, oral
- urinary symptoms
- throat symptoms
- anal symptoms – bleeding, discharge, pain
- systemic symptoms such as fever, rash, joint inflammation
- in females: menstrual history, including last normal menstrual period, postcoital bleeding and intermenstrual bleeding.

ANSWER 4

Questions about a reproductive history include the following.

- How many pregnancies have you had (including miscarriage and termination of pregnancy)?
- Do you need contraception?
- Are you planning a pregnancy? How would you feel if you found out you were pregnant?
- What contraception are you using/have you used in the past?
- Do you use withdrawal as a method of contraceptive?[4,5]
- Have you taken emergency contraception? Are you aware that it is available over the counter at pharmacies?
- Are your Pap tests up to date?

ANSWER 5

No, not always.

Opportunistic chlamydia screening should be offered to all sexually active patients under 30 years of age[6] and can be offered without taking a detailed history.[7] For example, you might say 'We recommend testing for all sexually active people under 30 for chlamydia, and the test is done with a simple urine test. Would you like to do that test today?'

Likewise, opportunistically asking women if they need contraception if they are presenting for other health complaints may be very useful, particularly for patients from overseas who may not be aware that GPs are able to provide this service and do it routinely. Patients may not be aware of the range of contraceptives available (particularly the long-acting reversible methods), and may not have an understanding that in Australia it is considered good practice to be prepared with contraception and condoms to prevent unintended pregnancy and infections.[8]

ANSWER 6

When asking a patient about FGM/C, use value-neutral non-judgemental questions such as, 'Do you have a traditional cutting?' or 'Have you been circumcised?'.

FEEDBACK

FGM/C may occur in many countries of Africa as well as parts of the Middle East and Asia (including Indonesia, India, Malaysia, Israel and Iraq). FGM/C is not a religious practice. It is not legal to be performed in Australia, but there are many women living in Australia who have had this performed. FGM/C can vary from ritual pricking of the clitoris to infibulation, which involves removal of clitoral and labial tissue and fusing of the labia so that only a small hole is left for urine and menstrual blood.[1]

CASE 2

ADELE HAS LOW LIBIDO

Adele, aged 49 years, consults you complaining that her sex drive is very low. She has no desire to have sex with her husband of 5 years, Stephan, and this is placing a strain on their relationship. Adele has been your patient for many years. She has good health and takes no medications. You know that Adele has two sons from her first marriage, aged 18 and 26. Adele separated from her first husband 17 years ago.

QUESTION 1

What history would you like to obtain from Adele to assess her low libido?

QUESTION 2

What are common factors in low libido in women?

QUESTION 3

Is it unusual for a woman in a relationship such as Adele's to experience low sex drive?

FURTHER INFORMATION

Adele has had two relationships. She married her first husband, Mark, at the age of 22, after an unplanned pregnancy early in their relationship. She felt a high sex drive early in this relationship but their sexual activity lessened during their relationship with busy work and parenting roles. They divorced soon after the birth of their second child, when Mark met a new partner and left Adele. Adele's life was then extremely busy, taking sole care of her two children, and she rarely thought about sex. Adele fell in love with Stephan 6 years ago and after a whirlwind romance they married. Adele felt strong sexual desire with Stephan for the first 2 years and enjoyed sex, although she found Stephan to have high expectations of her sexual performance. Initially this was exciting, but gradually Adele has found that Stephan is constantly pressuring her to have sex and he makes snide comments to his friends about a lack of sex, which Adele finds humiliating. Stephan is very physically demonstrative but is often quite critical of Adele and her children. Adele now finds herself avoiding physical closeness with Stephan as she knows that he will expect sex. Adele and Stephan use condoms for contraception. Adele has regular periods. She works full time and manages the home, as Stephan has traditional ideas about gender roles in housework. Adele's mother is widowed and has mild dementia. Adele's sons live at home with the youngest in his final year of school.

QUESTION 4

What factors in Adele and Stephan's relationship and lifestyle may be affecting her libido?

QUESTION 5

What are the principles of management for Adele?

FURTHER INFORMATION

You refer Adele to a relationship counsellor. She returns to see you 6 weeks later in great distress. She tells you that she is enjoying sex again and her relationship has improved following help from the counsellor. However, she is at the clinic today having experienced a condom breakage and she is very afraid of unplanned pregnancy. She acknowledges that fear of pregnancy concerns her and interferes with her enjoyment of sex. She would like to consider more effective contraceptive options.

QUESTION 6

What are Adele's options for emergency contraception?

QUESTION 7

At age 49, what options do Adele and Stephan have for ongoing contraception?

CASE 2 ANSWERS

ANSWER 1

For Adele, a woman with low libido in a relationship, the history will need to include questions about the following.

- What is going on sexually? Do she and Stephan have sex and how often?
- How do she and Stephan negotiate sex?
- What is her sexual enjoyment – does she enjoy sexual pleasure or orgasm alone or with Stephan? Does she experience superficial or deep dyspareunia? Does she have any other pain associated with sex, which may not be genital or pelvic?
- What is the quality and dynamics of the relationship – is there goodwill in the relationship? What are the patterns of communication and interaction in general and with regards to sex?

Take a thorough history about:

- the perception of libido – both Adele's and Stephan's perception of the low libido, including who is actually concerned about the low libido, what is the perception of blame for this and what impact it is having on the relationship
- Adele's physical health – general health, fatigue, medications, hormonal status (pregnancy, breastfeeding, menopause), alcohol and drug use, sexual and reproductive health
- Adele's mental health – stress or poor self-esteem
- the social history of both partners – women often juggle many roles and responsibilities.

ANSWER 2

Common factors in low libido in women are the following.

- Relationship duration – female desire will naturally decline as they move on from the early romantic phase of the relationship, often declining much more than a man's desire.
- Women are generally less sexually motivated than men (although they may still enjoy sex).
- The media portray an unrealistic picture of women with high libido and athletic sexual performance, and often the perception that sex is only for the thin and young.
- A woman's libido will be easily affected by factors such as stress and fatigue.

ANSWER 3

It is common for women to have low motivation for sex (over 50% in an Australian survey[9]) and to not feel a strong desire to initiate sex once a relationship is established. Although women may experience less lust than in the initial stage of the relationship, they may find pleasure in sex with their partner if the relationship and the sex are good.

ANSWER 4

Relationship and sexual factors that may be affecting Adele's libido are:

- unrealistic expectations about female libido and associated blame
- unhelpful pattern of behaviour with desire discrepancy – Adele withdraws, Stephan pursues
- performance anxiety
- critical or negative communication
- physical discomfort because of female lack of desire and physical readiness for sex with lack of lubrication and possibly condom use
- previous unplanned pregnancy, anxiety about pregnancy, failure of previous marriage when sex became less frequent.

Lifestyle and social factors that may be affecting Adele's libido are:

- fatigue
- multiple roles and distractions
- stress and pressure
- cultural expectations (e.g. a female may be expected to take the role of carer for ageing relatives)
- inequitable share of housework.

All of these important factors are contributing to Adele's low libido and it is not surprising that she isn't much interested in sex!

ANSWER 5

The principles of management for Adele are as follows:

- Ask – be willing to ask about sexual problems.
- Listen – take a thorough history of the problem and possible causes and impact.
- Assess – what is the problem, is it a relationship and/or sexual problem, is there pathology? Use a biopsychosocial approach:
  - assess medication, drug and alcohol use
  - assess for general health as any chronic medical condition that results in pain, fatigue or depressed mood that may affect libido (so optimising management may assist)
  - assess hormonal status as changes such as during menopause (or breastfeeding) may have an impact.
- Advise – normalise and explain common problems; provide specific suggestions such as recommended reading (see *Resources*).
  - Adele and Stephan could work on reducing the factors that inhibit Adele's desire for sex (such as being too tired or being fearful of unplanned pregnancy), and increasing factors that boost desire (such as communication, non-sexual affection or compliments).[10] They may find it helpful to schedule in sex as it may not happen spontaneously.
  - Suggest trying a lubricant if hormonal changes are an issue.
  - Self-help exercises can be used to increase focus on touching and pleasurable sensations such as Sensate-focus exercises.[10] This type of exercise may be suggested and explained by the GP or by a sexual and relationship counsellor.
- Refer – if needed (e.g. relationship counselling, sexual counselling).
- Motivate and follow-up.

ANSWER 6

Adele's two main options for emergency contraception are:[11]

- oral levonorgestrel 1.5 mg, which can be taken up to 4 days after sex (and can be used without harm up to 5 days, but with much lower efficacy), is available over the counter.
- copper intrauterine device (IUD) insertion up to 5 days after sex.

ANSWER 7

At age 49 years, Adele's fertility is diminishing rapidly; the average age of menopause in Australia is 51 years.[12] International[13] and Australian[11] guidelines recommend that combined hormonal contraception (the combined oral contraceptive or combined hormonal vaginal ring) and the injectable contraceptive are not used from the age of 50 years, due to unacceptable risks of cardiovascular complications.

Options for women aged 50 years and over, with higher typical use efficacy than male condoms, are:

- progesterone-only pill
- contraceptive implant
- IUD (hormonal or copper)
- male or female sterilisation.

Other methods, such as the female condom, diaphragm, natural family planning or the withdrawal method, have similar or lower typical use efficacy than the male condom, which Adele and Stephan are currently using.

- Male condoms are 98% effective and female condoms are 95% effective at preventing pregnancy but only when used consistently and correctly.
- In typical use, male condoms are only 82% effective and female condoms are only 79% effective at preventing pregnancy.[14]

Explain to Adele the efficacy of available contraceptive options as well as her relatively low fertility. The risk of unplanned pregnancy with lower efficacy contraceptives needs to be balanced with any potential risks of higher efficacy contraceptives (such as procedural risk with IUD insertion or sterilisation).

FEEDBACK

While the chance of pregnancy over 50 years of age is exceptionally low, there is evidenced-based guidance[15] for assisting women in deciding when to cease hormonal contraception at menopause. Key points include the following.

- **For women using non-hormonal contraception, contraception can be ceased after 12 months of amenorrhoea in women over the age of 50 years and after 2 years of amenorrhoea in women below the age of 50 years.**
- **Follicle stimulating hormone (FSH) levels cannot be used as an indicator of ovarian failure in women using combined hormonal contraceptive methods (which suppress FSH levels), but can provide guidance for women aged over 50 years using the progestogen-only pill, implant or levonorgestrel-releasing IUD (LNG-IUD) who are amenorrhoeic. Women with FSH levels ≥30 IU/L on two occasions 6 weeks apart need only continue the method for another 12 months.**
- **Contraception is not required beyond the age of 55 years.**

CASE 3

VICTOR'S MUM IS WORRIED

Victor's mother, Lin, is a regular patient. At a recent visit Lin mentioned that she was concerned about her son Victor, aged 17 years. Victor is starting to receive poor marks at school and she was upset on coming home recently to find Victor at home on a school day. She says she intends to organise an appointment for Victor to see you. You know that Victor's family are ethnic Chinese from Malaysia who moved to Australia when Victor was aged 4 years. The family have a strong Christian faith. When you see that Victor has an appointment with you, you review his file and see that he is usually well. When you call Victor from the waiting room his mother comes in with him.

QUESTION 1

What should be your approach to this consultation with Victor and his mother, Lin, presenting together?

FURTHER INFORMATION

After briefly listening to Lin's concerns you then see Victor on his own. Victor seems guarded with his mother in the room, but once she has left and you explain confidentiality and the exceptions to confidentiality, Victor seems happy to talk to you. You explain that you would like to know a bit more about what is happening in his life and start a HEADSS (a psychosocial interview for adolescents – Home and environment, Education and employment, Activities, Drugs, Sexuality, Suicide/depression) assessment.[16] Victor lives at home with his parents and his younger sister, Julie. He says he is feeling pressure from his parents to achieve high grades and he has mixed feelings about attending church each week as he doesn't feel connected to the Christian religion. Victor acknowledges that his school marks have declined, and says he can't wait to finish school. On further questioning he tells you that he has had a falling out with his best friend and is being picked on by classmates. Victor used to play basketball but has recently stopped to avoid spending time with his peers. Victor doesn't take drugs and although he went to parties where he drank alcohol in the holidays, he does not drink alcohol regularly, nor does he binge drink. He does not smoke.

QUESTION 2

How do you ask Victor about sex without making assumptions about his sexuality or sexual behaviour?

FURTHER INFORMATION

Victor tells you that he isn't currently sexually active. When you ask him about sexual attraction, he tells you that he is attracted only to guys and has known about this attraction from the age of 10. He mentions that he feels OK about telling you this as he is used to seeing posters and pamphlets about gay health in your waiting room. Victor tells you that he is quite worried about having an STI, as he and a male family friend, John, of the same age, experimented with some gay pornography online and masturbated each other. He hasn't had contact with John since and Victor's messages on Facebook have been ignored. You ask Victor if he has told anyone about his sexual attraction. Victor becomes quite distressed and manages to tell you that he came out to his best friend at school, who then told other classmates, who are now bullying him. Victor is being called 'fag', feels physically threatened at school and fears travelling home after school. Victor has started leaving school early to avoid confrontation and is feeling depressed and alone. Victor has feelings of hopelessness for his future as he cannot see his homosexuality being accepted by friends or family. He feels overwhelmingly different and doesn't know anyone else who feels like he does. On specific questioning Victor has had fleeting suicidal ideation but no current plans or thoughts.

QUESTION 3

What information can you give Victor about his concern about STIs?

QUESTION 4

What STI screening would you advise for a sexually active man who is having sex with men?

QUESTION 5

What other health issues are more prevalent in same-sex attracted patients?

QUESTION 6

What are positive factors that will help mental health and improve resilience for Victor?

QUESTION 7

What consulting skills can you use to support Victor, who has same-sex attraction and is experiencing significant distress?

CASE 3 ANSWERS

ANSWER 1

Greet Victor and address questions to him directly. Explain at the beginning of the consultation that it is your usual practice to see a young person on their own, with the option of bringing the parent back at the end of the consultation. When you see Victor alone, explain that your discussion is private, and outline the exceptions (i.e. if a person is at risk of significant self-harm or harm by others, at risk of suicide, or at risk of physically harming someone else).[17] Add that you would explain to him if you felt that you needed to break confidentiality, and why. After your consultation with Victor, come to an agreement about what information, if any, you can share with his mother.

ANSWER 2

When asking about sexual history or sexuality, it is important not to make assumptions.

In asking Victor about sexual partner/s, it may help to normalise the process by using a third person approach such as, 'Many people your age are beginning to experiment with sex[17] is that something that you have started?' If he has, you can ask if his partners are male, female or both, such as, 'Is that with a guy, a girl or both?' If not, ask him about sexual attraction in the same way.

You may need to ask Victor some specific questions about sexual activity. Explaining why you are asking is key, so explain that this helps you to know if there is risk of infection, or helps with testing or advice. Ask about sexual practices – oral, vaginal and anal sex. With oral and anal sex, ask if he was 'giving' or 'receiving' (often called 'top' and 'bottom' with anal sex). Ask specifically if condoms were used for some or all of the sexual activity.

FEEDBACK

Making an assumption about heterosexuality will reduce the likelihood of disclosure of same sex attraction (or bisexuality).[3] So, rather than asking young males if they have a girlfriend, and young females if they have a boyfriend, find a neutral term such as 'partner' and ask about gender/s of partners. Also keep in mind that many people who have same-sex attraction or who have sex with people of the same gender may not identify with the labels homosexual, gay or lesbian. In Australia approximately 2% of adults identify as lesbian, gay or bisexual, whereas up to 15% report same-sex attraction.[18]

ANSWER 3

Mutual masturbation is very low risk for STI and Victor can be reassured.

Victor may have very little knowledge about STI risk with different sexual behaviours. Provide him with information about common STIs and how they are transmitted, with supporting written information.

Discuss condoms, how to use them correctly and where they can be bought. At subsequent consultations check for understanding and explain that some STIs may be asymptomatic and that some sexual activities have significantly higher risk.[19]

Estimation of transmission of HIV from an HIV-positive source is shown in *Table 1*.[19,20,21]

The estimated prevalence of HIV in gay males in Australia is 13%.[21]

Table 1. Estimation of transmission of HIV from an HIV-positive source

Receptive anal intercourse	1/120 – 1/30
Receptive vaginal intercourse	1/1000
Insertive anal intercourse	1/1000
Insertive vaginal intercourse	1/1000
Receptive oral intercourse with ejaculation	not measurable

ANSWER 4

Guidelines have been developed for STI testing for men who have sex with men (see *Table 2*).[22]

Table 2. Sexually transmitted infection testing guidelines for men who have sex with men

At least once a year: all men who have had any type of sex with another man in the previous year should be offered:

- pharyngeal swab for gonorrhoea NAAT (e.g. PCR, SDA, TMA) or culture
- anal swab for gonorrhoea NAAT or culture and chlamydia NAAT
- first void urine for chlamydia NAAT
- serology for HIV, syphilis, hepatitis A, hepatitis B, hepatitis C (if HIV positive or injecting drug use).

More frequent testing: 3–6 monthly testing is recommended for men who:

- have episodes of unprotected anal sex
- have had more than 10 partners in the past 6 months
- participate in group sex or use recreational drugs during sex.

HIV positive MSM: 3-monthly syphilis testing as part of routine HIV monitoring.

Repeat testing: People diagnosed with chlamydia or gonorrhoea should be retested in 3 months.

MSM = men who have sex with men; NAAT = nucleic acid amplification test; PCR = polymerase chain reaction; SDA = strand displacement amplification; TMA = transcriptional mediated amplification

*First void urine = initial part of the urine stream. Not first urine of the day and not midstream urine

Reproduced with permission of the STIs in Gay Men's Action (STIGMA) group.[22] Sexually transmitted infection testing guidelines for men who have sex with men 2010, STIGMA, Sydney. http://stigma.net.au/resources/STIGMA_MSM_Testing_Guidelines_2010.pdf

ANSWER 5

Due to homophobia, gay, lesbian and bisexual people have higher rates of mental illness and social issues, including:[23]

- depression
- anxiety
- substance abuse
- self-harm
- suicide
- violence
- abuse
- family rejection
- homelessness
- disconnection
- discrimination
- stigma
- seeking or accessing healthcare.

ANSWER 6

Positive factors for health are social supports, institutional support (e.g. school, work, healthcare), community connectedness, self-acceptance and being in a relationship.[23]

ANSWER 7

Consulting skills needed to support Victor include the following.

- Be respectful.
- Be self-aware of your own identity and assumptions (e.g. assumptions of heterosexuality).
- Emphasise and protect confidentiality.
- Normalise sexual variations such as homosexuality or bisexuality.
- Don't 'out' your patient if they don't (i.e. don't use term 'gay' if they don't use it).
- Be sensitive about not forcing disclosure.
- Understand that 'coming out' is a process and may follow the pattern of coming out to self, others, family, and then community. This is a very variable process. Also be aware that not all same-sex attracted people will identify as gay, lesbian or bisexual.
- Discuss with Victor if he is ready to disclose to family and/or school.
- If he is ready to disclose to family or school, explore possible positive and negative consequences and offer support.
- Support and follow up (including mental health, particularly suicide risk, and physical health).
- Refer to or suggest sensitive referral networks.
- Make your practice inclusive and welcoming by:
  - having signs (such as the rainbow symbol) or posters or visible policies that show an inclusive approach
  - providing registration forms that have options such as 'partnered' as an option, or 'preferred contact' instead of 'next-of-kin'
  - educating staff about same-sex attracted patients and confidentiality.[23]

FEEDBACK

Coming out usually coincides with first realisation of same-sex attraction in young people who are in open, accepting environments; however, in contexts where the environment is conservative, restrictive and homophobic, coming out will often be delayed after first realisation until the environmental context is more conducive (such as moving from a homophobic secondary school into the adult learning environment of university).[23]

CASE 4

MADDY REQUESTS CONTRACEPTION

Maddy, aged 16 years, has made an appointment to see you to request 'the rod'. She tells you that her friend has one and thinks it is awesome, and that she wants to use something that is safer than condoms. Her friend comes to your clinic. This is Maddy's first presentation to you as her family usually sees another local doctor. Maddy has come in on her own. She is a Year 9 student at the local high school. She is a non-smoker and tells you that she does not like drinking alcohol. On first presentation she looks well and healthy. Her periods are regular, between every 28–31 days and typically last 5 days. Menarche was at 13 years of age. She has no dysmenorrhea or symptoms suggestive of premenstrual tension.

QUESTION 1

Is Maddy able to consent to treatment with a hormonal contraceptive implant? What do you need to document in your notes? Do you need to discuss this with Maddy's parents?

QUESTION 2

What if this request was made by a young person aged 14 or 15 years? Does underage sex need to be reported? Does this fall under mandatory reporting?

FURTHER INFORMATION

Maddy has been sexually active with her boyfriend, Jack, aged 17 years, for a few months. She hasn't had any other sexual partners. She thinks Jack has had one other girlfriend. Maddy and Jack have had oral and vaginal sex. She tells you that they have always used condoms for vaginal sex with no slippages or breaks, and that they have not used condoms for oral sex.

QUESTION 3

Maddy is requesting the progestogen contraceptive implant. What are the important points to cover when counselling for this type of contraception? What are the benefits, side effects and contraindications?

QUESTION 4

What other contraceptive options are suitable for Maddy?

QUESTION 5

Maddy has come to see you on a school curriculum day and would find it difficult to return to your practice on a school day. Maddy is day 9 of a 28–31 day cycle. What options for timing of insertion can you discuss with Maddy?

QUESTION 6

Your advice to Maddy is to continue to use condoms to reduce the risk of STIs. What STI testing, if any, is appropriate for Maddy today? What sample/s would you use for testing?

FURTHER INFORMATION

You don't have time to offer implant insertion today, but you notice that your colleague who has recently trained in implant insertion has an available appointment in an hour, so you discuss this with your colleague and Maddy and they agree that you can provide Maddy with a prescription now so that she can attend for a Quick Start[11] insertion later in the day with your colleague.

QUESTION 7

What follow-up is needed?

CASE 4 ANSWERS

ANSWER 1

The ability for a minor under the age of 18 years to consent to treatment needs to be assessed against the laws of the relevant jurisdiction.

In South Australia, the *Consent to Medical Treatment* and *Palliative Care Act 1995* permits a child under the age of 16 years to consent to a medical treatment if this is corroborated in writing by at least one other medical practitioner who has personally examined the child before the treatment was commenced.[24]

In New South Wales, the *Minors (Property and Contracts) Act 1970* allows minors aged 14 years or over to consent to their medical treatment. However this Act also permits parents of children under 16 to grant consent, and does not deal with the potential conflict that may ensue.

Remaining jurisdictions are guided by the common law, and medical practitioners must determine whether the minor has the capacity to consider the treatment options and consequences. This is commonly referred to as the 'Gillick competent' child, or the 'mature minor'.[24] The level of intelligence and understanding required to validly consent is a question of fact. In assessing competency consider age, maturity, intelligence, education level, social circumstances (e.g. a HEADSS assessment[16]), as well as the complexity and nature of the treatment and associated risks.

In practice, a patient aged 16 requesting reversible contraception is likely to be a 'mature minor' and you should document their understanding of potential risks and benefits. Document that the young person is having (or would be having) sex and that it is in the best interest of the young person to have contraception.

In the case of a mature minor you do not need to obtain permission from a parent, but it is recommended that you discuss and document any pros or cons for the young person telling their parent. It is important that you discuss confidentiality and its exceptions[17] with Maddy.

ANSWER 2

A child who is 14 or 15 requesting contraception must generally be assessed as above in *Answer 1*.

The legal age of sexual consent in Australia is generally 16 or 17 years of age dependent on jurisdiction. Underage sex is dealt with by the relevant criminal codes, and in itself is not a reportable offence unless harm or abuse is suspected to be occurring. This would be similar to the situation of a patient disclosing use of illegal drugs. According to the Australian Institute of Family Studies, sex between peers who are close in age – with no power imbalance or violence – is not a legal issue. Therefore medico-legal assessment is generally around ability to consent to treatment as a 'mature minor' and the potential risk of harm.

Mandatory reporting obligations differ in each state and territory[25] and require a reasonable suspicion that a child has been, is being, or is likely to be harmed. An assessment of risk and protective factors, such as the HEADSS psychosocial assessment for adolescents, may be useful. If unsure, consult with a peer, medical defence organisation or discuss with the child protection agency in your state or territory.

ANSWER 3

It is important to discuss bleeding patterns when women begin using this form of contraception. All women will experience a change in their usual pattern and generally bleeding will become less regular. About 1 in 5 women experience amenorrhoea and 1 in 5 women experience prolonged, frequent or heavy bleeding.

Other adverse events listed in the product information as occuring in about 5% of women are headache, weight gain, acne, breast pain, emotional lability and abdominal pain. While mood changes, weight gain, headaches and loss of libido are reported, direct evidence is limited and there may not be a causal association with these. Acne may develop, worsen or improve. Local scarring may occur but is usually minor.[11]

The benefits of a long-acting progesterone implant include the highly effective contraceptive effect it has for a period of 3 years. This method is rapidly reversible and means that the woman does not have to remember daily oral contraception. Another benefit is that many women with dysmenorrhoea will experience an improvement in their symptoms.[11]

Contraindications listed in the product information to the use of a progesterone implant include pregnancy, breast cancer and other sex steroid sensitive malignancies, liver tumours (benign or malignant), severe liver disease, active thromboembolism and undiagnosed vaginal bleeding. The only absolute contraindication is breast cancer that has been active in the last 5 years.[11]

ANSWER 4

Other forms of contraception include combined hormonal contraceptives (the pill and the ring) and the progestogen contraceptive injection. An IUD could be considered if these methods were not suitable as nulliparity is not a contraindication to use.[11] Condoms are important in addition to these methods for STI risk reduction.

ANSWER 5

The options for timing include the traditional starting method and the Quick Start method. In the traditional starting method insertion is done on day 1–5 of the menstrual cycle, which gives immediate cover. If the woman is day 6 or later of her cycle, waiting for her next period to start contraception may increase risk of unintended pregrancy as a result of the delay.

The Quick Start regime can be used for most women and is particularly useful for women who need contraception that cycle, where it is difficult for a woman to return to initiate (e.g. receive implant insertion by a doctor) or if she has long or unpredictable cycles. Quick Start involves starting the hormonal method of contraception outside the recommended time even if the woman is beyond day 5 of the cycle. Using Quick Start balances the risk of conceiving while waiting to start the contraceptive method with the risk that an early pregnancy may not have been excluded. So, to reduce the implications of an unrecognised early pregnancy, the doctor needs to arrange a system for pregnancy testing in 4 weeks.

This recall and documentation is particularly important for methods such as the implant that can cause irregular bleeding and amenorrhoea, meaning a woman may be confused about symptoms of early pregnancy. The implant is rapidly reversible and inadvertent use early in pregnancy is thought to not affect the health of an ongoing pregnancy. If Quick Start is used, the method is not effective for the first 7 days. [11]

In summary, using Quick Start involves the following:

- starting beyond day 5 of the cycle, understanding the possibility that early pregnancy cannot be excluded
- using another method of contraception for the first 7 days
- carefully documenting instructions and putting in place a recall system for pregnancy testing in 4 weeks. In some patients it may be appropriate to check or remind them to do a pregnancy test at home rather than attend the clinic.

ANSWER 6

All young people under the age of 30 who are sexually active should be offered chlamydia testing.[6]

This can be done with first pass urine, vaginal (including self-collected), or cervical swab for PCR/NAAT testing. There is no role for blood testing for chlamydia. It is important to ask Maddy if she has been vaccinated for hepatitis B and human papilloma virus.[26]

A useful summary is provided in the STI testing tool on page 16.

ANSWER 7

Offer follow-up in:

- 4 weeks for pregnancy testing, irrespective of bleeding (could be done via phone call to check on home pregnancy testing)
- 3 months for implant check-up – this is good timing to discuss bleeding patterns and other adverse events.[11] At this time also follow up on safe sex messages and any need for further STI testing (e.g. change of partner).[27]

Maddy should start having Pap tests from age 18–20 years, and should be offered annual chlamydia screening.[6]

STI Testing Tool

Who? is the patient?	Why? would you do an STI test?	Which? STI	How? WHAT specimen do you need?	How? WHAT test do you order?
A sexually active young person under 29 years	This population is at higher risk for Chlamydia	Chlamydia	First pass urine **OR** Self-collected vaginal swab **OR** Endocervical swab	NAAT
		HBV	**Consider vaccination for HBV & HPV**	
A sexually active Aboriginal young person under 29 years	This population is at higher risk for Chlamydia * Can also be conducted as part of the Aboriginal health check - Medicare item 715	Chlamydia Gonorrhoea	First pass urine **OR** Self-collected vaginal swab **OR** Endocervical swab	NAAT
		HBV	Blood **Consider vaccination for HBV & HPV**	HBcAb
An (asymptomatic) person of any age requesting "a STI checkup"	The patient has requested it, so may be at risk. Ideally, take a sexual history to ascertain: a) if they fall into one of the groups below b) help you decide on sites for specimen collection	Chlamydia	First pass urine **OR** Self-collected vaginal swab **OR** Endocervical swab	NAAT
		HIV Syphilis HBV	Blood **Consider vaccination for HBV**	HIV Ab Syphilis EIA HBcAb
A man who has sex with men (MSM)	This population group is at higher risk for Chlamydia, Gonorrhoea, Syphilis, HIV, HAV, HBV	Chlamydia	First pass urine & anal swab	NAAT
		Gonorrhoea	Throat swab Anal swab	Gonorrhoea culture NAAT
		HIV Syphilis HAV HBV	Blood **Vaccinate for HAV & HBV**	HIV Ab Syphilis EIA HAV Ab (total) HBcAb
A sex worker	This population group is at higher risk for Chlamydia, Gonorrhoea, Syphilis, HIV, HBV See above for MSM sex workers	Chlamydia Gonorrhoea	First pass urine **OR** Self-collected vaginal swab **OR** Endocervical swab	NAAT
		HIV Syphilis HBV	Blood **Vaccinate for HBV**	HIV Ab Syphilis EIA HBcAb
A person who injects drugs	This population group is at higher risk for Chlamydia, Gonorrhoea, Syphilis, HIV, HBV and HCV* * HCV is not an STI but is included due to risks associated with injecting drugs	Chlamydia Gonorrhoea	First pass urine **OR** Self-collected vaginal swab **OR** Endocervical swab	NAAT
		HIV Syphilis HBV HCV	Blood **Vaccinate for HBV**	HIV Ab Syphilis EIA HBcAb HCVAb

Produced March 2012

HAV = Hepatitis A
HBV = Hepatitis B
HCV = Hepatitis C

HPV = Human Papilloma Virus

NAAT= Nucleic Acid Amplification Test (eg: PCR)

Information on vaccination www.immunise.health.gov.au
Information on HIV Pre & post-test discussion www.ashm.org.au/uploads/HIV_viral_hep_Chapter_9.pdf

Figure 1. STI Testing Tool. Reprduced with permission from RACGP et al. STI testing tool, 2012. Availalbe from www.stipu.nsw.gov.au/page/General_Practice_Resources/STI_Clinical_Management_2 (accessed 26 March 2013).

CASE 5

AL FEELS LIKE A BOY

Al, aged 19 years, is waiting to see you in the treatment room. You are working a weekend shift at your practice. The receptionist phones you when you have just finished seeing a patient, and says, 'I've just put a teenager in the treatment room with a knife wound'. You rush in to see an overweight young person with short hair, wearing a loose shirt and tracksuit pants, sitting on the treatment bed holding a cloth to their chest. You introduce yourself and your patient tells you in a husky voice that their name is 'Al'. You check the wound and see that it is a long very superficial incised wound across the upper chest, which has stopped bleeding. There are a few scars in the same area, which alerts you to the possibility of self-harm. Al has breasts that look female, but Al looks like a male. Wound management is straightforward, but you realise that there is more to this presentation, so you ask Al to come with you to your consulting room.

QUESTION 1

You are feeling confused as you are uncertain of Al's gender. How can you manage this situation sensitively?

FURTHER INFORMATION

Al tells you that he is a guy. He says he was called Alison as a child, but now only uses the name Al. He wants to be known as a male and has a history of self-harm and feels disgusted by his breasts. Al is unemployed and living with his older sister.

QUESTION 2

What do the terms transgender, transsexual and transvestite mean? Which may apply to Al? Is there a possible medical diagnosis?

QUESTION 3

Are transgender people usually also homosexual?

FURTHER INFORMATION

Al tells you that he has felt like a boy for as long as he can remember. He always preferred to dress in boys' clothes and play with boys' toys. At puberty he thought that he might be a lesbian, but later realised that his true gender was male. He hates his body and wants to get rid of his breasts and his 'monthlys'. He can't cope with studying because of his experiences of being bullied. He has lost his job and he feels rejected by his parents. His older sister is supportive of him and lets him crash on her couch as he has nowhere else to stay. Al seems pleased to have told you about this and agrees to return to see you for another appointment.

QUESTION 4

What initial steps can be taken to help Al with his distress and sense of gender incongruence?

QUESTION 5

What are other treatment options for AI in the future?

QUESTION 6

What is the role of the GP in ongoing care for transgender patients?

CASE 5 ANSWERS

ANSWER 1

If you are unable to identify the patient's gender, then this may be an indication that the patient is gender questioning or transgender. Rather than assume or guess a person's gender, it is best to ask.[28] For example, you could ask, 'AI: a guy or a girl?' or 'AI, can I clarify your gender, male or female?' Questioning in a clear and non-judgemental way will facilitate but not force disclosure of gender questioning or transgender identity. You may need to explain the relevance of asking these questions, and also to be respectful of silence if the person does not want to disclose this information. This might also be an opportunity for AI to tell you that many people confuse his/her gender.

ANSWER 2

Transgender refers to people who identify as the gender opposite to their assigned birth gender some, or all of the time. Transgender can be male to female (MtF or transfemale), or female to male (FtM or transmale). Generally use the pronoun 'she' for transfemale and 'he' for transmale. Transgender (or 'trans') is the term that applies to AI.

Transsexual refers to people who are making or have made the transition to their identified gender with hormone or surgical treatment. Transvestite refers to a man who is usually heterosexual and wears female clothes, at times for sexual pleasure.

AI may have a medical diagnosis of transsexualism,[29] which is a gender identity disorder in DSM-IV. This diagnosis involves a strong persistent cross-gender identity with associated significant distress and impairment of functioning. This diagnosis can assist patients who are seeking treatment such as hormonal therapy and gender reassignment surgery.

ANSWER 3

Gender identity doesn't determine sexual orientation. Generally trans people will identify their sexuality based on their core sense of gender self. So a transmale who is attracted to females is heterosexual.

ANSWER 4

AI's distress may be helped by initial steps to help him to 'pass' as a male. AI has already chosen a male form of his name, which helps him to pass as a male. Taking a male name and using the correct pronoun is also useful and AI needs to be supported in this. Passing may include dressing as a male, breast minimisation bras or breast binding. The use of the oral contraceptive pill in a continuous manner can reduce or relieve bleeding.

AI needs assessment for depression. He may also need referral to local services for employment or training and possibly housing assistance. AI can also be referred to a specific trans support service.[27]

ANSWER 5

If AI has persistent gender dysphoria (and as AI is over 18 years of age), he may be referred to a gender dysphoria clinic, although these are few in number and have long waiting times.[30] Psychiatric assessment is part of this process. Treatment options include speech pathology, hormone therapy (testosterone for transmen and oestrogen and anti-androgens for transwomen) and surgery. Surgery for transmen can include chest reconstruction, hysterectomy, oophorectomy and clitoral lengthening. Phalloplasty is rare and limited in success. There are conditions on timing of these treatments and Medicare funding is not available for all treatments. Some treatments are not reversible. Not all transgender patients have a strong wish for hormones and surgery.

ANSWER 6

The GP has important roles in caring for transgender patients.

- Have a non-judgemental attitude and be respectful of diversity.
- Remember that issues of gender and sexual orientation can change.[3]
- Provide support and a safe place and be prepared to take time.
- Be knowledgeable about gender diversity including common health issues for transgender patients such as depression, self-harm and suicidality.
- Monitor hormonal side effects and provide screening (e.g. Pap test).
- Support family members.
- Work to make your service respectful of diversity.
- Provide links or referrals to support groups, counselling or organisations. For some patients these may be some distance away, and websites may be particularly useful.

CASE 6

MELANIE IS HAVING TROUBLE BECOMING PREGNANT

Melanie, aged 30 years, has been attending your practice for many years. She sees several different doctors; this is the first time that you have seen her. In Melanie's record you see that she has a diagnosis of intellectual disability. She is taking an oral contraceptive pill containing 30 mcg ethinyl oestradiol and 150 mcg of levonorgestrel. Melanie tells you that she has made an appointment today because she is having trouble falling pregnant.

Melanie lives alone, with support from a case worker and support workers to help with housework and cooking. Melanie works doing packing in a factory in a supported environment. Melanie has a boyfriend, Jarred, also aged 30, who works in the same supported environment workplace. From the clinical record you can see that Melanie attends your practice regularly with her mother to obtain prescriptions for the pill.

QUESTION 1

How can you make sure that your communication with Melanie, who has an intellectual disability, is effective in this consultation?

QUESTION 2

Melanie wants to become pregnant but is on the pill. How can you check for understanding of the contraceptive action of the pill? How can you check for understanding about sex and family planning?

FURTHER INFORMATION

Melanie had thought that she was taking the pill to help her stay healthy. She didn't understand the word 'contraception', but did know that there were ways to stop a woman becoming pregnant and she understood about condoms. Melanie knows that a woman could become pregnant by having sexual intercourse. Melanie usually attends with her mother for prescriptions. Melanie tells you that her parents aren't very happy that she has a boyfriend.

QUESTION 3

Is it important for Melanie to give informed consent when being prescribed the pill?

QUESTION 4

Do Melanie's family have the right to insist that she uses contraception? What legal assistance may be obtained?

QUESTION 5

Do people with an intellectual disability have the right to make their own decision with regard to sexuality?

CASE 6 ANSWERS

ANSWER 1

It is important when communicating with Melanie to:

- keep sentences short – one idea at a time
- look for a shared understanding when using medical terminology and then use this term consistently
- use simple language and avoid jargon or abstract words
- check for understanding – ask Melanie to explain the information back to you
- avoid questions with a yes/no answer as these can be ineffective
- use literal pictures or models to explain[31] (e.g. simple black and white diagrams without labels)
- provide age-appropriate information in a developmentally appropriate way (for Melanie, this means providing information appropriate for a 30-year-old woman, but using communication strategies to make this developmentally appropriate)
- if examination or investigation is required, show the instruments that you will use and walk Melanie through every step, providing realistic expectations (e.g. discomfort, embarrassment)
- schedule longer or multiple appointments as needed.

For general issues related to sexual questioning of a person with a disability, see *Table 3*.

Table 3. Discussing sexual issues with a person with intellectual disability

See the person alone for at least part of the consultation if at all possible. If the person is unable to communicate without support, address questions directly to the person and observe their response to the question and to their support person's reply. Assume that the person understands more than they can express.
Ask the person's permission to discuss sexual issues. The person may need reassurance that it is acceptable to be sexually active and to talk about it.
Use plain language but accurate terms for body parts. If the person uses their own terms, clarifying meaning and matching the person's language may be useful.
Ask open ended questions as far as possible. However, be aware that the person's language skills may not allow detailed answers.
Visual material such as pictures or models can be very helpful, especially for a person with limited verbal skills
Reproduced with permission from Aust Fam Physician.[30] www.racgp.org.au/download/documents/AFP/2011/April/201104eastgate.pdf

ANSWER 2

Using a picture of a pregnant woman may assist this discussion. Suitable questions may include:

- What happened to this woman?
- How did the baby get inside her?
- What can a woman do if she doesn't want to get pregnant when she has sex?
- What can a woman do if she wants to have a healthy baby?

ANSWER 3

Commonwealth legislation supports and expects health professionals to provide sexual healthcare to people with an intellectual disability (*Disability Discrimination Act 1992*). There is the presumption of capacity to consent, unless this can be shown to be impaired. Melanie needs to have accurate information about her options and the potential consequences, and be able to make a decision using this information to consent to the pill.[32] Therefore she needs to understand the contraceptive effects of the pill to give her informed consent to this medication.

ANSWER 4

Melanie's family do not have the right to insist that she uses contraception.[31] In addition, Melanie has the right to confidentiality.

If a doctor wants to check if a patient has a medical guardian, the office of the public advocate/guardian[33] can be contacted to ascertain the details of the Guardianship order, or for further advice or support regarding the patient's capacity to consent and the possible involvement of a substitute decision maker.[34]

ANSWER 5

People with a disability have the right to sexual and reproductive health. They are able to have consensual sex and have the right to take risks (or choose unwisely). Health information and services may need to be presented in a different way to meet the needs of a person with a disability. Accurate and appropriate sexuality education is essential in improving the sexual and reproductive health outcomes of people with disabilities.

Women, or couples, with disability usually need support in family planning and parenting (as do many other groups in our community such as very young parents, or parents with other medical or mental health issues). This is a complex situation that may need exploration of issues, such as discussion of realistic plans for parenting.[31]

In Australia, all states and territories have legal restrictions around sterilisation for a person with an intellectual disability, and approval needs to go through the guardianship authority for adults[33] and the Family Court of Australia for children.

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RESOURCES FOR DOCTORS

SEXUALITY AND GENDER DIVERSITY

- *Standards of care for the health of transsexual, transgender, and gender-nonconforming people* Version 7 can be found in International Journal of Transgenderism 2011; 13:165–232, at www.wpath.org/documents/IJT%20SOC,%20V7.pdf
- A report on the health and wellbeing of transgender people in Australia and New Zealand can be found in Couch M, Pitts MK, Mulcare H, Croy S, Mitchell A, Patel S. *TranzNation: a report on the health and wellbeing of transgender people in Australia and New Zealand*. Melbourne: Australian Research Centre in Sex, Health and Society, 2007. Available from www.glhv.org.au/files/Tranznation_Report.pdf [accessed 28/03/2013].
- The Australian and New Zealand Professional Association for Transgender Health (ANZPATH) website includes service providers and links: www.anzpath.org/ANZPATH_Inc/Service_Providers.html
- A guide to gay, lesbian, bisexual, transgender and (GLBTI) intersex inclusive practice for health and human services can be found at Ministerial Advisory Committee on Gay, Lesbian, Bisexual, Transgender and Intersex Health and Wellbeing. *Well proud: a guide to gay, lesbian, bisexual, transgender and intersex inclusive practice for health and human services*. Victoria: Department of Health, 2009. http://docs.health.vic.gov.au/docs/doc/75618B0EE0847E0FCA257927000E6EED/$FILE/Well%20Proud%20Guidelines%20updated%202011.pdf
- An informal tool to help you assess GLBTI people's access and quality of care at your service can be found at www.qahc.org.au/files/shared/docs/GLVH_HealthServicesAudit.pdf
- A guide to sensitive care for lesbian, gay and bisexual people attending general practice can be found at http://www.glhv.org.au/fact-sheet/guide-sensitive-care-lgb-people-attending-general-practice

CONTRACEPTION AND STIs

- Family Planning New South Wales, Family Planning Queensland, Family Planning Victoria. *Contraception: an Australian clinical practice handbook.* 3rd edn. Australia: Family Planning New South Wales, Queensland, Victoria, 2012, provides current, evidence-based, best practice recommendations for contraceptive delivery in Australia.
- The Sexual Health & Family Planning Australia website www.shfpa.org.au/home has links to state and territory organisations.
- National management guidelines for sexually transmissible infections are available from http://mshc.org.au/healthpro/Guidelines/NationalManagementGuidelinesForSTIs/tabid/278/Default.aspx
- The STI testing tool is available from www.stipu.nsw.gov.au/page/General_Practice_Resources/STI_Clinical_Management_2/
- STI testing guidelines for men who have sex with men are available from http://stigma.net.au/resources/STIGMA_MSM_Testing_Guidelines_2010.pdf
- An illustrated sheet showing the efficacy of contraceptive methods can be found at www.shfpa.org.au/images/stories/reports/170912_updated%20contaceptive%20ccard.pdf
- State and territory organisation websites for patient information can be found at www.shfpa.org.au/home

FEMALE GENITAL MUTILATION/CUTTING

- The FGM/C Service Coordination Guide and Care Plan Flow chart is available on Family Planning Victoria's website www.fpv.org.au/advocacy-projects-research/projects/female-genital-mutilation-cutting/

DISABILITY

- State and territory-based disability services can be found by searching for the individual state or territory name and 'disability services'. See the centre for Disability Health Victoria at www.cddh.monash.org
- AGAC member organisations by state and territory can be found at Australian Guardianship and Administration Council, www.agac.org.au/links, accessed 28 March 2013.
- *Australian medico-legal handbook* is an excellent resource (Kerridge I and Parker M, 2008, Church Livingstone Elsevier).

RESOURCES FOR PATIENTS

DISABILITY

- HealthyStart www.healthystart.net.au/ is a Commonwealth initiative which provides resources for mothers with learning disabilities and the professionals who support them.
- Family Planning Queensland www.fpq.com.au/publications/fsBrochures/Br_Contraception_Disability.php has produced a brochure *Contraception – Disability* for those with a disability.
- A book based on interviews with new mothers with a range of disabilities is: Judith Rogers, *The disabled woman's guide to pregnancy and birth*, New York: Demos Medical Publishing, 2005.

SEXUALITY AND GENDER DIVERSITY

- The National LGBTI Health Alliance (lesbian, gay, bisexual, transgender, intersex and other sexuality) website www.lgbthealth.org.au/. Includes a national member list and the resource *Respecting people at intersex trans and gender diverse experience*.
- Dude magazine http://dudemagazine.wordpress.com/ is a collection of various perspectives related to female to male transgender issues.
- The Gay and Lesbian Community Services www.glcs.org.au has a telephone counselling service: 9420 7201, 1800 184 527.
- Each state and territory has an AIDS council. The Australian Federation of AIDS Organisations www.afao.org.au/living-with-hiv/?a=5083 lists all state and territory councils.
- The National LGBTI Health Alliance www.lgbthealth.org.au is the peak health body for organisations that provide health-related programs, services and research targeting lesbian, gay, bisexual, transgender, intersex and other sexuality, sex- and gender-diverse people.

LOW LIBIDO

- Vivienne Cass, *The elusive orgasm: a woman's guide to why she can't and how she can orgasm*. Boston MA: Da Capo Press, 2007.
- King R. *Where did my libido go*? North Sydney: Ebury Press, 2010.
- General information on libido can be found at www.healthforwomen.org.au/images/stories/Education/Documents/info/libido.pdf and www.jeanhailes.org.au/resources/fact-sheets/fact-sheet-by-topic/604-libido

Sexuality and sexual health

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 3.
FOR EACH QUESTION BELOW SELECT ONE OPTION ONLY.

QUESTION 1

Jenny, aged 51 years, has just started a new relationship. Her periods have been irregular for 6 months. She wants to know what contraception she should use. Of the following, what is the most likely first choice for Jenny?

A. Combined hormonal vaginal ring
B. Combined oral contraceptive
C. Progesterone-only pill
D. Injectable contraception
E. None needed.

QUESTION 2

Crys, aged 49 years, uses condoms for contraception. Her regular periods stopped 3 years ago; however, she continued to have irregular bleeding for 12 months. When could Crys stop using condoms?

A. After finding FSH levels >30 IU/L on two occasions 6 weeks apart.
B. She can stop now as she has been amenorrhoeic for more than 12 months.
C. She can stop now as she has been amenorrhoeic for more than 2 years.
D. She needs to continue using a condom for 12 months.
E. She needs to continue using a condom until the age of 55 years.

QUESTION 3

Brooke, aged 52 years, has been on the progesterone-only pill for several years. Her periods stopped 2 years ago. When should she stop using the progesterone-only pill?

A. After finding FSH levels of 30 IU/L or above on two occasions 6 weeks apart.
B. 12 months after finding FSH levels of >30 IU/L or above on two occasions 6 weeks apart.
C. After finding FSH levels of 50 IU/L or above.
D. After 12 months of amenorrhoea.
E. When she reaches the age of 55 years.

QUESTION 4

Enrica, aged 22 years, has an intellectual disability following a car accident as a young child. She lives with her mother and father and comes to the clinic with her mother, Maria. Enrica has met a man and wants to discuss contraception with you. Maria has indicated to you prior to this consultation that she wishes Enrica to have a sterilisation procedure as Maria considers Enrica will never be in the position to look after a child. Which of the following statements is true for this situation?

A. Enrica has an intellectual disability and should have a sterilisation procedure.
B. Enrica has an intellectual disability so her mother should make the decision about sterilisation.
C. Enrica has an intellectual disability so her parents jointly should make the decision about sterilisation.
D. Enrica has an intellectual disability so the situation should be automatically referred to the guardianship authority.
E. Enrica is over 18 years of age and therefore is presumed to have the capacity to make the choice about sterilisation for herself, unless the doctor deems that she lacks this decision-making capacity.

QUESTION 5

Which of the following is true about FGM/C?

A. It is commonplace in many countries.
B. It is a religious practice.
C. It is legal in Australia.
D. It involves fusing of the labia.
E. It involves removal of the clitoris.

QUESTION 6

Anton, aged 35 years, sees you for a regular check of his blood pressure. His family has attended the clinic for many years. He has a wife and a son aged 3 years. During the consultation he mentions that the relationship with his wife is not happy and he is in a relationship with a man. He wonders if he should have any tests. He has no symptoms of an STI. On further questioning he tells you he is not using condoms. What STI tests should you order?

A. Pharyngeal swab for gonorrhoea

B. Anal swab for gonorrhoea and chlamydia

C. Urine test for chlamydia

D. Serology for HIV, syphilis, hepatitis

E. All of the above.

QUESTION 7

How often should Anton (see Question 6) be advised to have these tests?

A. Every 2 years

B. Every 12 months

C. Every 3–6 months

D. Every 1–2 months

E. Every 2 weeks.

QUESTION 8

Taylor, aged 26 years, is a school teacher who has just met someone. She is at the start of a new relationship. She would like to know more about her contraceptive options. What are the advantages of using a progestogen implant method of contraception?

A. It provides immediate contraceptive cover.

B. It provides long-term protective cover for 3 years and is easily reversible.

C. It protects against STIs.

D. It can be used in clients with breast cancer.

E. It doesn't require follow-up.

QUESTION 9

Leila, aged 27 years, is a designer who comes to see you in a distressed state. She came home early from work 2 days ago and found her long-term boyfriend Jeremy dressed in her clothes. She was embarrassed and didn't know how to handle the situation. He reassured her and told her that a previous girlfriend didn't mind but she has come to discuss the situation with you. She is worried about the implications for her relationship.

What is the most likely definition/explanation for this type of behavior?

A. Jeremy is transgender.

B. Jeremy is transsexual (MtF).

C. Jeremy is transvestite.

D. Jeremy has gender identity disorder.

E. Jeremy is homosexual.

QUESTION 10

Grace, aged 19 years, is a university student who comes to see you requesting a Pap test. She has been sexually active since the age of 17 with the same partner. What sort of STI testing should be offered to all patients under the age of 30 who are sexually active?

A. Syphilis

B. Chlamydia

C. HIV

D. Gonorrhea

E. There is no need to offer any testing.

check

Independent learning program for GPs

Unit 497 August 2013

Neurology

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Neurology

Unit 497 August 2013

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

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This unit of *check* looks at some common and serious neurological problems that present in general practice. This unit includes clinical scenarios related to Parkinson disease, multiple sclerosis, facial pain, stroke, migraine in a child and the concerns related to pregnancy in a woman who has epilepsy.

We would like to thank the authors for providing a wealth of information about neurological problems for this unit of *check*.

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The learning objectives of this unit are to:

- list the differences between migraine in a child and an adult
- discuss the issues relevant to pregnancy in a person on epileptic medication for epilepsy
- compare the various treatment options for patients with multiple sclerosis
- explain the preventive measures to be taken by a patient with a transient ischaemic attack
- recognise and recall patients with risk factors such as hypertension to prevent stroke.

We hope this edition of *check* will help you to manage patients who present to your practice with a neurological problem.

Kind regards

Jill Pope
MBBS, PGradDipArts(Edit&Comms), GradDipArts(Ling&AppLing)
Medical Editor *check* Program

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

AF	atrial fibrillation	MS	multiple sclerosis
BP	blood pressure	OR	odds ratio
CT	computerised tomography	PBS	Pharmaceutical Benefits Scheme
DBS	deep brain stimulation	RCTs	randomised controlled trials
INR	international normalised ratio	TIA	transient ischaemic attack
LP	lumbar puncture	TN	trigeminal neuralgia
MCQs	multiple choice questions	TTE	transthoracic echocardiogram
MRI	magnetic resonance imaging		

CASE 1

ANNE HAS PERSISTENT HEADACHES

Anne, aged 10 years, presents to you with her mother, Catherine. Anne has been having headaches for approximately 2 years. These occur up to 2–3 times per month, although she sometimes has headache-free periods lasting for up to 3–4 months. The headaches are located in the bilateral temporal regions and feel like 'a hammer banging on my head'. Sometimes the headaches also occur in the facial and maxillary areas. The headaches are accompanied by nausea and photophobia, but not phonophobia. There are no consistent triggers but headaches are sometimes precipitated by hunger or lack of sleep. Attacks are severe and Anne is unable to attend school when they occur. The episodes last 2–4 hours and are usually aborted by sleep.

In childhood, from age 5 to age 7 years, Anne had recurrent periods of non-colicky midline abdominal pain. An extensive gastrointestinal work-up revealed no abnormalities.

Anne has a history of motion sickness.

The psychosocial history is unremarkable.

Anne has a younger brother, Greg, and lives with both parents. Her mother, Catherine, has a history of headaches, and so does one of Catherine's two sisters.

You find no abnormalities on the physical and neurological examination of Anne.

QUESTION 1

What is the most likely diagnosis of Anne's headaches?

QUESTION 2

In what ways are migraines in children and adults different?

QUESTIONS 3

What neuroimaging is indicated for Anne?

QUESTION 4

What would be the recommended first-line acute treatment for Anne?

QUESTION 5

What preventive medications can be used for paediatric migraine?

QUESTION 6

Should Anne be offered preventive medication?

QUESTION 7

Anne's mother, Catherine, asks what she can do to help decrease the occurrence of Anne's headaches. What advice can you give her?

CASE 1 ANSWERS

ANSWER 1

The most likely diagnosis of Anne's headache is migraine. The severe intensity and presence of nausea and photophobia are characteristic of migraine. The history of motion sickness is also suggestive of migraine, and the prior history of recurrent abdominal pain with normal investigations likely represents abdominal migraine, a migraine variant that usually occurs in childhood. The normal neurological examination, the absence of focal neurological signs and symptoms, the 2-year history of stereotypical attacks, and the months-long intervals without headaches are all reassuring for the absence of a secondary headache disorder or structural abnormality.

Tension-type headache is mild or moderate in intensity and is generally not disabling.

Cluster headache is characterised by severe attacks of unilateral pain accompanied by autonomic features such as ptosis, lacrimation or conjunctival injection; it rarely occurs in children.

Acute sinusitis can cause headaches and facial pain, but is also associated with nasal discharge, nasal obstruction, night cough, decreased sense of smell, bad breath and/or fever. Recurrent headaches that occur in the maxillary regions, without any of these other features, are most likely migraines, with involvement of the second branch of the trigeminal nerve. A misdiagnosis of 'sinus headaches' is one of the most common causes of delay in migraine diagnosis and treatment.

ANSWER 2

While migraine in adults lasts for at least 4 hours by definition,[1] children are more likely to have attacks of shorter duration. Photophobia and phonophobia often do not develop until after 12 years of age.[2] Migraines in children are more likely to be bilateral, though younger children may not be able to report the location or quality of their headaches. The use of children's drawings can be both sensitive and specific in the diagnosis of childhood headaches.[3,4]

Although migraine has been shown to be comorbid with mood and/or anxiety disorders in adults, this does not appear to be the case in children. A recent large systematic review[5] of clinical studies assessing psychological functioning and/or psychiatric comorbidity in children with migraine showed that paediatric migraineurs do not have more psychological dysfunction or comorbid psychiatric diagnoses compared with healthy controls. However, if psychiatric comorbidity is present, mental health referral may result in improved migraine management.

ANSWER 3

Neuroimaging is not indicated in patients with recurrent headaches characterised by consistent features, absence of focal neurological signs and a normal neurological examination. Neuroimaging should be considered in patients with an abnormality on neurological

examination, a change in character or pattern of pre-existing headaches, new-onset severe headaches, seizures or other signs of neurological dysfunction, a history of neurocutaneous syndrome (e.g. neurofibromatosis, tuberous sclerosis or Sturge–Weber syndrome), or if the child is younger than 6 years of age. If the headache location is exclusively occipital, further assessment is also warranted.[6]

ANSWER 4

Non-steroidal anti-inflammatory drugs and paracetamol are first-line medications for the acute treatment of paediatric migraine, and these would be offered for Anne.

Sumatriptan and other triptans have been used in children as young as 6 years of age though there is no clear-cut evidence for efficacy in this age group. However, sumatriptan nasal spray is safe and effective in patients older than 12 years of age,[7] and zolmitriptan and rizatriptan have shown efficacy in adolescents.[8] The efficacy of dihydroergotamine in paediatric migraine is unclear.

ANSWER 5

When choosing a preventive medication for migraine, comorbid conditions such as depression, epilepsy or obesity should be taken into account, such that one medication may be used to treat two disorders.

Medications that have been used for paediatric migraine prevention include antidepressants (e.g. amitriptyline), antihypertensives (e.g. propranolol), antihistamines and antiserotonergics (e.g. cyproheptadine, pizotifen) and antiepileptics (e.g. valproic acid, topiramate). However, only topiramate has been shown to be statistically superior to placebo in randomised controlled trials (RCTs),[9,10] and may be particularly useful in overweight patients due to the potential side effect of weight loss. Flunarizine, a calcium-channel blocker, has also demonstrated efficacy in paediatric migraine,[11] but is not available in Australia. Amitriptyline is widely used and has been shown to be effective in open label studies.[12] Its once-daily dosing is appealing and may increase compliance. Cyproheptadine reduced headache frequency in a retrospective study[13] and may be used in younger children who are unable to swallow tablets. Although beta-blockers have also been used for paediatric migraine prevention, RCTs investigating their use in this context[14–16] have not demonstrated their efficacy over placebo, and the risks of hypotension, depression and exacerbation of asthma likely outweigh the potential benefits in many cases.

The use of nutraceuticals such as magnesium,[17] riboflavin,[18–20] and coenzyme Q10[21] in paediatric migraine prevention has been studied in a few small RCTs, but none has shown superiority over placebo. However, these may be considered in cases where traditional medications are not tolerated or where a more 'natural' approach is preferred.[22]

ANSWER 6

Preventive medication is indicated when headache frequency has reached an unacceptable level. Though preventive medication is certainly warranted if the patient has four or more severe attacks per month, it may be considered at lower frequencies if the child is missing school regularly or is unable to participate in social and family activities due to headaches. Preventive medication is not usually required over a long period. Once headache frequency has decreased and remained stable for several months, medication may be tapered, and many patients are able to cease preventive treatment without a recurrence of high-frequency attacks.[23]

The use of preventive medication should be discussed with Anne's mother, Catherine. Its use would depend on how much school Anne was missing and would probably be deferred until after other, non-drug approaches had been tried.

ANSWER 7

Lifestyle modifications can be very effective in reducing migraines and should be incorporated into Anne's daily routine. These include:[23]

- hydration – with at least eight glasses of non-caffeinated drinks daily. Although caffeine is often beneficial in the acute treatment of migraines, daily consumption of caffeinated beverages can result in the development of chronic daily headache
- sleep hygiene – including 8 hours of sleep at night. Bedtime and awakening should be at consistent times each evening and morning throughout the week, as lack of sleep and too much sleep can both trigger headaches
- exercise – incorporating 30–60 minutes of aerobic exercise, at least three times per week
- meals – making sure Anne consumes three daily meals, with mid-morning and mid-afternoon snacks, as hunger appears to trigger headaches in Anne. Meals should be relatively high in protein, vegetables and fibre, and low in fat and sugar. Highly processed foods or those with additives and preservatives are best avoided.

CASE 2

JILL WANTS ADVICE ABOUT EPILEPSY TREATMENT DURING PREGNANCY

Jill, 28 years of age, has well-controlled juvenile myoclonic epilepsy, for which she takes sodium valproate and lamotrigine. Jill was diagnosed 10 years ago on electro-clinical features. She comes to see you for family planning advice. Her last seizure was 3 years ago.

QUESTION 1

What factors influence seizures during pregnancy?

QUESTION 2

What are the known predictors of seizure frequency?

QUESTION 3

What are the risks associated with seizures during pregnancy?

QUESTION 4

What risks do antiepileptic drugs pose to the foetus?

QUESTION 5

Does prenatal antiepileptic drug exposure affect cognitive outcomes in children?

QUESTION 6

Are there any obstetrical risks associated with antiepileptic drugs?

QUESTION 7

Can pregnancy affect a mother's epilepsy?

QUESTION 8

How would you manage Jill?

CASE 2 ANSWERS

ANSWER 1

Seizures during pregnancy can be broadly influenced by metabolic and pharmacokinetic changes, and other factors such as sleep deprivation, malaise and vomiting. Although sex hormones may influence seizure frequency in those with catamenial epilepsy, there is insufficient evidence that changes in sex hormones during pregnancy affect seizure frequency.[24]

Pharmacokinetic effects of drugs in pregnancy are well described in the literature[25–27] and relate to decreased absorption and degree of protein binding, as well as to changes in the individual's volume of distribution, metabolism and excretion.[27] Patients on lamotrigine or oxcarbazepine are likely to have a significant decrease of plasma drug concentration during pregnancy with subsequent increase in seizure frequency.[28,29] This can be attributed to the pharmacokinetic effects of pregnancy. Oxcarbazepine is metabolised to an active metabolite that is rapidly eliminated in pregnancy and may also be influenced by pharmacogenetic variability.[29] Hence, levels of the active metabolite fall during pregnancy, leading to an increased risk of seizures.

Despite marked clearance changes with lamotrigine[25,30] that may lead to an increased risk of seizures, lamotrigine is still considered a safer alternative to valproate monotherapy[31] and has the lowest rate (2%) of congenital malformations with doses <300 mg/day.[32] Baseline pre-pregnancy lamotrigine levels along with regular monitoring and dose adjustments during pregnancy to maintain pre-pregnancy levels have resulted in improved efficacy.[30] Algorithms have been published for monitoring levels and titrating lamotrigine dose.[33] These algorithms also emphasise the increased risk of toxicity in the immediate post-partum period due to a rapid reduction in lamotrigine metabolism.

Sleep deprivation – from nocturia, discomfort or anxiety – has been described.[34] Malaise and vomiting may theoretically lead to decreased drug absorption, but this is an uncommon cause of antiepileptic drug failure in pregnancy.[27]

ANSWER 2

Data from the Australian Pregnancy Registry, reported in 2009, suggested that the risk of a seizure during pregnancy for women who had been seizure-free during the year prior to pregnancy was 50–70% less than for women who had had one or more seizures during the preceding year.[35] The patients who had been seizure-free during the prior year tended to be those with primary generalised epilepsy rather than focal epilepsies. The American Academy of Neurology and the American Epilepsy Society guidelines in the same year concluded that 84–92% of those seizure-free for at least 9–12 months pre-conception remained seizure-free during pregnancy.[24] More recent studies have suggested the most important predictor of seizures during pregnancy is the history of a seizure in the month prior to pregnancy;[36] the next most important predictor is antiepileptic drug polytherapy. Timing of seizure exacerbations is also a factor, as focal seizures tend to have exacerbations in the second to the third and sixth month, whereas generalised seizures demonstrate seizure exacerbations in the third pregnancy month.[36] Interestingly, valproate monotherapy is associated with a significantly lower risk of seizure recurrence.[13] For reasons already discussed, lamotrigine and oxcarbazepine monotherapy have been demonstrated to be a predictor of recurrent seizures.[29]

ANSWER 3

Seizures during pregnancy are associated with small-for-gestational-age babies,[34] occurring at approximately twice the expected rate.[37] Low-birthweight infants and pre-term delivery have also been associated with seizures during pregnancy;[34] however, there has been no demonstrable association between epilepsy type or a first trimester generalised tonic–clonic seizure and risk of major congenital malformations.[32]

ANSWER 4

Teratogenicity is the major concern with antiepileptic drugs. Pre-conception folic acid supplementation (400 µg/day) is recommended to reduce the risk of major congenital malformations and should be continued throughout the pregnancy.[38] Consensus guidelines suggest that there is a probable increase in risk of major congenital malformations when antiepileptic drugs are taken during the first trimester but it is unclear whether this applies to all or some antiepileptic drugs.[37] A meta-analysis of pregnancy outcomes found valproate to have the highest incidence of major congenital malformations (10.73%).[39] In contrast, lamotrigine has a 2.91% risk of major congenital malformations.[39] The Australian Pregnancy Registry major congenital malformation rate for lamotrigine is 5.2%.[40] History of a major congenital malformation in a previous pregnancy has been suggested to be a predictor of future malformations, with an increased risk of congenital malformations in the second pregnancy if the mother is still on the same antiepileptic drugs.[41] Additionally, antiepileptic drug polytherapy is probably associated with increased risk of major congenital malformations, leading to the recommendation to avoid polytherapy in the first trimester of pregnancy.[37]

The effect of antiepileptic drugs on the foetus is dose-dependent. An increase in malformation rates has been observed with increasing antiepileptic drug doses, with initial findings of a significantly greater risk of foetal malformations with valproate ≤1.1 g/day (30.2%) compared with <1.1 g/day (3.2%).[42] The European Register of Antiepileptic Drugs in Pregnancy, which involves 42 countries, recently published their findings that support a dose-dependent risk of malformations.[32] The lowest rates of malformation occurred with <300 mg/day lamotrigine, and with <400 mg/day carbamazepine. Dose-dependent higher rates (compared with lamotrigine) were confirmed on multivariable logistic analysis with valproate, carbamazepine at greater than 400 mg/day, and phenobarbital.[32]

Newer antiepileptic agents may confer lower risk of malformations; however, further data is still required. Levetiracetam is promising, with malformation rates ranging from 0.7%[43] in a UK/Irish registry to 2.4% in a North American registry.[44] In the Australian Pregnancy Register, only 22 exposures to levetiracetam monotherapy have been recorded so far, with no known documented malformations.[40]

ANSWER 5

Children of mothers on polytherapy probably have reduced cognition compared with those of mothers on monotherapy, which has led to the recommendation to consider monotherapy to reduce this risk.[37] Valproate exposure in utero has been associated with an increased risk of language impairment,[45] reduced IQ (by 7–10 points), and worse verbal and memory abilities at age 6 compared with exposure in utero to carbamazepine, lamotrigine and phenytoin.[46] Valproate exposure in utero has also been associated with worse non-verbal and executive function compared with exposure in utero to lamotrigine.[46] A dose-dependent effect has been seen, as the outcomes for those exposed to <1 g/day of valproate did not differ from the results for those exposed to other antiepileptic drugs.

The effect of antiepileptic drugs on cognitive outcomes may also be influenced by periconceptional folate, which has a demonstrable benefit, with higher mean IQs in children exposed to periconceptional folate across all antiepileptic drugs.[46]

ANSWER 6

There is no conclusive evidence of a higher risk of obstetrical complications in pregnant women taking antiepileptic drugs.[37] The American Academy of Neurology and the American Epilepsy Society consensus guidelines suggest that the risk of caesarean delivery is probably not increased,[24] although subsequent studies suggest the risk of caesarean delivery may be increased.[47, 48] The two subsequent studies did not specify the circumstances surrounding the decision to undergo caesarean delivery and hence further evidence is required.

Not enough evidence exists for other complications such as pre-eclampsia, pregnancy-induced hypertension and spontaneous abortion.[1] The risk of premature contractions and premature labour and delivery is probably not moderately increased; however, there may be a substantially increased risk if the woman is a current smoker.[24] The risk of pregnancy-related bleeding complications is probably not substantially increased.[24]

ANSWER 7

Not enough evidence exists to prove seizure frequency and status epilepticus are increased in pregnant women with epilepsy.[24]

ANSWER 8

You should aim to switch Jill to lamotrigine monotherapy and commence folic acid. You should take pre-conception baseline lamotrigine levels, and check levels during pregnancy to maintain this pre-pregnancy level.

CASE 3

MARY PRESENTS WITH FACIAL PAIN

Mary, 39 years of age, comes to see you with a 5-day history of left-sided facial pain that has kept her away from work. Mary has only recently been attending the clinic and has no relevant past history; she is not taking any medications. She has a husband and one daughter.

QUESTION 1

What are the key features to elicit from Mary about the pain?

FURTHER INFORMATION

Mary describes episodes of lancinating pain in the distribution of her left cheek and jaw that last only a few seconds. The episodes are always the same. She has no associated visual disturbance, scalp tenderness or jaw claudication. There is no past history of facial shingles.

On examination she is very reluctant to let you make contact with her chin, as she is concerned that this will precipitate an episode of her facial pain. Other than this concern of Mary's, examination of her face is unremarkable in that there is no rash, bitemporal pulses are present and the arteries are not thickened and there is no motor or sensory deficit other than reported sensitivity to light touch and pin prick in the distribution of the second and third branches of the left trigeminal nerve (cranial nerve V). Visual acuity and fields to confrontation are normal. Additionally, the region of the temporomandibular joints and sinuses are non-tender.

QUESTION 2

What are the differential diagnoses of Mary's hemi-facial pain?

QUESTION 3

What are the common clinical features of trigeminal neuralgia (TN)?

QUESTION 4

What is the natural history of TN?

QUESTION 5

How is TN generally diagnosed?

QUESTION 6

Is imaging necessary?

QUESTION 7

What treatment would you suggest to Mary?

CASE 3 ANSWERS

ANSWER 1

You need to ask focused questions about the pain, including:

- type
- distribution
- duration
- associated features (visual disturbance, tenderness).

You also need to ask about a past history of facial pain or shingles, and whether she has any dental problems.

ANSWER 2

Differential diagnoses to consider for Mary are:

- TN
- primary headache (which includes migraine)
- dental pathology
- temporomandibular joint dysfunction
- maxillary sinus disease
- temporal arteritis.

ANSWER 3

Epidemiologically, the ratio of women to men affected with TN approaches 2:1. The incidence gradually increases with age and is rare below the age of 40 years.[49] Common features include sudden onset, paroxysmal, stereotypical episodes of intense, sharp or stabbing pain in the distribution of one or more branches of the trigeminal nerve (see *Figure 1*). In one study, 29% of patients had only one episode of pain, 19% had two episodes, 24% had three episodes, and 28% had four to 11 episodes.[49]

Classical TN generally involves the second (maxillary) or third (mandibular) divisions of the trigeminal nerve. The first division is affected in less than 5% of cases.[50] There may be trigger zones in the distribution of the affected nerve, which are often located near the midline, and, if present, are often activated by superficial contact such as light touch, shaving, washing, tooth brushing or cold air. (You will recall that Mary was very hesitant about you examining her chin for fear of precipitating her facial pain.)

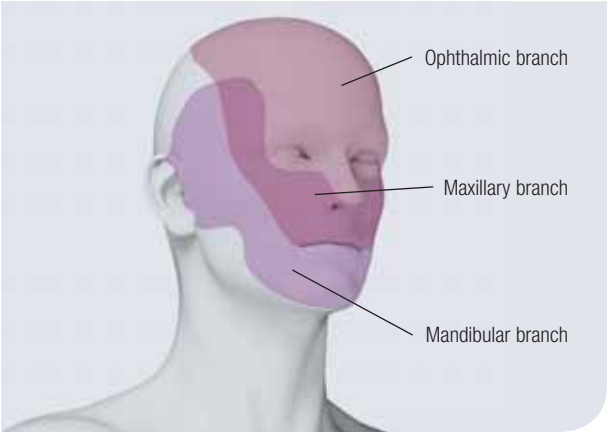

Figure 1. Distribution of the trigeminal nerve (cranial nerve V)

ANSWER 4

The course of TN is variable; episodes may last weeks or months and are generally punctuated by pain-free intervals. It is common for symptoms to recur, with continuous pain being the exception. Most often, the condition tends to fluctuate in severity and frequency of painful exacerbations.[51]

ANSWER 5

TN is principally a clinical diagnosis and is based upon the characteristic clinical features described above, particularly paroxysms of pain in the distribution of the trigeminal nerve.

The International Headache Society diagnostic criteria for classic TN are shown in *Table 1*.[50]

Table 1. Diagnostic criteria for classic trigeminal neuralgia

A. Paroxysmal attacks of pain lasting from a fraction of a second to 2 minutes, affecting one or more divisions of the trigeminal nerve and fulfilling criteria B and C.
B. Pain has at least one of the following characteristics:
1. intense, sharp, superficial or stabbing
2. precipitated from trigger areas or by trigger factors.
C. Attacks are stereotyped in the individual patient.
D. There is no clinically evident neurological deficit.
E. Not attributed to another disorder.

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ANSWER 6

It is believed that the vast majority of cases of TN are caused by vascular compression of the trigeminal nerve root.[52] An evidence-based practice parameter found that the pooled literature on head computerised tomography (CT) or magnetic resonance imaging (MRI) identified a secondary cause of TN (other than vascular compression) in 15% of patients and found insufficient evidence to support or refute using MRI to identify neurovascular compression in classic TN.[53] However, considering the causes of secondary TN include tumours, multiple sclerosis (MS) and skull base abnormalities, some practitioners adopt the stance that a low threshold for performing an MRI should exist.[54]

ANSWER 7

TN is generally refractory to commonly used analgesics.

Carbamazepine is the most thoroughly studied treatment for classic TN and is established as effective.[52,53,55] Side effects are generally manageable, particularly if low doses are prescribed initially with gradual up-titration. Initial dosing is usually 100–200 mg once or twice daily, and the dose can be increased gradually in increments of 100–200 mg every 3 days as tolerated until sufficient pain relief is attained. A dose of 600–800 mg daily, given in two divided doses, is generally ample, with a maxmum suggested total daily dose of 1200 mg.

There should be periodic attempts to gradually withdraw the drug if Mary's pain has been adequately controlled. If Mary does not respond to carbamazepine, consider referrring her to a neurologist.

CASE 4

KAREN HAS A NUMB FOOT

Karen, aged 34 years, is a mother of two who presents 3 months after giving birth to her second daughter. She has noticed a patch of altered sensation that feels a bit like a dentist's anaesthetic injection on her right foot. The odd feeling started a few days earlier, but has since spread up the leg to her thigh. There is no significant past history, except for an episode of visual loss in her left eye 10 years earlier that spontaneously resolved. Karen ceased breastfeeding 2 weeks after childbirth due to difficulties feeding. The only medication she is taking is the contraceptive pill, and she has no allergies.

QUESTION 1

What is the most likely diagnosis?

QUESTION 2

What further history taking and examination would you undertake?

FURTHER INFORMATION

On further questioning, Karen states that her mother had MS, but she has not thought to mention it before now. This increases Karen's risk 20–40-fold. She also admits to intermittent urinary incontinence, but has put this down to an aftermath of the pregnancy.

Examination reveals altered, but not absent, sensation in the right leg extending to an area around the perineum. Karen's visual acuity is normal and she has no mobility disturbance.

QUESTION 3

What investigations are appropriate? Can a diagnosis of MS be confirmed at this first presentation?

FURTHER INFORMATION

An MRI establishes the diagnosis of MS, with evidence of multiple brain and spinal cord lesions, including two gadolinium-enhancing lesions, one at T10, indicative of recent onset and probably responsible for her presenting symptoms.

QUESTION 4

Should you commence treatment for Karen? What are her options?

QUESTION 5

Given that MS is familial, is there an opportunity for primary prevention in close family members?

CASE 4 ANSWERS

ANSWER 1

While increasing neurological deficit can be caused by a number of illnesses, in a young adult woman, one should consider a diagnosis of MS. MS is the most common neurological illness in young adults and is more common in women. In this case a past history of visual loss that resolved suggests an earlier attack in optic neuritis, a common first presentation of MS that was not diagnosed. Relapses or flare-ups of MS are more common after childbirth, although breastfeeding offers some protection.

ANSWER 2

MS is familial, so it is important to take a family history. However, the great majority of people with MS have a negative family history. Further history should focus on any other neurological symptoms, particularly bladder issues and mobility. It is not unusual for people with MS to have evidence of existing neurological lesions at first presentation. Similarly, examination should look for evidence of other neurological disturbance. Visual acuity should be tested.

ANSWER 3

An MRI is the most definitive test to establish the diagnosis of MS, and can rule out other pathologies as well. Many neurologists today will not proceed to lumbar puncture (LP), depending on positive MRI findings, as the findings on LP are relatively non-specific. On MRI, evidence of typically located old lesions as well as new gadolinium-enhancing lesions indicates separate attacks, confirming MS, according to the McDonald Criteria 2010,[56] without needing to wait for follow-up scans or relapses. Recent evidence suggests that hypovitaminosis D is more common in people with MS than others[57] and is a common trigger for MS presentation and relapse, and the addition of vitamin D supplementation to standard therapy improves outcome in MS.[58] Vitamin D levels should be obtained; there is considerable evidence that people with MS should maintain high normal levels of vitamin D for optimal outcome, and that such levels are safe.[59] For people with low vitamin D levels at presentation (<75 nmol/L), a one-off megadose of 150 000 IU to 500 000 IU, depending on how low the level is, is safe and brings serum levels up rapidly.[60]

ANSWER 4

Disease-modifying therapies such as the interferons and glatiramer reduce the rate of relapses, but there are conflicting results on the rate of progression to disability.[61] However, as Karen has had only one previous documented attack, which was more than 2 years ago, this therapy would not be subsidised by the Pharmaceutical Benefits Scheme (PBS) in her case.

A secondary prevention approach, with modification of adverse risk factors, can provide significant benefits, with studies showing improvements in quality of life with a comprehensive risk factor modification approach.[62] Risk factors implicated include dairy and saturated fat consumption, stress, and lack of omega 3s, sun exposure and vitamin D.[63] Given the frequency of depression in MS, the GP should proactively focus Karen on attending to life pressures, stress and other risks for depression. Mindfulness-based meditation has been shown in a randomised trial to improve quality of life and depression.[64] Consideration may be given to referral for a residential educational workshop to assist in risk-factor modification (see *Resources*).

The interferons (interferon beta-1a and interferon beta-1b) produce a flu-like syndrome in around half the people who take them, which can have a significantly negative effect on quality of life. They are also associated with more significant toxicity including thyroid, hepatic and bone marrow problems. Glatiramer is relatively free of side effects, and just as effective, although it does require daily injection. New medications are more potent, but tend to have more side effects, although oral agents such as fingolimod are now available and these may be more acceptable to many people. Careful consideration of side effects is necessary.

Karen should be offered immediate treatment with intravenous methylprednisolone for her relapse while long-term prevention strategies can be discussed at a subsequent consultation.

ANSWER 5

The risk of developing MS for close family members is substantial. There is now considerable evidence that vitamin D supplementation reduces the risk of developing MS in susceptible individuals by up to 70%.[65–67] Doses of the order of 5000 IU daily of vitamin D should be taken by adult relatives, suitably adjusted for children. There is no danger of toxicity at that dose[68] so blood testing is unnecessary. Such supplements are available from compounding chemists or from reputable suppliers. Commonly available vitamin D supplements of 1000 IU a day are insufficient to affect vitamin D levels significantly.

CASE 5

MARTIN HAS INVOLUNTARY MOVEMENTS

Martin, 57 years of age, has had Parkinson disease for 6 years. He comes in to see you with his wife, Lorraine. He sits wriggling and squirming in the chair with choreiform movements more marked in his right limbs. He has facial grimacing movements and says that he has been having difficulty coping with the hot weather when his involuntary movements are even more troublesome. Lorraine starts crying and says that she can't take it any more. Martin has been a secondary school teacher for 30 years and says that he is still coping with work. At times his voice is soft and his gait is slower with a tendency to freeze.

He is on a combination of levodopa 150 mg/carbidopa 37.5 mg/entacapone 200 mg and he takes this combination in six tablets a day at intervals of 3 hours from 6 am. He also takes pramipexole extended release 4.5 mg once daily and rasagiline 1 mg mane.

QUESTION 1

What is the most likely cause of Martin's involuntary movements? What action might be taken to reduce them?

QUESTION 2

Lorraine is visibly distressed. What questions would you ask Lorraine?

FURTHER INFORMATION

Given the presence of impulse control symptoms, you decide to remove the pramipexole from his medication list.

Martin and Lorraine attend again a week later. Martin's appearance has changed and he is now free of the wriggling movements, but appears slow and shuffly with a dejected expression. Lorraine once again appears tearful. Martin has been sleeping poorly and complains of restlessness in his legs and reduced energy. He has been unable to concentrate when taking classes and he requests some time off work.

QUESTION 3

What factors could contribute to Martin's difficulty in coping with work?

QUESTION 4

What might be done for his insomnia and restless legs syndrome?

FURTHER INFORMATION

Martin returns the following week and says that he has been able to sleep 5 hours per night. He still has some discomfort in his legs in the early hours of the morning and his energy levels remain poor. His off-phases are troublesome and he is concerned that he will not be able to return to work.

QUESTION 5

What other treatments might be considered?

CASE 5 ANSWERS

ANSWER 1

Martin's involuntary movements are most likely drug induced. Drug-induced dyskinesia can produce writhing or wriggling movements, which can be mild and confined to a distal limb or may be worse on the side more affected by the Parkinson disease. This type of dyskinesia may also involve cervical and truncal rocking movements and facial grimacing. Sometimes there is a dystonic component with a tendency to hold the neck tilted or turned or to invert a foot or hold an arm in an unusual posture.

The levodopa preparations, rasagiline and pramipexole (a dopamine agonist), can all contribute to dyskinesia. When there is a sudden worsening it may relate to a change in the patient's medication. In Martin's case, rasagiline[69] was added soon after it was listed on the PBS in August 2012, and the dyskinesia, which had been mild prior to that, had become quite troublesome. Martin had been advised to reduce the levodopa (by reducing the combination tablet) if dyskinesia occurred, but he preferred to stay on the higher dose.

The use of dopaminergic medication that is disproportionate to the degree of immobility experienced in the off-phase of Parkinson disease is now recognised as an iatrogenic disorder called 'dopamine dysregulation syndrome'. In dopamine dysregulation syndrome,[70] patients often adjust their medication upwards themselves. They are tolerant of dyskinesia with accompanying euphoria in their on-phases and dysphoria in their off-phases. This craving or addiction to dopaminergic replacement can also manifest with impulse control problems and may be resistant to downward adjustment of their medication. Impulse control disorders[71] can express themselves as pathological gambling, hypersexuality, excessive shopping and punding (pointless obsessional behaviour such as the repetition of complex motor behaviors [e.g. collecting or arranging objects]).

The most immediate benefit might be obtained from reducing the number of levodopa combination tablets per day. Pramipexole may also contribute to dyskinesia and impulse control problems. Consider reducing the dose of pramipexole first if there are behavioural problems and mental side effects associated with the dyskinesia.

ANSWER 2

Carer stress associated with Parkinson disease is often exacerbated by impulse control problems. The long-term difficulties of reduced ability to work, income insecurity and reduced shared household work are compounded by social withdrawal, mood change and lack of motivation from the Parkinson disease. When there is a crisis in a marital relationship, secrecy associated with the patient's gambling or problems related to hypersexuality are commonly found. Ask Lorraine specific questions about gambling behaviour, punding and hypersexuality. In this case, Lorraine had found a credit card deficit and, when she checked the history of their internet usage, found extensive use of pornographic websites.

ANSWER 3

The impact of parkinsonian motor features depends on the person's social and occupational situation. A mild dysarthria with reduction in gesture and facial expression will have significant impact for a teacher. The presence of dyskinesia can be disabling in social situations. Similarly, subtle cognitive changes, such as word-finding difficulty, difficulty changing mental set and distractibility, will be significant problems for somebody with intellectually demanding work. Other non-motor features of parkinsonism, including depression and an increased tendency to anxiety, may lead to difficulty coping with stress. Fatigue and apathy may also reduce working hours.

ANSWER 4

The sudden withdrawal of pramipexole may lead to exacerbation of parkinsonian motor features, increased fatigue, the recurrence or exacerbation of restless legs syndrome, low mood and sleep disturbance. Sometimes it is necessary to resume the dopamine agonist at a lower dose, but this carries a significant risk of recurrence of the impulse control problems such as gambling and hypersexuality. Sometimes a compromise can be reached. Practical measures to help control them include counselling for financial and gambling-related problems as well as marital counselling.

A low dose of amitriptyline can be useful for middle and late insomnia associated with Parkinson disease. While there is a risk of developing serotonin syndrome in using antidepressant agents with rasagiline (a monoamine oxidase type B inhibitor), small doses of amitriptyline may be tolerated.

ANSWER 5

Deep brain stimulation (DBS)[72] should be considered for the treatment of patients with Parkinson disease who are having significant motor fluctuations that are difficult to control with drug therapy. This may be because of a tendency to dyskinesia in the on-phases or the unpredictability of the off-phases. At other times, difficulties in tolerating drug treatment because of behavioural side effects might also favour this treatment modality as it may allow a reduction in dose of parkinsonian drugs, in particular dopamine agonists.

DBS should not be considered if there are other major health risks such as major depression or significant cognitive impairment. If gait changes and freezing improve significantly with drug therapy they will often respond quite well to DBS surgery, but severe balance problems and 'freezing', regardless of drug treatment, are more resistant.

DBS is often a favoured option in the treatment of patients with early-onset Parkinson disease who, after several years of responding quite well to drug treatment, are having increasing difficulties that threaten their social and working life.

CASE 6

PETER HAS HIGH BLOOD PRESSURE

Peter, 72 years of age, comes to see you for a check-up and a repeat prescription of perindopril. He is divorced and lives alone on a small property 20 km outside Bendigo in regional Victoria. He drives a car and works 2 half days as a bookkeeper in Bendigo. He is a right-handed ex-smoker who quit 6 years ago after he had a heart attack. This is documented in his past history as a 'non-ST elevation myocardial infarction'. He also has a past history of hypertension and hypercholesterolaemia. He previously smoked 5 cigarettes per day for 30 years (8PY) before quitting.

Peter has no family history of stroke or of cardiovascular disease. He has osteoarthritis of both knees, but is otherwise well. Recent blood tests showed a normal fasting glucose as well as a normal fasting cholesterol profile. His current medications are aspirin 100 mg, perindopril 5 mg, metoprolol 25 mg and pravastatin 20 mg every day.

On examination today his pulse rate is irregularly irregular and his blood pressure (BP) is 155/100 mmHg seated. An electrocardiogram confirms newly diagnosed atrial fibrillation (AF) at 66 beats per minute (bpm). Peter denies any symptoms consistent with transient ischaemic attack (TIA) or stroke.

QUESTION 1

What factors need to be addressed to reduce Peter's risk of stroke?

QUESTION 2

What further investigations, if any, would you order?

QUESTION 3

What medication would you prescribe, if any?

FURTHER INFORMATION

Peter refuses any further testing or medication change, as he feels well and is about to leave for a month's holiday in Thailand. Six months later he returns for a check-up and reports having had an episode of 2 hours non-fluent speech disturbance while at work about a month previously. His employer was away and he coped by not answering the phone at work that day. He was unable to process any numbers or figures during this time, but he is confident that he had no other symptoms. The speech disturbance recovered completely after 2 hours. He feels that he has now fully recovered. His BP today is 160/95 mmHg seated and he is in AF at 72 bpm. Examination is otherwise normal.

QUESTION 4

What is your diagnosis?

QUESTION 5

What investigation needs to be done now?

QUESTION 6

What medication changes would you recommend now?

QUESTION 7

What advice would you give Peter with respect to driving?

CASE 6 ANSWERS

ANSWER 1

The two risk factors that need to be addressed in Peter's situation to reduce the risk of stroke are hypertension and AF. The most prevalent reversible risk factor for stroke is hypertension.[73] Normalisation of hypertension significantly reduces stroke risk and the BP target in non-diabetic patients is 130/80 mmHg. Hypertension increases stroke risk in patients with other risk factors such as carotid stenosis.

Anticoagulation is recommended in Peter's situation to prevent an atrial thrombus forming in the presence of AF.[74] He has no previous history of stroke and there are no contraindications for him to commence on anticoagulant therapy. The overall risk of ischaemic stroke rises with age and over 70 years of age the prospective risk generally exceeds the annualised risk of haemorrhagic complications from anticoagulation.

ANSWER 2

Strictly speaking, no further tests are necessary. However it is prudent to order a transthoracic echocardiogram (TTE) in someone with newly diagnosed AF to check for mural dyskinesia or an occult valve lesion. Mural thrombi are seldom visible on TTE, but their absence will not affect the decision to commence anticoagulation treatment.

ANSWER 3

There is no particular drug needed to control hypertension in rate-controlled AF.

Standard stroke prophylaxis in Peter's case would be to commence warfarin. If warfarin is commenced then aspirin is stopped. Once started on warfarin his international normalised ratio (INR) needs to be kept between 2.0 and 3.0.

ANSWER 4

Peter has most likely had a minor cortical stroke or TIA, most likely in the middle cerebral artery distribution.

ANSWER 5

Carotid ultrasound is the investigation of choice in acute presentations of suspected TIA. High-grade stenosis (>70%) in the carotid artery poses significant stroke risk in males even in non-symptomatic patients. Endarterectomy[75] significantly reduces this risk. Peter does not have an excessive surgical or anaesthetic risk and his life expectancy is greater than 5 years. The complication rate is for endarterectomy is 3–4%. The risk of developing a stroke with a high-grade stenosis is estimated at 6% in 2 years. The main complication of endarterectomy is perioperative stroke. The benefit of surgery declines 2 weeks post stroke or TIA, but surgery may still be indicated in this case.

Non-contrast brain CT[76] is useful prior to anticoagulation to exclude small or occult infarcts, as well as prior small intracerebral haemorrhages, which may have been unreported or asymptomatic. These may indicate amyloid angiopathy in someone aged over 70 years and makes anticoagulation more of a risk.

As well as imaging, it will be important to monitor Peter's serum glucose and lipid levels.

ANSWER 6

Peter now has an increased risk of developing a stroke and treatment is highly recommended. The treatment target for secondary prevention of stroke is still similar to primary prevention, but as his future stroke risk is higher, treatment is more strongly indicated.

A recent study suggested a very small relative benefit with combined perindopril and indapamide;[77] however, there is no compelling reason not to use another agent if Peter is intolerant of these drugs.

Warfarinisation reduces stroke risk overall by an odds ratio (OR) of about 0.65. Aspirin up to 150 mg a day alone is inadequate, as it only reduces the OR by 0.20–0.35, but is better than no treatment where warfarin is contraindicated. There is no strong evidence as to whether clopidogrel monotherapy, aspirin and clopidogrel, or a combination of aspirin/dipyridamole is of greater benefit in preventing stroke in AF. However, all these options are more effective than aspirin. Newer antiplatelet agents such as prasugrel have not been evaluated in high-quality studies with regards to preventing ischaemic stroke.

Newer anticoagulants that do not require INR testing are now becoming available. Rivaroxaban, apixaban and dabigatran are available in Australia although not all of them are currently subsidised by the PBS. They are expensive, and cannot be quickly reversed in case of catastrophic haemorrhage or emergency surgery, but they may have a slightly lower haemorrhage risk.

ANSWER 7

You need to advise Peter about current AustRoads[78] guidelines. These recommend not driving a private car for 2 weeks post TIA and 4 weeks post stroke. Neurological assessment is usually required for holders of heavy vehicle licences. Notification to the relevant road authority of a new medical condition like a stroke is a statutory requirement of the driver. Doctors are not compelled to report drivers, but consideration needs to be given if a non-compliant patient puts the community at risk by driving against this restriction. Drivers remaining unfit beyond these periods must remain off the road until fit to resume driving.

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RESOURCES FOR DOCTORS

Paediatric headache

- The American Academy of Neurology (www.aan.com/practice/) has published practice guidelines that can be accessed by non-members.
- The American Headache Society (www.americanheadachesociety.org) has information for both doctors and patients.

Multiple sclerosis

- The National Institute for Health and Care Excellence (UK) (http://guidance.nice.org.uk/CG8) provides guidance for doctors based on the best available evidence, including the management of MS.
- The Mayo Clinic (US) has information on MS (www.mayoclinic.com/health/multiple-sclerosis/DS00188).
- Prof George Jelinek, an experienced medical clinician and researcher, who has MS, recommends a range of well-researched options in his book *Overcoming multiple sclerosis: an evidence-based guide to recovery*, Sydney: Allen and Unwin; 2010 (www.overcomingmultiplesclerosis.org/book/).

RESOURCES FOR PATIENTS

Paediatric headache

- The American Headache Society (www.americanheadachesociety.org) has information for both doctors and patients.
- Information and support for migraine sufferers is provided by the Migraine Research Foundation (www.migraineresearchfoundation.org).

Facial pain

- The Better Health Channel website has good information on neuralgia (www.betterhealth.vic.gov.au/bhcv2/bhcarticles.nsf/pages/Neuralgia_explained).
- The Trigeminal Neuralgia Association Australia is a resource for patients (www.tnasydney.freeservers.com).

Epilepsy in pregnancy

- The Australian Epilepsy Pregnancy Register is a voluntary, nationwide study that is enrolling women with epilepsy/taking antiepileptic mediation who are currently pregnant or who have recently given birth (infants up to 6–9 months of age) (www.neuroscience.org.au/apr).
- Epilepsy Australia is a useful website for patients (www.epilepsyaustralia.net). Each of the states has a website. See under 'Epilepsy Australia Affiliates'.

Multiple sclerosis

- The Mayo Clinic (US) has information on MS (www.mayoclinic.com/health/multiple-sclerosis/DS00188).
- Prof George Jelinek, an experienced medical clinician and researcher, who has MS, recommends a range of well-researched options in his book *Overcoming multiple sclerosis: an evidence-based guide to recovery*, Sydney: Allen and Unwin; 2010 (www.overcomingmultiplesclerosis.org/book).
- An evidence-based website for patients diagnosed with MS is available (www.overcomingmultiplesclerosis.org).
- The Gawler Foundation offers a residential lifestyle program for patients diagnosed with MS (http://gawler.org/retreats/multiple-sclerosis).

Neurology

In order to qualify for six 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 3.
FOR EACH QUESTION BELOW SELECT ONE OPTION ONLY.

QUESTION 1

John, 8 years of age, has been seeing you for review of his migraines. John has been having migraines for over 12 months. The headaches are throbbing, lasting 3–5 hours and are often in the right frontal area. They are worse with physical activity. His mother also gets migraines.

Which of the following statements is true regarding similarities and differences between paediatric and adult migraine?

A. Paediatric migraine is more likely to be unilateral in location than in adults.

B. Photophobia is more prominent in paediatric migraine.

C. Phonophobia is more prominent in paediatric migraine.

D. Paediatric migraine is often of shorter duration than adult migraine.

E. The association between migraine and mood disorders, as seen in adults, has also been demonstrated in children.

QUESTION 2

What neuroimaging is indicated for John for the diagnosis of migraine?

A. CT brain

B. MRI brain

C. MR angiography brain

D. CT sinuses

E. None of the above.

QUESTION 3

Which of the following medications is recommended for first-line acute treatment in this patient?

A. Dihydroergotamine

B. Ibuprofen

C. Sumatriptan

D. Amitriptyline

E. Topiramate.

QUESTION 4

Which of the following statements best characterises the use of preventive medications in the paediatric migraine population?

A. Preventive medication is not indicated if the patient has fewer than four headaches per month.

B. Once started, preventive medication is usually continued for several years.

C. The efficacy of nutraceuticals such as magnesium, riboflavin and coenzyme Q10 in paediatric migraine prophylaxis is supported by randomised controlled trials (RCTs).

D. The efficacy of amitriptyline and cyproheptadine in paediatric migraine prophylaxis is supported by RCTs.

E. Comorbid conditions can guide the choice of preventive medication.

QUESTION 5

Bob, 65 years of age, presents at your surgery with episodes of pain in the left side of his face. The episodes are brief and shock-like, and last from several seconds to nearly a minute. They occur around the left cheek and are triggered by washing the area and by shaving. There are no associated neurological features. Last year Bob had shingles on the right side of his face. What is the most likely cause of his pain?

A. TN

B. Post-herpetic pain

C. Cluster headaches

D. Sinus pain

E. Migraine.

QUESTION 6

What would be the first-line treatment for Bob?

A. Lamotrigine

B. Baclofen

C. Carbamazepine

D. Amoxicillin

E. Paracetamol.

QUESTION 7

Which of the following is true of TN?

A. Imaging is required to establish a diagnosis.

B. Blood tests are required to establish a diagnosis.

C. It is more common in men than women.

D. It usually affects the ophthalmic branch of the trigeminal nerve.

E. It usually affects the maxilllary or mandibulor divisions of the trigeminal nerve.

QUESTION 8

Bernadette, 35 years of age, is a mother of two. She has a 3-year history of MS. Bernadette presented initially with optic neuritis. She has been well since that time. She woke this morning with numbness in her left hand. This is her first relapse of MS. What is an effective treatment for a relapse of MS?

A. Methylprednisolone

B. Interferon b

C. Glatiramer

D. Vitamin D 100 000 IU

E. Fingolimod.

QUESTION 9

Athol, 61 years of age, has had Parkinson disease for 7 years. He currently takes levodopa, a dopamine agonist and an irreversible MAO inhibitor. The dose of his levodopa was recently increased from four to six times per day by a colleague. He presents with choreiform movements and truncal rocking. What is the most likely cause of his involuntary movements?

A. Stroke

B. Space-occupying lesion

C. Drug-induced dyskinesia

D. Multiple sclerosis

E. Lewy body dementia.

QUESTION 10

Tim, an accountant 63 years of age, has a 10-year history of hypertension. His blood pressure today is 170/90 mmHg. He has come in for a repeat prescription of irbesartan 150 mg, which he has not taken for a month or so because he ran out. One of his work colleagues recently had a stroke.

What is the most prevalent reversible risk factor for stroke?

A. Smoking

B. High cholesterol

C. AF

D. Carotid stenosis

E. Hypertension.

check

Independent learning program for GPs

Unit 498 September 2013

Emergency presentations

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Emergency presentations

Unit 498 September 2013

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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RACGP

Emergencies are an every day occurrence in general practice. The breadth and depth of general practice means that we can see a child with tonsillitis, followed by a man with severe chest pain, then a repeat script for the pill and identify a newly diagnosed diabetic all in one day.

We need to be able to recognise the emergency, assess its severity and put in place a management plan in a relatively short time. In a limited resource environment this may also mean being responsible for managing the emergency until further help becomes available.

This unit of *check* looks at a variety of clinical emergencies including meningitis, ectopic pregnancy and anaphylaxis.

We would like to thank the authors for providing a wealth of information on emergency presentations in this unit of *check*.

The authors of this unit are:

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The reviewer of this unit is:

John Murtagh MD, MBBS, BSc, Bed, FRACGP, Emeritus Professor, Monash University and Professorial Fellow in the Department of General Practice, University of Melbourne. He is the author of several internationally adopted text books including *General Practice*, *Practice Tips*, *Patient Education* and *Cautionary Tales*. Murtagh's *General Practice* has been translated into 13 languages.

The learning objectives are that by the end of this unit, participants will be able to:

- list the symptoms of anaphylaxis
- discuss the relationship between positive pregnancy tests, ultrasound and vaginal bleeding in the diagnosis of ectopic pregnancy
- demonstrate awareness of an appropriate management plan in meningococcal disease
- formulate a triage system to help identify emergency presentations in general practice appropriate for reception staff
- recognise emergencies presenting with abdominal pain.

We hope this edition of *check* will help you to manage emergency presentations of patients in your clinic.

Kind regards,

Jill Pope
MBBS, PGradDipArts(Edit&Comms), GradDipArts(Ling&AppLing)
Medical Editor *check* Program

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

ABC	airway, breathing and circulation	IgE	immunoglobulin E	PCR	polymerase chain reaction
βhCG	beta human chorionic gonadotropin	IM	intramuscular	PML	polymorph leucocyte
BP	blood pressure	IUP	intrauterine pregnancy	SpO_2	saturation of peripheral oxygen
		IV	intravenous	TVS	transvaginal ultrasound

CASE 1

ELINOR HAS VAGINAL BLEEDING

Elinor, aged 27 years, is a single woman who presents with a 3-day history of intermittent cramping lower abdominal pain and mild constipation. She is feeling mildly nauseated and anorexic. She has not travelled overseas recently and the rest of her family are well. She can't remember when she had her last period. She noticed some vaginal bleeding this morning and wonders if this is her period. She is otherwise well and uses no medicine, or over the counter or illicit drugs.

QUESTION 1

What examination and investigations would you perform?

QUESTION 2

What is the probability diagnosis and what serious diagnoses should not be missed?

FURTHER INFORMATION

On examination, Elinor is comfortable and in no obvious pain. She is afebrile and haemodynamically stable. Her urine pregnancy test is positive. She has mild general lower abdominal tenderness with no rebound tenderness and no masses. The uterus is bulky but pelvic examination is otherwise normal. On speculum examination the cervix is closed with a moderate amount of bright blood at the cervix. No products of conception are visible.

QUESTION 3

How would you manage Elinor?

FURTHER INFORMATION

You order the investigations and review Elinor that afternoon. The trans-vaginal ultrasound (TVS) and does not show any contents in the uterus, adnexal masses or fluid in the pouch of Douglas. The beta human chorionic gonadotropin (βhCG) level is 1800 IU/L and her blood group is A negative with no antibodies. The urine chlamydia polymerase chain reaction (PCR) result is pending.

QUESTION 4

Given the above findings, how would you manage Elinor?

FURTHER INFORMATION

You review Elinor's βhCG and TVS in 2 days. The βhCG level has now risen to 2100 IU/L and there are still no relevant ultrasound findings.

QUESTION 5

What is your diagnosis and management?

QUESTION 6

What is the significance of Elinor's Rhesus negative blood group?

CASE 1 ANSWERS

ANSWER 1

Elinor needs to have her vital signs assessed. It is important to observe how unwell she is as well as her level of abdominal discomfort. It is essential that she has a urine pregnancy test performed during the consultation as this will guide the remainder of your examination. Examine her abdomen for tenderness, rebound tenderness and masses.

Investigations to order include a full blood evaluation (FBE) and urine screen.

If the pregnancy test is positive, she requires a:

- bimanual examination, looking for the size of the uterus, adnexal masses and tenderness, and cervical motion tenderness
- speculum examination to see if the cervix is inflamed, open or closed, and to assess the site and amount of bleeding and if there are any potential products of conception visible.

ANSWER 2

Elinor is well, afebrile and has normal vital signs. If she has a negative pregnancy test, the probability diagnosis is constipation or dysmenorrhoea. However, it is important to exclude pregnancy and in particular ectopic pregnancy. Pelvic inflammatory disease and appendicitis are also important to exclude.

If Elinor's pregnancy test is positive, she could have an ectopic pregnancy, be miscarrying or be experiencing a threatened miscarriage (ongoing pregnancy).

The trio of abdominal pain, amenorrhoea and vaginal bleeding are the classic symptoms of ectopic pregnancy and should be suspected in any women of reproductive age with these symptoms. Ectopic pregnancy can also be asymptomatic or present with shock or collapse.[1]

ANSWER 3

Given the positive pregnancy test, abdominal pain and vaginal bleeding, the differential diagnosis is related to pregnancy – that is, ectopic pregnancy, miscarriage or threatened miscarriage (see *Figure 1*).[2]

If Elinor had shown any signs of haemodynamic instability, acute abdomen, adnexal mass, or pain or tenderness on examination, she would need to be resuscitated with fluid and transferred immediately to an emergency department. The signs could indicate either intraperitoneal haemorrhage or ectopic pregnancy rupture, and these can be associated with morbidity and mortality.[3]

As Elinor has none of these signs, management at this stage can continue to occur in the community.

Elinor needs to be made aware of the differential diagnoses and the potential serious nature of these diagnoses. She needs to be reviewed promptly if she has new or worsening symptoms.

Elinor requires a TVS with a review later in the day or the following day; she also requires a quantitative βhCG and a blood group and

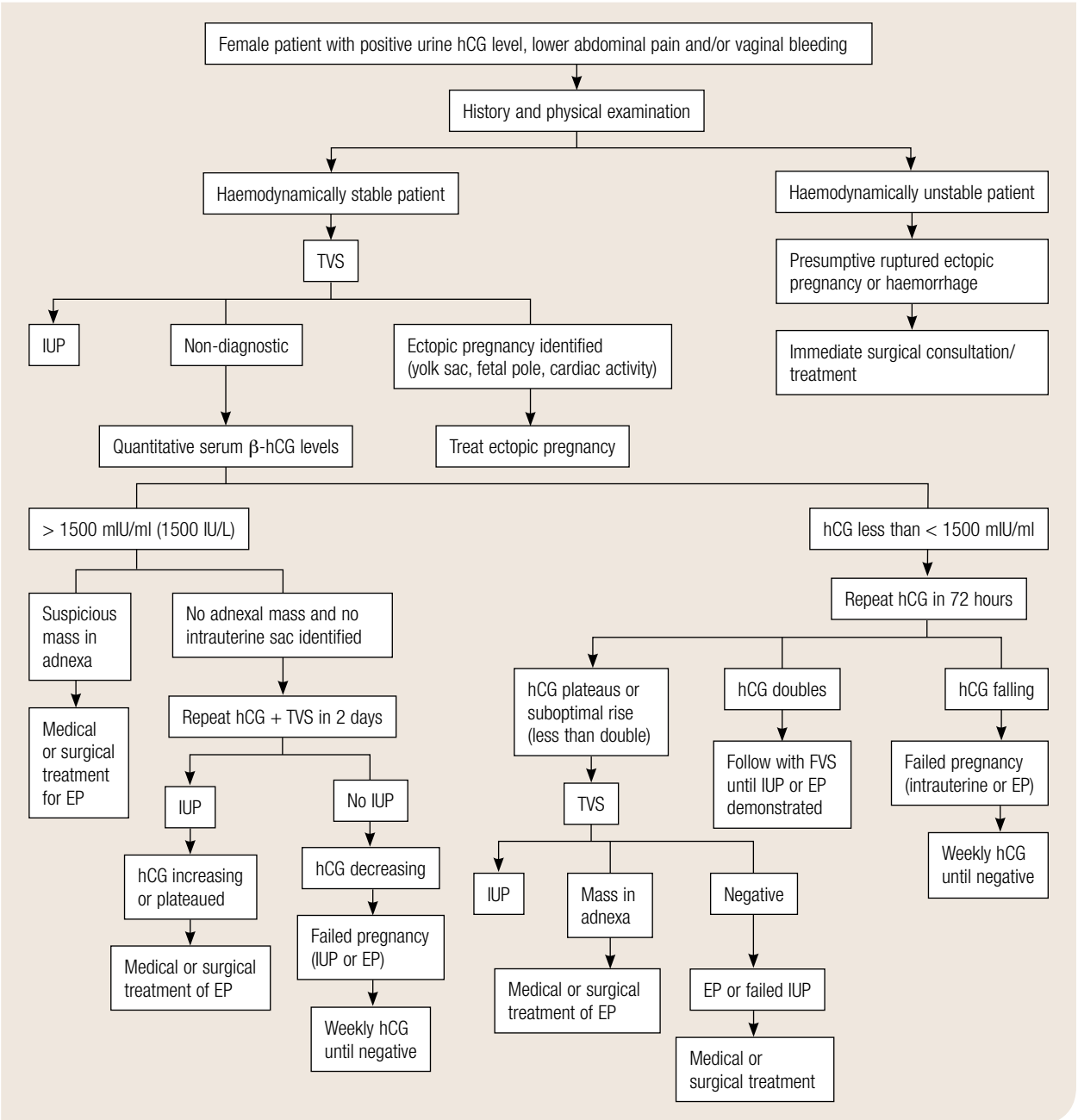

Figure 1. Management of female patient with positive urine hCG level, lower abdominal pain and/or vaginal bleeding. EP: ectopic pregnancy; IUP: intrauterine pregnancy; TVS: transvaginal ultrasound; hCG: human chorionic gonadotropin. Reproduced with permission from: Tulandi T. Clinical manifestations, diagnosis, and management of ectopic pregnancy. In: UpToDate, Basow DS (Ed), UpToDate, Waltham, MA 2013. Copyright © 2013 UpToDate, Inc. For more information visit www.uptodate.com.

antibody screen. Chlamydia testing is a recommended screening test in this age group (under 30 years) and can be considered as an opportunistic investigation.[4]

ANSWER 4

Based on a TVS result, bleeding in early pregnancy suggests three possibilities:[5,6]

1. **TVS is suggestive of an ectopic pregnancy**. Findings that are definite are an extra-uterine embryo, which is seen in 15–20% of ectopic pregnancies. Strongly suggestive findings include free pelvic/intraperitoneal fluid, tubal ring and a complex adnexal mass. In these cases, the woman requires immediate referral for hospital care for treatment of ectopic pregnancy.
2. **TVS shows an intrauterine pregnancy (IUP) and there is no concern for heterotopic pregnancy**. TVS may reveal normal findings confirming an IUP, and so ectopic pregnancy is likely to be excluded. In this case, evaluation for miscarriage should be undertaken. It is important to note that an ectopic pregnancy may

be mistakenly excluded in the case of heterotopic pregnancy (a combined intrauterine and ectopic pregnancy, which is rare except among women conceiving through assisted reproduction) and pseudosacs (false sacs that can be confused with gestational sacs; they occur in 10–20% of ectopic pregnancies).

3. **TVS is indeterminate, showing signs of neither an ectopic pregnancy or IUP**. In this case, the diagnosis or exclusion of ectopic pregnancy is less certain.

   Elinor's TVS is classified as 'indeterminate' as her TVS shows no signs of either an ectopic pregnancy or IUP. In this situation the βhCG level is used to classify the ultrasound results further into a 'non-diagnostic' or an 'abnormal pregnancy'.[5,6] This is done by comparing the βhCG level to the discriminatory zone. The discriminatory zone is the βhCG level above which a gestational sac is usually identified by an expert ultrasonographer on TVS if an IUP is present. It is usually 1500 to 2000 IU/L (with the level being much higher, at about 6500 IU/L, with transabdominal ultrasound).[7,8] The discriminatory zone is dependent upon a number of factors, including the skill of the ultrasonographer, the ultrasound equipment used, physical factors (such as fibroids, multiple gestation, obesity), and the βhCG assay used.[7,8]

   An *abnormal pregnancy* is where there is an indeterminate TVS and a βhCG above the discriminatory zone. It is strongly suggestive of ectopic pregnancy or recent spontaneous miscarriage.[3,9] However, since there is no proven discriminatory level for multiple gestations, it may represent a multiple gestation. Very careful follow-up is therefore needed in an abnormal pregnancy because of a high likelihood of ectopic pregnancy.[3] Depending on the clinical situation and the clinical suspicion of ectopic pregnancy, this may require referral to an emergency setting, follow-up at an early pregnancy assessment service or follow-up in the community by a GP.

   A *non-diagnostic pregnancy* is where there is an indeterminate TVS and a βhCG level below the discriminatory zone. It is consistent with an early viable IUP, a non-viable IUP (e.g. recent miscarriage) or an ectopic pregnancy (which is ultimately diagnosed in 8–40% of these cases[9]). In this case, if the patient is clinically well, the βhCG needs to be repeated in 48–72 hours and serially with a repeat TVS if the βhCG rises above the discriminatory zone.[3]

   - A falling βhCG supports a failed pregnancy. In this case, if clinically appropriate, βhCG levels should be undertaken weekly until negative for pregnancy.
   - A doubling of βhCG supports a developing IUP. In this case, if clinically appropriate, the βhCG should be followed until an IUP is visible on TVS.
   - A βhCG that plateaus or has a suboptimal rise suggests an ectopic pregnancy and the woman should be immediately transferred to a hospital setting for management of possible ectopic pregnancy.

   However, a normal rise of βhCG may be seen in up to 15% of ectopic pregnancies and an abnormal rise may be seen in 15% of IUPs.[10]

Therefore, if the TVS is indeterminate (either abnormal or non-diagnostic), careful assessment and follow-up is required as an ectopic pregnancy is not excluded until location is identified or complete miscarriage confirmed.[3,9]

For Elinor, the lack of a gestational sac in the uterus with a βhCG level above the discriminatory zone supports a likely ectopic pregnancy. Other possibilities include multiple pregnancy and a non-viable pregnancy (e.g. a recent miscarriage).

If your clinical suspicion of an ectopic pregnancy is high, you should transfer Elinor to an emergency setting; however, as Elinor is clinically well, it is reasonable to repeat a TVS and quantitative βhCG in 2 days. As before, Elinor needs to be fully aware of and agree with the management plan and know what to do in the case of new or worsening symptoms.

ANSWER 5

The continued lack of a gestational sac in the uterus with a slowly rising βhCG level above the discriminatory zone supports the diagnosis of an ectopic pregnancy. Elinor needs to be immediately transferred for hospital care for treatment of an ectopic pregnancy.

The standard approach for serial βhCG is looking for a rise of at least 63% over 48 hours, which is considered normal for a viable IUP (although this does not exclude the possibility of ectopic pregnancy).[10] Elinor's βhCG showed a rise of only 16%.

ANSWER 6

Elinor has an ectopic pregnancy and because her blood group is Rhesus negative with no preformed antibodies, she will require prophylactic anti-D immunoglobulin. For women with Rhesus negative blood group with no preformed antibodies, prophylactic anti-D immunoglobulin is routinely offered at 28 and 34 weeks gestation and postpartum if the baby is Rhesus positive.

FEEDBACK

In addition, prophylactic anti-D immunoglobulin is offered for:

- **1st trimester (<12 weeks) potential sensitising events – including ectopic pregnancy, termination of pregnancy, miscarriage and chorionic villus sampling**
- **2nd and 3rd trimester (from 12 weeks gestation onwards) potential sensitising events – including vaginal bleeding, obstetric haemorrhage, amniocentesis and cordocentesis, external cephalic version (whether successful or not), abdominal trauma, and any other suspected intra-uterine bleeding or sensitising event.**

There is insufficient evidence to suggest that a threatened miscarriage before 12 weeks gestation necessitates anti-D.[11]

CASE 2

LUCAS HAS A FEVER AND IS VOMITING

Lucas, aged 8 months, is brought in by his mother, Linda, with fever and vomiting for the past few hours. He was born at term by a normal vaginal delivery after an uneventful pregnancy, and has been a healthy and happy child, with no significant illnesses up until now. He has been followed regularly by a maternal and child health nurse, and is up to date with his vaccinations.

Linda states that Lucas woke up crying at around 7 am this morning. He felt hot, had vomited once and was floppy to hold. He was given a dose of ibuprofen by his mother, who then brought him to your clinic to be seen as an emergency appointment. He had been well the previous day and had fallen asleep normally with his usual bedtime routine. There is no history of upper respiratory tract infection symptoms and no diarrhoea. His family has not travelled overseas recently and no other member of the household has been ill.

On examination Lucas appears drowsy and is moaning continuously. There is no neck stiffness. His temperature is 39.2 °C, respiratory rate is 40, heart rate is 180 and blood pressure 80/50 mmHg. His airway appears patent and there is no stridor; auscultation of his lungs reveals good air entry bilaterally with no crackles or wheezing. Capillary refill is less than 2 seconds, and you note a diffuse maculopapular rash with several non-blanching lesions (petechiae) on the extremities (see *Figure 2*). His anterior fontanelle is not bulging.

Figure 2. Rash on Lucas's leg. Reproduced with permission from Meningitis Research Foundation.

QUESTION 1

What illnesses may be associated with a petechial rash?

QUESTION 2

What is your diagnosis?

QUESTION 3

What is your immediate management?

QUESTION 4

Which antibiotics would you consider and via which route of administration?

FURTHER INFORMATION

Lucas is transported by ambulance to the nearest hospital emergency department with paediatric facilities. Lumbar puncture is performed using appropriate precautions, and the results are indicative of bacterial meningitis.

QUESTION 5

What further management is indicated?

FURTHER INFORMATION

Lucas remains in hospital and improves significantly over the next 48 hours. Cerebrospinal fluid and blood cultures grow *Neisseria meningitidis*.

QUESTION 6

What further measures should be taken?

CASE 2 ANSWERS

ANSWER 1

Several illnesses can present with fever and petechiae or purpura, including viral infections such as enterovirus and bacterial infections caused by *N. meningitidis*, *Streptococcus pneumoniae* and *Haemophilus influenzae*.[12] Non-infectious causes of a purpuric rash include Henoch–Schönlein purpura, idiopathic thrombocytopenic purpura and leukaemia.[13] Petechiae around the head and neck may be caused by vomiting or coughing.

ANSWER 2

Lucas is clearly unwell, with fever, decreased tone and an altered level of consciousness. In this setting the diagnosis of acute meningococcal disease must be considered, and appropriate treatment instituted.

ANSWER 3

Immediate management starts with assessment of airway, breathing and circulation (ABCs). Lucas is moaning continuously, with no stridor and good air entry noted on auscultation. He is warm and well perfused with capillary refill of less than 2 seconds and a blood pressure in the normal range for his age. His ABCs thus appear intact. However, there is the potential for rapid deterioration in this setting, and he should be re-evaluated frequently.

Oxygen should be administered to Lucas and intravenous (IV) access obtained for the possibility of fluid resuscitation and administration of antibiotics. Blood cultures should also be taken when obtaining IV access, if possible. Obtaining IV access may be difficult due to hypotension and/or inexperience of the doctor. Intra-osseous access may be considered if the doctor is experienced.

If fluid resuscitation is deemed necessary, an initial bolus of 20 mL/kg of normal saline should be administered, with frequent reassessment of perfusion and the administration of additional boluses up to a total of 60 mL/kg if signs of hypoperfusion persist.[14]

Early contact with emergency services to arrange urgent hospital transfer is essential. Communication with paediatric critical care services is necessary to discuss management and to assist with hospital transfer if necessary.

ANSWER 4

Antibiotics should be administered to Lucas as soon as possible and before hospital transfer. Current recommendations[15] are for the administration of cefotaxime 50 mg/kg, the reason being that even though meningococcal isolates in Australia remain sensitive to treatment with penicillins,[16] it is not possible to immediately distinguish between disease caused by *N. meningitidis* and disease caused by other invasive bacterial pathogens, such as *S. pneumoniae*. Other third-generation cephalosporins such as ceftriaxone may be used. In the presence of previous anaphylactic reactions to cephalosporins, chloramphenicol is recommended.

The preferred route of antibiotic administration is IV. If IV or intra-osseous access cannot be obtained, the antibiotic may be administered via the intramuscular route, although this is not ideal as decreased perfusion in the setting of shock may limit absorption. It is, however, preferable to not giving any antibiotic.

ANSWER 5

Cefotaxime should be continued at the dose of 50 mg/kg IV every 6 hours. In addition, current evidence supports the use of steroids to reduce the risk of hearing loss and reduce cerebral oedema in bacterial meningitis.[17] Commence dexamethasone 0.15 mg/kg IV, before or shortly after the first dose of antibiotic, and continue for 4 days.

ANSWER 6

Meningococcal disease requires notification, and the department of public health needs to be contacted as soon as possible. Close contacts of the patient require chemoprophylaxis, as soon as possible, with rifampicin, ceftriaxone or ciprofloxacin. Close contacts include family members, childcare contacts and travel contacts (e.g. on a long plane flight), although exposure needs to have been prolonged and in the 7 days preceding the onset of the illness.[18] All unvaccinated household contacts should be offered information on meningococcal vaccination with the appropriate vaccine.

CASE 3

OSCAR PRESENTS WITH A RASH

Oscar, aged 18 months, is brought in urgently by his mother, Amanda, who is concerned about an itchy raised rash that appeared on Oscar's face and body this afternoon, shortly after Oscar ate lunch.

FURTHER INFORMATION

Over the next 5–10 minutes Oscar developed a hoarse, croaky voice and an intermittent cough. Amanda rushed him to your clinic by car. His voice has continued to sound hoarse during the 2-minute drive to the clinic, and he had a large vomit in the car.

QUESTION 1 

What are the key features to elicit in your focused history and examination for Oscar with regard to an allergic response?

FURTHER INFORMATION

Oscar has been well in the last few days. He had an uneventful morning playing inside. For lunch today, Amanda gave Oscar a peanut butter sandwich and an apple. He then developed respiratory symptoms with a hoarse, croaky voice. This was the first time Oscar had eaten peanut butter. Amanda is unsure about previous exposure to peanuts.

Oscar ate half of his sandwich and 5 minutes later started to develop an urticarial rash, which was initially on his face but then spread to his torso and limbs.

On examination, Oscar is alert but distressed. He has an intermittent dry cough and his voice sounds hoarse. His heart rate is 150 beats/min, respiratory rate is 36 breaths/min, saturation of peripheral oxygen (SpO_2) is 97% and blood pressure (BP) is 90/60 mmHg. On respiratory examination Oscar has a mild increased work of breathing and an expiratory wheeze on auscultation. He has an urticarial rash on his face, torso and limbs that appears intensely pruritic. His mother estimates Oscar's weight is approximately 12 kg.

QUESTION 2 

What are the immediate management priorities for Oscar?

FURTHER INFORMATION

You transfer Oscar to a treatment room and administer 0.12 mL of 1:1000 adrenaline via intramuscular (IM) injection. You administer supplemental oxygen and call an ambulance. Five minutes after administration of intramuscular adrenaline you reassess Oscar. His heart rate is 165 beats/min, SpO_2 99% and BP 95/65 mmHg. He is alert but distressed and crying. According to Oscar's mother, his voice has returned to normal. His cough appears to be settling and on auscultation he has a clear chest.

QUESTION 3 

While waiting for the ambulance to arrive, what further management could you provide for Oscar?

QUESTION 4 

Amanda asks you to explain why he needs to go to hospital when he is so much improved, and what will happen while he is in hospital. How would you respond to her question?

FURTHER INFORMATION

Oscar is taken by ambulance to the local hospital where he is admitted to a general paediatric ward. He has an uneventful admission and is discharged home after an observation period of 6 hours.

QUESTION 5

What is the likely management plan for Oscar following discharge from the hospital?

QUESTION 6

Twelve months later, Amanda brings Oscar's younger sibling, Isabelle, for review. Isabelle is aged 10 months and Amanda is concerned about introducing peanut into her diet given Oscar's history of peanut anaphylaxis. How would you counsel Amanda?

CASE 3 ANSWERS

ANSWER 1

The diagnosis of an immunoglobulin E (IgE)–mediated food allergy requires a detailed medical history and physical examination. This history should include identification of potential causal food(s) ingested, the form in which this was ingested (e.g. raw or cooked), the amount ingested and the time to progression of symptoms.[19] Typically, symptoms and signs of an IgE-mediated, acute food-induced allergic reaction occur within minutes to 1–2 hours of exposure to the allergen, and can involve four target organs – the skin (e.g. erythema, pruritus, urticaria, angioedema), gastrointestinal tract (e.g. oral pruritus, colicky abdominal pain, vomiting, diarrhoea), upper respiratory system (e.g. nasal congestion, rhinorrhoea, sneezing) and/or lower respiratory system (e.g. laryngeal oedema, hoarseness, persistent cough, chest tightness, dyspnoea, wheezing, accessory muscle use) and cardiovascular system (e.g. pallor and drowsiness [in infants and young children], tachycardia, hypotension, dizziness, collapse, loss of consciousness).[20] It is important to establish the severity of a reaction(s), with particular emphasis on identifying patients who have experienced anaphylaxis, which is the most severe form of an acute IgE-mediated allergic reaction. Anaphylaxis is defined as:

> any acute onset illness with typical skin features (urticarial rash or erythema/flushing, and/or angioedema), PLUS involvement of respiratory and/or cardiovascular and/or persistent severe gastrointestinal symptoms OR any acute onset of hypotension or bronchospasm or upper airway obstruction where anaphylaxis is considered possible, even if typical skin features are not present.[21]

Additional history should be sought to evaluate relevant differential diagnoses, depending on the presenting symptoms and signs (e.g. idiopathic urticaria, isolated angioedema).

In a child with a suspected acute allergic reaction, physical examination should begin with a rapid assessment of the child's airway, breathing and circulation.[22] Evaluation of a child's or infant's level of consciousness and mental state should also be performed as circulatory compromise in this age group may initially present as pallor and drowsiness, rather than hypotension.

FEEDBACK

Once the patient is stabilised, additional relevant history would include a dietary history, personal history of atopy (e.g. eczema, asthma) and current management of these. Family history, with particular reference to a history of atopy, should also be sought.

ANSWER 2

Anaphylaxis is a medical emergency and prompt initiation of therapy is essential. IM adrenaline injected into the upper anterolateral thigh is the first-line management at a recommended dose of 0.01 mL/kg (0.01 mg/kg) of a 1:1000 solution, up to a maximum of 0.5 mL (0.5 mg).[20] Adrenaline is readily metabolised and its effects may be shortlived. In up to 20% of patients, repeat doses of adrenaline may be required every 5–10 minutes for symptoms that do not improve or resolve with a single dose.[20] Intravenous administration of adrenaline is not recommended for the initial management of anaphylaxis and, if it is required, it should be provided in a setting where invasive monitoring and specialist support is available (e.g. intensive care unit).[22]

As changing to an upright posture has been associated with sudden death in adult patients with anaphylaxis, Oscar, with suspected anaphylaxis, should *not* be asked to stand or walk and should, if possible, be managed in a supine position with his legs elevated.[19,23]

Delayed administration of adrenaline is associated with increased morbidity and mortality in patients with anaphylaxis and other pharmacologic agents should be used as adjunctive therapy only.[20,24]

ANSWER 3

IM adrenaline is the first-line treatment for anaphylaxis, which has already been given. However, adjunctive therapies may be used as second-line management.

- **Oxygen**: Supplemental oxygen is recommended in patients with anaphylaxis, particularly if there is evidence of respiratory distress and/or hypoxaemia.[20,22] You have already given this.
- **Antihistamines**: Antihistamines may be used for the relief of the cutaneous symptoms (e.g. urticaria, erythema) and localised upper respiratory tract symptoms (e.g. rhinorrhoea, sneezing) that are commonly present in patients with anaphylaxis.[22] The mechanism of action of antihistamines does not prevent or relieve airway obstruction or hypotensive shock, so antihistamines should not be used as initial management.[22,25]
- **Corticosteroids**: Although there is limited evidence to support the use of glucocorticoids in the management of anaphylaxis, these medications are commonly prescribed to prevent biphasic (late-phase) or protracted reactions.[20, 26]
- **Beta-agonists (e.g. salbutamol)**: Inhaled or nebulised beta$_2$-adrenergic agonists may be used as additional therapy in patients with wheeze and shortness of breath as an adjunct to IM adrenaline. If airway symptoms are persistent following initial treatment with IM adrenaline, repeat administration of IM adrenaline is indicated.[22]
- **IV volume expanders**: For severe cases.

ANSWER 4

You explain to Amanda that patients who receive adrenaline for the management of acute food-induced anaphylaxis require observation in a hospital setting because of the risk of biphasic (late-phase) reactions that can occur in up to 20% of patients.[27,28] Oscar will be monitored for the recurrence of symptoms, which may require additional treatment. The majority of patients will be observed for 4–6 hours before discharge.[19]

ANSWER 5

Oscar will be discharged home with an 'anaphylaxis action plan' outlining the emergency management of subsequent reactions and a prescription for two adrenaline auto-injectors. Prior to discharge, Oscar's parents will also receive counselling regarding the avoidance of the causal food and the introduction of other food into his diet. Oscar will be referred to an allergy specialist to enable confirmation of the diagnosis and to optimise the long-term management of anaphylaxis. In some instances, a dietitian referral may be appropriate to assist with ongoing education regarding avoidance of the causal food and management of high-risk situations (e.g. parties outside the home).

ANSWER 6

The Australasian Society of Clinical Immunology and Allergy has produced a position statement, *Allergy prevention in children and infant feeding advice*, based on relevant evidence available in the literature (see Resources). These guidelines recommend the introduction of complementary solid foods from 4–6 months of age (including the allergenic foods, such as peanut and egg). Previous recommendations to delay introduction of potentially allergenic foods (e.g. peanuts) have been withdrawn, including in infants with siblings who have a known allergy to these foods and infants with other established allergic disease, such as eczema.

CASE 4

DAVID IS UNWELL AND HAS ABDOMINAL PAIN

You are called to the home of David, aged 56 years, by his neighbours, who are concerned that he is unwell. He has been confused and there has been deterioration in his self-care. When you see him, he complains of abdominal pain.

You know from his past history that he is an alcoholic and a heavy smoker.

You suspect that David might have underlying chronic liver disease.

Figure 3. Spider naevi. Reproduced with permission from Department Klinische Forschung. Available at www.ikp.unibe.ch/lab2/ppnew/pp6/etoh_files/slide0017_image003.gif.

QUESTION 1

What stigmata of chronic liver disease can be looked for on physical examination?

Figure 4. Palmar erythema. Reproduced from the Journal of Online Hepatology, 22 March 2012, Pathology: palmar erythema. Available at http://thebileflow.wordpress.com/2012/03/22/pathology-palmar-erythema Copyright Elsevier.

FURTHER INFORMATION

From the practice records you can see David has a 30-year history of alcoholism. He has chronic liver disease with Child–Pugh C cirrhosis, is hepatitis C positive, has alcoholic cardiomyopathy and has had banding of varices. His medications include lactulose, frusemide, spironolactone and bisoprolol.

He is a heavy smoker. He is divorced and lives in his own apartment. He has previously worked as an architect but has not been able to work for the last 10 years.

On examination David is an unkempt man appearing older than his years. His temperature is 38 °C, pulse rate 110, BP 105/70 mmHg and respiratory rate 22. He has dry mucous membranes.

David has multiple spider naevi on his chest (*Figure 3)* and arms, palmar erythema (*Figure 4*), leuconychia (white nails) and gynaecomastia. He appears confused and you note a hepatic flap.

On examination of his abdomen he has a caput medusa, a soft large distended abdomen and generalised abdominal tenderness with no guarding; bowel sounds are present. On rectal examination there are no masses, and there is normal stool colour.

QUESTION 2

What is the differential diagnosis for David's abdominal pain?

QUESTION 3

In a patient with advanced cirrhosis and abdominal pain, which potentially fatal diagnosis should be considered?

QUESTION 4

What could be the cause of David's confusion?

FUTHER INFORMATION

David's test results are shown in *Table 1*. The chest X-ray shows small bi-basal pleural effusions. Urinalysis shows no abnormalities. Ascitic fluid analysis shows white cell count of 700 cells/mm^3; red blood count of 50 cells/mm^3; and organisms: gram negative rods seen.

Table 1. David's results

	Result	Normal reference interval
Haemoglobin	110 g/L	130–180 g/L
White cell count	14 x 109/L	4–11 x 109/L
Platelet count	100 x 109/L	150–400 x 109/L
Sodium	130 mmol/L	135–145 mmol/L
Potassium	5.0 mmol/L	3.5–5.2 mmol/L
Chloride	102 mmol/L	95–110 mmol/L
Bicarbonate	24 mmol/L	22–30 mmol/L
Urea	14 mmol/L	3.5–8.5 mmol/L
Creatinine	170 µmol/L	60–110 µmol/L
Bilirubin	34 µmol/L	3–20 µmol/L
Alkaline phosphatase (ALP)	40 U/L	30–110 U/L
Gamma-glutamyl transferase (GGT)	156 U/L	10–50 U/L
Alanine transaminase (ALT)	88 U/L	5–40 U/L
Aspartate transaminase (AST)	78 U/L	5–40 U/L
Total protein	52 g/L	64–79 g/L
Albumin	27 g/L	35–48 g/L
Lipase	70 U/L	7–60 U
international normalised ratio (INR)	1.8	0.8–1.2
Activated partial thromboplastin time (APTT)	29 seconds	26–40 seconds

QUESTION 5

David is transferred to the emergency department, where some investigations are initiated to elucidate the aetiology of his abdominal pain. Which investigations should be performed?

QUESTION 6

What are the key management issues for David?

CASE 4 ANSWERS

ANSWER 1

Stigmata of chronic liver disease that can be looked for on physical examination are:

- spider naevi (greater than 3)
- palmar erythema
- leuconychia
- Dupuytren contracture
- gynaecomastia
- testicular atrophy
- caput medusa
- ascites
- foetor hepaticus
- jaundice
- asterixis (liver flap)
- loss of body hair.

ANSWER 2

The differential diagnoses of David's condition are:

- spontaneous bacterial peritonitis
- peptic ulcer disease
- gastritis
- pancreatitis
- diverticulitis
- perforated viscus
- gastro-oesophageal reflux disease
- appendicitis
- bowel ischaemia
- bleeding hepatomas.

ANSWER 3

The potentially fatal disease that should be considered in David is spontaneous bacterial peritonitis.

Spontaneous bacterial peritonitis is defined as an ascitic fluid infection without an evident intra-abdominal surgically treatable source. It primarily occurs in patients with advanced cirrhosis.[29] It must be differentiated from a surgically treatable cause of secondary peritonitis. The mortality rate from a single episode of spontaneous bacterial peritonitis has been estimated as 10–46%.[30] It is a condition that can be overlooked, especially in the patient presenting with other diagnoses such as gastrointestinal bleeding or, much less commonly, hepatic encephalopathy.

Spontaneous bacterial peritonitis usually occurs in patients with advanced cirrhosis who have established large-volume, clinically

detectable ascites. Typical presenting symptoms include fever, abdominal pain, confusion and haemodynamic instability. Fever can be low grade as patients with advanced cirrhosis may have a baseline hypothermia. Abdominal pain and abdominal signs are typically less pronounced than patients with peritonitis from a surgical cause. The separation of the peritoneal surfaces by large volume ascitic fluid prevents the development of a rigid abdomen.

The pathogenesis is thought to be multifactorial. Factors are bacterial translocation from the gut to the mesenteric nodes and from there to the bloodstream, reduced function of the hepatic reticulo-endothelial phagocytic system and decreased antimicrobial activity of the ascitic fluid.[31]

Early diagnosis and treatment improves mortality. Renal impairment develops in approximately one-third of patients, probably due to a further reduction in effective blood volume.[32] Patients who have delayed diagnosis subsequently develop septic shock are unlikely to survive.

ANSWER 4

A large proportion of patients with spontaneous bacterial peritonitis display altered mental status. This may be a subtle deterioration only detected by people who know the patient well. The alteration in mental status may be a result of hepatic encephalopathy or simply due to the presence of infection.

Other potential causes of confusion in David are:

- head trauma
- intracranial event
- Wernicke encephalopathy
- alcohol withdrawal
- electrolyte disturbance.

ANSWER 5

Investigations for David at this stage are full blood examination; urea, electrolytes, creatinine; liver function test, coagulation studies; chest X-ray; blood cultures; and ascitic fluid analysis.

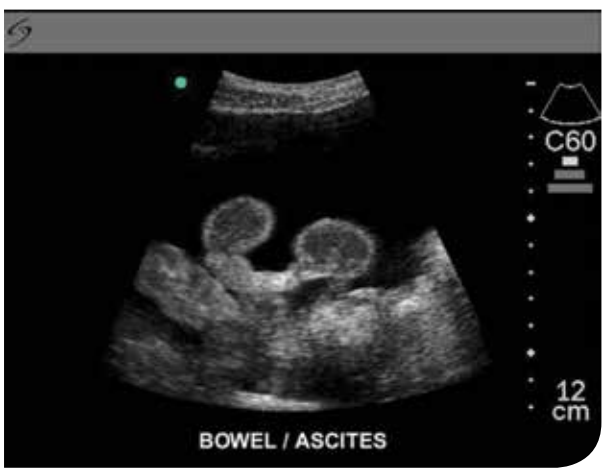

Figure 5. Ultrasound of abdomen showing ascites (the dark area above the loops of bowel). Reproduced with permission from Anaesthesia UK. Available at www.frca.co.uk/article.aspx?articleid=100019.

A low threshold for performing an abdominal paracentesis is essential for early diagnosis and treatment.[30] An ascitic tap should be performed prior to the administration of antibiotics. The widespread use of bedside ultrasound in emergency departments allows an ascitic tap to be done easily (*Figure 5*). Coagulopathy, which is common in these patients, is not a contraindication to the procedure.[33]

The diagnosis of spontaneous bacterial peritonitis is established by positive bacterial culture results and an elevated polymorph leucocyte (PML) count of >250 cells/mm^3. Treatment can begin presumptively in the presence of elevated PML count pending final culture results.

ANSWER 6

David's results indicate that he has spontaneous bacterial peritonitis.

Early treatment with antibiotics is the cornerstone of management for David. For patients with the classical symptoms and signs of spontaneous bacterial peritonitis, antibiotic treatment can begin as soon as the ascitic fluid has been obtained. In patients without the classical presentations, a presumptive diagnosis of spontaneous bacterial peritonitis can be made with the finding of an ascitic PML count >250 cells/mm^3, pending formal culture results. Intravenous third-generation cephalosporin is first-line therapy. The most commonly cultured bacteria are *Escherichia coli* and *Klebsiella*. Others include *S. pneumoniae* and the enterococci.

David should also be given intravenous thiamine.

David should be discharged with antibiotic prophylaxis. Long-term antibiotic prophylaxis to prevent spontaneous bacterial peritonitis is indicated in patients with previous history of proven spontaneous bacterial peritonitis, and patients with ascites and very low ascitic protein concentration (less than 10 g/L). The first-line drug for prophylaxis is trimethoprim + sulfamethoxazole; second-line is norfloxacin.

Patients on long-term norfloxacin should be observed for developing infections from quinolone-resistant gram negative organisms.[31]

CASE 5

SUSAN HAS ABDOMINAL PAIN

Susan, aged 19 years, comes to your clinic for an evaluation of some abdominal pain. She describes it as 'all over' and 'nagging' for the last 3–4 days. She is worried that she might be having acid reflux or indigestion.

Your clinic is her usual medical provider and she is not known to have any relevant past medical history. Her only medication is an oral contraceptive and she does not drink alcohol. Her family history is remarkable only for a mother with diabetes.

QUESTION 1

What differential diagnosis might you think of?

QUESTION 2

What specific questions should you ask to gain more history into Susan's complaint?

QUESTION 3

Should you order any laboratory investigations? If so, what? What tests can you do in your clinic, now?

QUESTION 4

What are a few 'cannot miss' diagnoses in this patient?

FURTHER INFORMATION

When you take a detailed history, Susan reveals a history of increased weight loss, hyperphagia (increased appetite) and increased urination.

Her urine pregnancy test is negative; her blood glucose level is 24 mmol/L.

QUESTION 5

What are your initial and immediate concerns about Susan?

QUESTION 6

What steps should you take in your clinic?

CASE 5 ANSWERS

ANSWER 1

Gastrointestinal

- intestinal obstruction
- gastritis
- gastroenteritis
- appendicitis
- constipation

Gynaecological

- dysmenorrhea
- ovarian e.g. torsion
- mittleschmerz
- endometriosis
- ectopic pregnancy

Genitourinary infection

- pelvic inflammatory disease
- pelvic abscess
- sexually transmitted disease (STI)
- urinary tract infection (UTI)

Miscellaneous

- pancreatitis
- drugs
- metabolic - diabetic ketoacidosis
- Addison disease.

ANSWER 2

You should ask Susan to quantify the pain further and also ask her about its onset, provocation, radiation, severity and duration. The character of the pain and its nature also help to clearly determine an aetiology. You should also ask Susan about her sexual and reproductive history.

ANSWER 3

A young female presenting with abdominal pain needs to be asked about the following:

- general health, e.g. malaise, weight loss and fever
- urinary symptoms
- bowel function
- menstruation
- sexual and reproductive history.

Depending on the history and examination, you might order laboratory blood tests and urine tests. Common investigations might include a full blood count (FBC), electrolyte panel and liver function tests (LFTs). Consider a lipase test if you suspect pancreatic disease. Urine exams might include a culture and sensitivity and a pregnancy test.[35]

Tests that might be able to be done in the clinic include a hand-held blood analysis panel (such as i-STAT), a urine dipstick with pregnancy test, and a blood glucose.[35]

ANSWER 4

'Red flag' differential diagnoses for Susan are:

- ectopic pregnancy
- perforated viscous
- appendicitis
- pelvic inflammatory disease
- diabetic ketoacidosis
- malignant disease, e.g. ovarian cancer.

ANSWER 5

Given Susan's increased blood glucose level, you should be suspicious of new-onset diabetes, type 1, and be concerned about ketoacidosis.[36]

Initial concerns should centre on ensuring Susan having adequate airway, breathing and circulation (ABC). Often patients with these symptoms and results are profoundly dehydrated and in hypovolaemic shock. Fluids and insulin are the immediate concerns, while electrolytes such as potassium and sodium are also important.[36]

ANSWER 6

In the clinic, the initial decision should be made quickly about where best to manage Susan.[37] Is she a candidate for the emergency department? Does she require hospitalisation? How can she be transported? Susan would probably benefit from hospitalisation and admission through the emergency department. An ambulance transport is a good consideration.

Knowing that certain office-based clinics are limited with diagnostics and treatment modalities, initial interventions might be hard to make. Blood should be taken and sent with the ambulance. A full blood count and electrolyte panel should be the minimum. If possible, initiate IV fluids with normal saline for Susan. If possible, an electrocardiogram should be performed to reveal any gross electrolyte abnormalities such as hyperkalaemia. Administration of insulin will probably be deferred until Susan is at the hospital.

CASE 6

BRAD IS NOT HIS NORMAL SELF

Brad, a single taxi driver aged 26 years, comes to your clinic for the first time. He has booked a long appointment and he wrote some odd things when registering at the front desk. He begins the consultation with 'small talk' but seems distracted. You note some facial bruising and he admits to being in a fight.

You are not clear why he's come, so you ask him directly. He says, while grinning broadly, 'What I need is something which is not really the way that people are staring and yelling at me … I have to rule it out so then I'll be the one'. His answers are disorganised and sometimes miss the point. He picks at his clothes and glances around the room while he sometimes seems not to hear you.

QUESTION 1

What are the diagnostic possibilities for Brad?

QUESTION 2

How should you proceed?

FURTHER INFORMATION

Brad asks you to look for the 'speakers in his ears'. You feel safe but make an excuse to step outside briefly to ask the practice manager and your colleagues to keep an ear out for trouble.

Physical examination, vital signs and blood glucose level are unremarkable. While examining Brad, you confirm that he is oriented to time, place and person.

Brad admits to auditory hallucinations, echoing his thoughts, which he attributes to the people he was fighting with (he names them).

He denies any recent illicit recreational substance use other than some occasional alcohol in social contexts.

He consents for you to contact his girlfriend, Liz. Liz says he hasn't been his usual self in the last 2 months; she confirms the absence of illicit substance use and is unaware of any past psychiatric history, family psychiatric history or significant developmental trauma. She hasn't seen him since he left her house abruptly 2 days ago.

You explain to Brad that you feel that ongoing support can best be provided by the local community mental health team and offer to organise an urgent appointment. He leaves angrily saying he's not 'mental' and will 'sort things out (his) own way'.

QUESTION 3

What is your working diagnosis and immediate management plan?

FURTHER INFORMATION

You are practising in a rural area and the nearest specialist mental health staff are 90 minutes drive away. You complete paperwork, under your state's Mental Health Act, authorising police assistance with transport to the nearest authorised psychiatric facility.

Brad is picked up by the police and taken to the local hospital's emergency department where you happen to be on duty.

QUESTION 4

What psychotropic medications and other issues should you consider at the local hospital while awaiting transfer to the mental health hospital?

CASE 6 ANSWERS

ANSWER 1

The suspicion of delirium is raised by Brad's odd behaviour, possible confusion and probable perceptual disturbance (picking at clothes, people yelling at him and distraction); this needs to be ruled out as a matter of urgency. In Brad's case, you must consider head injury.

Intoxication (e.g. amphetamines, hallucinogens and cannabis) can masquerade as psychosis.

Mania can present with psychotic symptoms and is suggested by Brad's affect at the consultation although grandiosity and pressure of speech are not evident.

Schizophrenia should be considered; however, an organic cause for Brad's presentation needs to be excluded. You need to consider neurological (e.g. epilepsy), metabolic (e.g. porphyria), autoimmune (e.g. systemic lupus erythematosus), infectious (e.g. HIV and tertiary syphilis) and iatrogenic (prescribed steroids) causes.

ANSWER 2

It is imperative that you only proceed after considering safety (of you, him and others). Is support available? Do you and the patient have unimpeded access to exits? Is there a past history of violence? There are published lists of other risk factors for violence but, at the individual patient level in a clinical setting, sensible clinical judgement and a cautious risk management approach is best practice.

You should adopt a calm/supportive stance while clarifying Brad's reasons for presentation, which will assist with engagement and rapport.

Conduct a physical examination including neurological screen, vital signs and blood glucose level.

Further assessment should include:

- screening for further psychotic symptoms including command hallucinations (may suggest high risk), inclusion of any known (therefore potentially at-risk) individuals in delusional system
- screening for thoughts of harm to self or others
- performing a cognitive assessment (e.g. Mini Mental State Examination)
- eliciting a substance use history
- asking about past psychiatric history, family history, personal history and developmental history
- considering seeking a corroborative history.

ANSWER 3

Although an organic cause cannot be excluded at this point, Brad's presentation with a prodrome (period of deteriorating psychosocial function) followed by acute psychotic symptoms is otherwise consistent with schizophreniform disorder – meeting diagnostic criteria for schizophrenia with duration less than 6 months.[38]

In clinical practice, 'first episode psychosis' is the most useful label as there is significant disparity in the clinical course, treatment response, relapse rate and diagnostic stability of patients receiving an early diagnosis of schizophrenia.

Mental health legislation mandates least restrictive treatment approaches. But, in view of Brad's uncooperativeness, apparent lack of capacity to give informed refusal, the probably rapid deterioration in his mental state and the apparent risk to others, it is reasonable to organise involuntary assessment and to seek urgent assistance from local specialist mental health services.

ANSWER 4

You should ask the police to stay until the situation is safe. Communication should be simple and calm. You should enlist the help of family/familiar persons if possible. Don't reinforce or debate delusional content. Try to find some common ground.

A detailed description of emergency tranquilisation and appropriate subsequent cardiorespiratory monitoring is beyond the scope of this case but it's likely that medication will be required in the face of agitation and arousal.

Current practice is to favour benzodiazepines such as lorazepam (1–2 mg orally) or diazepam (5–20 mg orally) initially; if the parenteral route is necessary, use midazolam (5–10 mg intramuscularly or 2.5–5 mg intravenously) initially. Midazolam has a short half-life so consider using a longer-acting benzodiazepine if there will be some delay before transfer and admission.[39,40]

Sedating oral antipsychotics such as olanzapine (5–10 mg initially) or risperidone (0.5–1 mg initially)[39] may be suitable as first-line or if benzodiazepines are not effective. Their antipsychotic effects tend to be delayed by some days.

Further investigations will be ordered on admission but it may be useful to obtain urine for drug screen if there will be some delay (amphetamines clear quickly).

CASE 7

CASPAR IS HAVING TROUBLE BREATHING

You are the first to arrive at your clinic early in the morning, when Georgina, a mother of three, arrives unannounced with her son Caspar, aged 3 years, who woke from sleep with dyspnoea. Caspar's family is known to you as you have been the family's GP for several years. Caspar has an older sister and a younger brother.

QUESTION 1

How do you determine the degree of respiratory distress?

FURTHER INFORMATION

Caspar has moderate to severe respiratory distress, indicated by some chest wall retraction and he is using his accessory muscles.

QUESTION 2

What are the important immediate management steps?

QUESTION 3

You believe Caspar has viral croup. What are the important and relatively common differential diagnoses to consider in Caspar?

FURTHER INFORMATION

Caspar has stridor at rest, is using his accessory muscles and has some chest wall retraction on breathing.

QUESTION 4

You diagnose that Caspar has moderate to severe croup. Describe your detailed management?

CASE 7 ANSWERS

ANSWER 1

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

- Mild airway obstruction: mild chest wall retraction and tachycardia, but no stridor at rest
- Moderate airway obstruction: stridor at rest, chest wall retractions, use of accessory respiratory muscles and tachycardia
- Severe airway obstruction: persisting stridor at rest, increasing fatigue, markedly decreased air entry, marked tachycardia.

Restlessness, decreased level of consciousness, hypotonia, cyanosis and pallor are signs of life-threatening airway obstruction.[41]

Focus on three elements: appearance/neurological, work of breathing and circulation. These physical signs of respiratory distress do *not* require you to touch the child or use any equipment, although removing the clothing, which the parent can assist with, will make visual inspection quicker. The oxygen saturation probe has been purposely left off this list as it can create additional problems that may waste valuable time in the initial rapid assessment of a very sick child; apart from having to locate the machine and attach the probe, there is the risk that a low reading due to hypoxia may be misconstrued as difficulty in attaching the probe.

The degree of respiratory distress is on a continuum from mild respiratory distress, where at worst only the respiratory rate is elevated, through to respiratory failure. The presence or absence of a runny nose, cough, sputum and noisy breathing are not reliable indicators of severity in the rapid initial assessment. Also, the pulse and blood pressure are unhelpful, as they will not fall until the very late stages of respiratory failure as a pre-terminal event just prior to cardio-respiratory arrest.

ANSWER 2

1. Call for help:
    a. Ring ambulance service
    b. Consider ringing your clinic staff to attend if the ambulance could be delayed.
2. Perform a rapid assessement to help consider the diagnosis:
    a. Is this a generalised allergic reaction?
    b. Is this upper airway (laryngeal or pharyngeal) obstruction?
    c. Is this lower airway disease (focal or bilateral, symmetrical or asymmetrical); are there added sounds (rhochi, crepitation)?
    d. Is infection present: runny nose, temperature?
    e. Is Caspar septicaemic: do you need to consider meningitis?

ANSWER 3

All significant upper airway obstructions present with inspiratory stridor unless the respiratory distress is too severe to allow any significant airflow. Stridor may be heard in the chest as a transmitted sound, which could then be confused with a lower airway added sound. Lower airway obstruction begins with expiratory added sounds but can progress to inspiratory added sounds with worsening of the condition before all sounds fade when the respiratory distress is too severe to allow any significant airflow.

Differential diagnoses of viral croup are generalised anaphylaxis with airway oedema, upper airway obstruction from a foreign body, and lower airway obstruction from foreign body, asthma or pneumonia.[42] All of these conditions can present with a cough that is usually not diagnostic. Infection usually has an associated fever and the child looks toxic and septic (although administration of paracetamol or ibuprofen may have caused a lull in the fever, or the child may be too sick to mount a febrile reaction).

ANSWER 4

Treat Caspar sitting up in whatever position he feels most comfortable and is least distressed. This will probably be in Georgina's arms. Caspar is aged 3 years, which can be approximated to 15 kg if his exact weight is not known.

1. Oral or parenteral steroids[43,44] (use the parenteral route only if Caspar is unable to tolerate oral medications)
    - prednisolone syrup 1 mg/kg oral single dose on day 1
      For a 15 kg patient = 15 mg (Caspar will need a second dose for the evening of the next day)

    OR
    - dexamethasone 0.15 mg/kg oral or IM
      For a 15 kg patient = 2.25 mg (single dose only as biological half-life is 2–3 days).
2. Nebulised adrenaline may be needed for severe croup[45]
    - 1:1000 adrenaline (1 mg/mL) 5 mL by nebuliser
      Effect lasts approximately 90–120 minutes but patient requires observation for 3 hours because of risk of rebound respiratory distress or persisting tachycardia.
3. Oxygen may be needed for severe croup
    - Nasal cannula: 1 L/min = 24%; 2 L/min = 28%; cannot be used at a higher rate of delivery than 2 L/min

    OR
    - Face mask: 5–10 L/ minute gives 45–60% oxygen; a minimum of 5 L/min is required for the mask to work

    OR
    - Non-re-breathing mask (facemask + oxygen reservoir with a one-way valve + side ports with one-way valves): 8–15 L/min gives 80–100% oxygen; a minimum of 8 L/min is required for the mask to work.
4. Antipyretic/analgesic if required
    - paracetamol oral or rectal 20 mg/kg if initial dose or 15 mg/kg if subsequent dose
      For a 15 kg patient = 300 mg initial or 225 mg subsequent

    AND/OR
    - ibuprofen oral 5–10 mg/kg
      For a 15 kg patient = 75–150 mg.

Cool mist (steam tent) was the mainstay of therapy for over 100 years but has not been shown to be effective in randomised controlled trials.

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RESOURCES FOR DOCTORS

Ectopic pregnancy

Many maternity hospitals in Australia have early pregnancy assessment services, which are often associated with emergency departments. These provide follow-up, diagnosis and management for women with bleeding in early pregnancy.

Anaphylaxis

- The Australasian Society of Clinical Immunology and Allergy (ASCIA) (www.allergy.org.au) is the peak professional body of clinical immunologists and allergists in Australia and New Zealand. This site enables access to resources for health professionals, including e-training, allergy/anaphylaxis action plans and management guidelines.
- The ASCIA health professionals website (www.allergy.org.au/health-professionals) enables access to ASCIA health professionals e-training, position statements, health professional information papers and clinical guidelines.
- The ASCIA anaphylaxis resources website (www.allergy.org.au/health-professionals/anaphylaxis-resources) provides access to ASCIA action plans, anaphylaxis guidelines and information for parents.

Psychiatric emergency

- Twenty-four hour mobile on-call psychiatric services are available in most, but not all, parts of Australia. Contact details vary depending on the state or territory of Australia or location within that state or territory.
- Therapeutic Guidelines: Psychotropic expert group. Behavioural emergencies. Revised February 2013. In: eTG complete [CD-ROM]. Melbourne: Therapeutic Guidelines Limited; 2013 Mar.
- The Commonwealth Department of Health and Ageing funds the mindhealthconnect website, with useful and up to date information and resource links covering a wide range of mental health. See www.mindhealthconnect.org.au
- GP Psych Support provides GPs throughout Australia with access to patient management advice from a psychiatrist within 24 hours. It is available by calling 1800 200 588 or at www.psychsupport.com.au. This service does not provide urgent advice in emergencies and queries involving moderate to high risk of harm to self or others are considered out of its scope.

Croup

- The Royal Children's Hospital has clinical practice guidelines about croup. See www.rch.org.au/clinicalguide/guideline_index/Croup_Laryngotracheobronchitis.
- See also the Respiratory Expert Group. Therapeutic guidelines: respiratory. Version 4. Melbourne: Therapeutic Guidelines Limited; 2009:151–3.

RESOURCES FOR PATIENTS

Ectopic pregnancy

Many maternity hospitals in Australia have early pregnancy assessment services, which are often associated with emergency departments. These provide follow-up, diagnosis and management for women with bleeding in early pregnancy.

Anaphylaxis

- The ASCIA patients and consumer website (www.allergy.org.au/patients) enables access for patients and parents to ASCIA education resources and patient support information.
- Allergy & Anaphylaxis Australia (www.allergyfacts.org.au) provides telephone support and information resources for patients and parents.

Psychiatric emergency

- Sane Australia (www.sane.org.au) and Lifeline (www.lifeline.org.au or phone 131114) are useful resources.
- The Commonwealth Department of Health and Ageing funds the mindhealthconnect website, which has useful and up-to-date information and resource links covering a wide range of mental health problems. See www.mindhealthconnect.org.au

Croup

- The Royal Children's Hospital has a patient leaflet about croup. See www.rch.org.au/kidsinfo/fact_sheets/Croup/
- Medscape has a webpage on croup. See http://emedicine.medscape.com/article/962972-overview.

Emergency presentations

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 3.

FOR EACH QUESTION BELOW SELECT ONE OPTION ONLY.

QUESTION 1

Jasmine is aged 4 years. She presents with a sudden onset of a stridor at rest, a hoarse voice and obvious difficulty in breathing. You diagnose moderate croup. Which of the following is the most appropriate course of action?

A. Take a nasopharyngeal aspirate or swab.

B. Reassure and review the next day.

C. Give oral antibiotics.

D. Give prednisolone syrup.

E. Use a 'steam' tent.

QUESTION 2

In the next hour (see question 1) Jasmine's respiratory distress worsens. With respect to severe croup, which of the following is NOT true?

A. Softer stridor is indicative of improvement.

B. Rebound respiratory distress can occur after nebulised adrenaline.

C. The clinical effect of nebulised adrenaline lasts 90–120 minutes.

D. Oxygen should be given.

E. Jasmine should be treated in the position she is most comfortable in.

QUESTION 3

Jonathan, aged 16 months, is brought to your clinic and you are called to see him immediately. His mother says he has been unwell with high fevers for 12 hours and has vomited once. On examination, Jonathan is obviously very unwell. He is listless and drowsy, with a heart rate of 140, respiratory rate of 48 and a systolic blood pressure of 80 mmHg. You suspect acute meningococcal disease. You call an ambulance. Which of the following antibiotics would be the most preferred for Jonathan before transferring him to hospital?

A. Benzylpenicillin

B. Amoxicillin

C. Cefotaxime

D. Chloramphenicol

E. Norfloxacin.

QUESTION 4

Samuel, aged 18 months, is rushed to your clinic and you are called to see him immediately. His mother is worried because he has become progressively pale and floppy, with swollen lips, noisy breathing and an urticarial rash over the trunk in the past 30 minutes. What is your first management step?

A. Give adrenaline 1:1000 at a dose of 0.01 mg/kg into the upper anterolateral thigh.

B. Give adrenaline 1:1000 at a dose of 0.5 mg into the upper anterolateral thigh.

C. Give adrenaline 1:10 000 at a dose of 0.01 mg/kg into the upper anterolateral thigh.

D. Give 5 mL adrenaline 1:1000 via nebuliser mask and oxygen pump.

E. Commence CPR at a rate of 30 compressions: 2 breaths.

QUESTION 5

Samuel (see question 4) is still pale and floppy, although his breathing is no longer noisy. He is normotensive, and you note his tongue is swollen. It has been 7 minutes since he first presented. You have obtained IV access. What will you do next?

A. Give IM adrenaline into the upper anterolateral thigh.

B. Give IM antihistamine into the upper anterolateral thigh.

C. Give IV normal/saline bolus 20 mL/kg.

D. Give IV atropine at 0.01 mg/kg.

E. Give IV adrenaline infusion.

QUESTION 6

Julie, aged 25 years, presents with vaginal spotting and right lower quadrant abdominal pain. There is some dark blood in the vaginal vault, and her cervix is closed. Serum βhCG is 4000 IU/L. TVS shows no evidence of pregnancy inside the uterus. What is the most likely diagnosis?

A. Hydatidiform mole
B. Ectopic pregnancy
C. Normal pregnancy
D. Appendicitis
E. Endometriosis.

QUESTION 7

Jane, aged 28 years, comes to the clinic complaining of spotting for the past week. Her last normal menstrual period was approximately 5 weeks ago. Her βhCG is 1220 IU/L, and a TVS shows no gestational sac in the endometrial cavity, no adnexal masses and no free fluid in the pouch of Douglas. Jane is clinically well. What is the next best step in the management of Jane?

A. Admit to hospital for laparoscopy.
B. Admit to hospital for laparotomy.
C. Admit to hospital for dilation and curettage.
D. Repeat βhCG in 2 days.
E. Repeat TVS in 2 days.

QUESTION 8

Jane (see question 7) had a repeat βhCG 2 days later, which was 2400 IU/L. What is the most likely diagnosis?

A. Ectopic pregnancy
B. Normal pregnancy
C. Multiple pregnancy
D. Spontaneous miscarriage
E. Non-viable pregnancy.

QUESTION 9

Which of the following is true of spontaneous bacterial peritonitis?

A. Gentamycin is the treatment of choice.
B. It is rarely fatal.
C. It requires surgical treatment.
D. It is caused by bowel perforation.
E. Delay in diagnosis can lead to septic shock.

QUESTION 10

Which organism is most likely to be the cause of spontaneous bacterial peritonitis?

A. *Mycobacterium tuberculosis*
B. *Streptococcus pneumoniae*
C. Enterococci
D. Enterobacteriaceae
E. *Escherichia coli.*

check

Independent learning program for GPs

Unit 499 October 2013

Sports medicine

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Independent learning program for GPs

Sports medicine

Unit 499 October 2013

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

Regular physical exercise is key to a healthy life and a healthy population. This month's *check* unit focuses on sports medicine. It includes management of injuries sustained while playing sport or being physically active. Sports medicine encompasses the management of elite athletes, sports people and anyone who is engaged in exercise from children to the elderly. Often it is a multidisciplinary team that looks at diagnosis, management, rehabilitation and prevention, as well as sports enhancement through training, nutrition and psychological performance.

We would like to thank the authors for providing a wealth of information about sports medicine for this unit of *check*.

The authors of this unit are:

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The learning objectives for this unit are to:

- identify triggers for exercise-induced asthma
- formulate an exercise plan for patients presenting with tennis elbow
- describe causes for groin pain
- source and create an up-to-date list of medications prohibited by WADA and ASADA in elite athletes.

We hope this unit of *check* helps you in the management of sporting injuries presenting to your clinic.

Kind regards,

Jill Pope
MBBS, PGradDipArts (Edit&Comms), GradDipArts (Ling&AppLing)
Medical Editor, *check*

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Medical Editor, *check*

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

ABI	autologous blood injection	FADIR	flexion, adduction and internal rotation	PIN	posterior interosseous nerve
AFL	Australian Football League	FAI	femoroacetabular impingement	PRP	platelet-rich plasma
ASADA	Australian Sports Anti-Doping Authority	FBE	full blood examination	PSS	pubic stress syndrome
ASDMAC	Australian Sports Drug Medical Advisory Committee	FEV_1	forced expiratory volume in 1 second	PTFL	posterior talofibular ligament
ATFL	anterior talofibular ligament	FVC	forced vital capacity	RECSy	recurrent exertional compartment syndrome
CFL	calcaneofibular ligament	GTN	glyceryl trinitrate	SUFE	slipped upper femoral epiphysis
EIB	exercise-induced bronchoconstriction	MRI	magnetic resonance imaging	TUE	therapeutic use exemption
FABER	flexion, abduction and external rotation	NSAIDs	non-steroidal anti-inflammatory drugs	URTI	upper respiratory tract infection
		OA	osteoarthritis	VMO	vastus medialis oblique
				WADA	World Anti-Doping Agency

CASE 1

MIA HAS SORE SHINS

Mia, aged 16 years, comes to your clinic and complains of shin pain. She is a netballer and plays competition netball for her school team. She rides her bike to school most days of the week.

She has had shin pain for 6 months. Selection trials for an interstate event are coming up later in the year and Mia is desperately keen to make the representative team.

QUESTION 1

What are the essential features of Mia's history you need to elicit during examination?

FURTHER INFORMATION

Mia describes her pain as a sharp, severe sensation over the lower medial tibial border, which has recently caused her to pull out of games due to the severity of the pain. She notices that the pain occurs mainly on impact with the ground and it feels like a jarring sensation up her shin. It used to ease after the warm-up for games and return as a dull ache following games; however, now it stays for the duration of every game and aches at night. Mia can still cycle most days with only mild discomfort in her legs.

QUESTION 2

What is your differential diagnosis?

FURTHER INFORMATION

Tibial bone pain is strongly related to heel strike/impact during running. In the early stages, it will disappear once the athlete warms up, although as the injury progresses, the pain may become constant throughout exercise. When severe, it may be symptomatic even at night and at rest, which is a strong indicator of a stress fracture. See *Figure 1* for the continuum of bone stress.

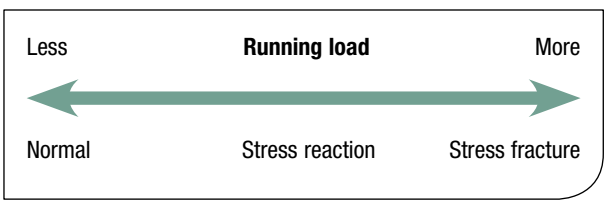

Figure 1. Continuum of bone stress. Stress fractures and reactions are part of the same process and are influenced by levels of running load

As impact loading increases, bone stress increases and tips the balance of bone deposition and resorption to the latter. Provided adequate rest or recovery periods occur after exercise bouts, this balance is restored as bone deposition is allowed to occur. However, if exercise duration, intensity or frequency is too great, a stress reaction or fracture may develop over time.

QUESTION 3

What findings do you look for on examination?

QUESTION 4

How do you investigate Mia's shin pain?

QUESTION 5

How would you manage Mia?

FURTHER INFORMATION

Mia represents to you 3 years later, having recovered from her tibial stress fractures. However, she now has bilateral exertional calf and medial shin pain that has limited her netball for the past season. Her calf pain comes on within the first quarter and she is now struggling to finish games. She describes a tight, cramping sensation that worsens the more she runs. This resolves within 30 minutes of the end of games and she is pain-free between exercise bouts. There is no tibial tenderness and Mia can hop without pain. She has had extensive massages on her calves and has worked on a stretching program, however, her symptoms are becoming progressively worse.

QUESTION 6

What is Mia's likely diagnosis now?

QUESTION 7

How will you manage Mia's condition?

FURTHER INFORMATION

It is not unusual for medial tibial stress fractures/reactions *and* recurrent exertional compartment syndrome (RECSy) to occur in the same patient, either simultaneously or sequentially over time. This can make the diagnosis challenging as the presentation may be a mixture of symptoms and signs.

RECSy usually occurs in adolescence to early adulthood and is then present indefinitely with running-based activity. It is rare for it to occur as an initial presentation of exertional calf or shin pain in later adulthood.

CASE 1 ANSWERS

ANSWER 1

You need to ask Mia specifically about the pain, including its:

- quality
- severity
- site
- radiation
- timing in relation to exercise
- precipitating and relieving factors.

It is essential to ask Mia to describe how the pain develops with each exercise bout, from commencement to completion, and also her symptoms in the days following exercise. Ask her what activities cause symptoms, whether it is impact (e.g. running) or non-impact (e.g. cycling) exercise.

Other important features to elicit are Mia's training and sporting history, particularly in the lead up to the onset of symptoms. Has there been a substantial change in the type or amount of exercise she has been doing?

Is there a past history of similar problems with exercise?

ANSWER 2

The differential diagnosis of Mia's pain is:

- stress fracture
- stress reaction.

ANSWER 3

You need to examine Mia for tibial tenderness:

- focal medial tibial tenderness is suggestive of a stress fracture
- linear or segmental tenderness is more likely to relate to a stress reaction.

Other signs to identify are:

- medial tibial pain on hopping or jumping
- pre-tibial swelling or palpable bony lump
- biomechanical abnormalities in the feet or overall lower limb alignment.

It is important to distinguish between true tibial tenderness and tenderness that occurs in the adjacent deep posterior compartment muscles that may be due to compartment syndrome or non-specific calf pain.

ANSWER 4

Imaging that might be useful for Mia include triple phase bone scan and MRI.

It is not essential to investigate this scenario, particularly if the injury is relatively clearly identified as a stress fracture as in Mia's case. However, factors such as time pressure to return to sport, chronic symptom duration, level of sport participation or poor response to previous management are examples where further investigation is useful.

The choice between imaging modalities depends on cost, availability and patient age (because of radiation). Although bone scanning is considered the gold standard, MRI has also been proven to be a valid imaging modality in stress fractures.[1]

Stress fractures typically appear as areas of intense focal uptake on triple phase bone scan in all three phases (*Figure 2*). On MRI they have a focal area of high signal on the T_2-weighted images (*Figure 3*).

Figure 2. Delayed phase bone scan of lower medial tibial stress fracture

Figure 3. Magnetic resonance imaging (MRI) of upper tibial stress fracture

ANSWER 5

Mia has a medial tibial stress fracture. This type of fracture resolves well with weight-bearing rest, typically taking 4–8 weeks for complete symptom resolution.

The use of ice and simple analgesics are useful in the early stages.

An initial period of limiting walking to essential amounts may be necessary in severe cases, and cross-training (e.g. bike/pool/upper body gym) can commence as soon as comfort allows (which is often immediately).

A slowly progressive return to impact-loading activity once hop/jump pain has resolved is essential to prevent recurrence of pathological bone stress.

There is no evidence that any supplements accelerate recovery; however, ultrasonic bone stimulators (e.g. LIPUS or EXOGEN) have limited evidence supporting their use.[2] Cost usually limits their use to high-demand athletes.

ANSWER 6

Mia's likely diagnosis is deep posterior RECSy.

RECSy is characterised by predictable onset of a cramping, tight pressure feeling in the involved muscle groups that comes on at some point into a running-based exercise bout and usually eases within 30 minutes of rest.[3] In the deep posterior compartment it is often associated with an element of medial tibial bone stress, which sometimes makes the diagnosis difficult due to a mixture of symptoms and signs.

Popliteal artery entrapment can present in a very similar fashion, although it is a rare condition with pain resolution typically within 1–3 minutes of rest.

ANSWER 7

RECSy is a clinical diagnosis that is made essentially on presenting features. As Mia's condition is becoming progressively worse despite appropriate conservative treatment (reduced exercise in addition to deep-massage therapy), it is worth performing intra-compartment pressure testing to confirm the diagnosis. This is an exercise test to pain with use of an indwelling muscle catheter system (see *Figure 4*) to prove raised intra-compartmental pressures post-exercise.

If elevated pressures are confirmed, counselling regarding possible surgical release of the relevant compartment fascia (fasciotomy or fasciectomy) is appropriate. Success rates for fasciotomy are considered good, as the majority of patients achieve good pain relief.[4]

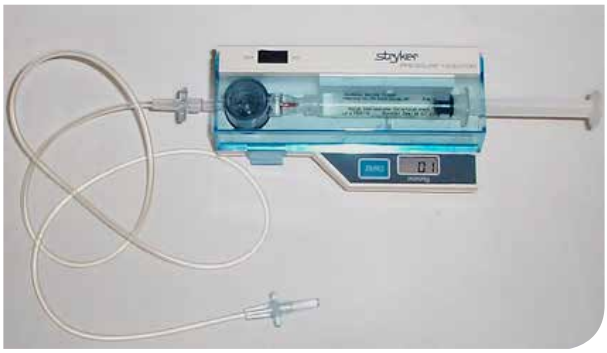

Figure 4. Stryker compartment pressure monitoring system

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CASE 2

ANNA HAS KNEE PAIN

Anna, aged 13 years, is fit and healthy. She enjoys playing netball and basketball. Her mother, Joan, brings her to your clinic. Anna has had right anterior knee pain for 2 months. She has had no acute injury to the knee, but the pain has prevented her from playing sport. She is able to walk comfortably on flat ground, but has pain while running, going down stairs, squatting and kneeling. She has not noticed any swelling in the knee.

On examination, Anna walks with a normal gait. Her knee has a full range of movement and there is no effusion. She has some mild tenderness at the lateral side of the knee.

QUESTION 1

What are the differential diagnoses of Anna's knee pain?

QUESTION 2

What features (both positive and negative) of Anna's presentation would make you consider patellofemoral pain as the most likely diagnosis?

QUESTION 3

What would lead you to request investigations for Anna?

QUESTION 4

What indications would lead you to refer Anna to a sports physician or orthopaedic surgeon?

FURTHER INFORMATION

Anna recalls that her knee pain may have begun while on a hiking trip through some mountainous country. She recalls it felt quite sore after a prolonged downhill walk. Her knee has been clicking a little, but has not locked. She has grown about 8 cm in the past 6 months. The pain has not disturbed her sleep, and she is otherwise well.

QUESTION 5

Assuming Anna has no indication for surgical intervention, what rehabilitation measures would be appropriate?

QUESTION 6

When can Anna return to sport?

CASE 2 ANSWERS

ANSWER 1

The most likely diagnosis is patellofemoral pain syndrome, also known as patellar maltracking or malalignment, or 'runners knee'.

Differential diagnoses include patellar instability, chondral or osteochondral injury (such as osteochondritis dissecans) and a discoid meniscus. Less common, but important, causes of atraumatic knee pain in children include hip joint pathology and bony tumours.

ANSWER 2

Typical features of the history of patellofemoral pain include onset of knee pain after a change in intensity, volume or type of sporting activity, or after a change in footwear. A recent growth spurt increases the load on the patellofemoral mechanism and can provoke pain. There may be a history of previous injury to the knee or thigh to cause some quadriceps inhibition, which subsequently leads to the development of knee pain. Subjective knee instability is unlikely, although pain may cause a feeling of weakness in the knee.

Relevant positive examination findings that you may note in Anna's stance include 'squinting patellae' (patellae pointing inwards), over-pronated stance, a 'Q' angle (the angle formed between the long axes of the femur and the tibia) of greater than 20°, and quadriceps atrophy, particularly vastus medialis obliquus (VMO). Another findings in patellofemoral pain may be a small effusion. Tenderness and tightness may be found in the lateral patellar retinaculum and iliotibial band as well as tenderness at the lateral femoral condyle and patellar margins. Patellar glide may be decreased medially, increased laterally or both. Generalised hypermobility can be assessed using the Beighton score (see *Table 1*).[1] Weakness in hip abductor muscles may be a contributing factor to patellofemoral pain.[2]

Relevant negative examination findings include stable collateral and cruciate ligaments, negative meniscal tests and an intact and pain-free range of movement at the hip.

Table 1. Beighton scoring for ligamentous laxity[1]

The Beighton score is calculated based on the following passive movement tests:

- 5th metacarpophalangeal extension ≥90° (1 point for each side)
- combined thumb/wrist flexion onto ipsilateral volar forearm (1 point for each side)
- elbow hyperextension ≥10° (1 point for each side)
- lateral patellar glide beyond the lateral femoral condyle in knee extension ≥10° (1 point for each side)
- palms to floor with bending from the waist, knees straight (1 point).

A score of ≥4 suggests generalised ligamentous laxity.

ANSWER 3

X-rays would be indicated if Anna had a history of a traumatic knee injury, or if she has persistent (i.e. greater than 7 days) or worsening night pain. An ultrasound examination is of little benefit in assessment of patellofemoral pain.

An MRI scan would be indicated if Anna had symptoms of a loose body in the knee (e.g. locking of the knee).

ANSWER 4

If Anna has recurrent effusion, locking or instability of the knee, or night pain, or if she fails to improve despite at least 8 weeks of good-quality rehabilitation, she should be referred to a sports physician or orthopaedic surgeon.

ANSWER 5

Successfully managing patellofemoral pain within the first 2 months may significantly decrease the risk of further anterior knee pain.[3]

Anna's initial treatment should be aimed at settling any effusion, and providing adequate analgesia with paracetamol and non-steroidal anti-inflammatory drugs (NSAIDs) if appropriate.

In the absence of surgical indications, treatment of patellofemoral pain requires a progressive rehabilitation program aimed at:

- improving VMO strength and timing. Isometric contractions allow for direct visual and palpable biofeedback for the patient (see *Figure 1*).
- decreasing tightness in lateral structures (e.g. iliotibial band)
- improving hip abductor strength.

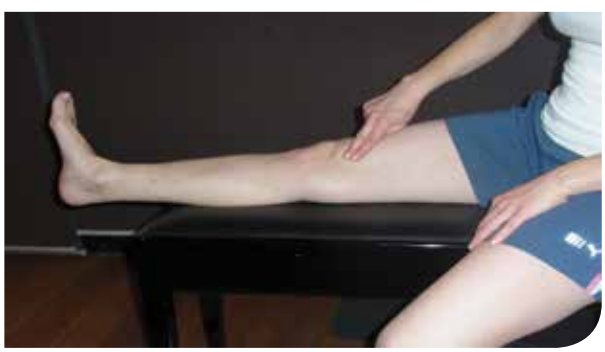

Figure 1. Isometric exercises of VMO

Other measures that may be of assistance in addition to rehabilitation are:

- controlling an over-pronated gait with orthoses[4]
- taping the patella or using a patellofemoral brace, which may provide some additional pain relief, although the evidence for this is mixed.[5]

ANSWER 6

Before Anna can return to netball she should have sequentially achieved:

- good isometric VMO contraction
- pain-free stairs, lunges and quarter squats
- pain-free straight-line running
- pain-free jumping, landing, stopping and pivoting drills
- full training.

Attempting to increase the intensity of activity before achieving the previous goal increases the risk of recurrent or persistent knee pain.

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CASE 3

JOHN PRESENTS WITH GROIN PAIN

John, aged 18 years, comes to your clinic with groin pain. He lives in the area and has attended your clinic all his life. John is an up-and-coming footballer with his eye on the AFL draft. He is frustrated about the development of right groin pain. He tells you that the pain started late last season and settled after the finals. Over the pre-season period, his pain was not too bad, but was 'just under the surface'. His pain started up again after starting the season. It is the fourth round now and he has significant pain.

John describes his pain as an intermittent pain in the central and medial right groin. During a game, it starts as an intermittently sharp pain and develops progressively into an ache that makes him limp. By the end of the game, he is quite sore. As he cools down, the pain worsens and he tends to limp for 24–48 hours after a game. Training tends to flare it again, so he has some level of pain most of the time.

QUESTION 1

Given John's history so far, what conditions may be causing his pain?

QUESTION 2

What key features are important to elicit in a focused history to help you differentiate the cause of pain?

FURTHER INFORMATION

John tells you that while running sometimes aggravates his pain, kicking practice is the most potent trigger. He also finds that the pain is worsened with leg-press exercises and deep weighted squats.

He does not have any other joint pains and there is no rash. He has no pain with cough or sneeze. He has not noticed any groin lumps. He has no urinary symptoms.

There is no family history of arthritis or psoriasis.

QUESTION 3

Which specific physical examination techniques can help differentiate the cause of John's pain?

FURTHER INFORMATION

When you examine John, you find normal back movement. He has no pain with cough or single-legged hop, and he has a normal Trendelenburg test. John has no groin masses on standing and no hernia is felt on palpation.

Right hip examination reproduces groin pain with full flexion and flexion, adduction, internal rotation (FADIR) testing. Inner quadrant stressing causes pain and a palpable click. There is pain with resisted right hip flexion.

John has no pain with adductor squeeze at any angle, and resisted sit-up is normal as is double-legged lift.

John has some anterior groin tenderness over the femoral triangle.

John has no cough impulse at any hernial orifices and testicular examination is normal.

QUESTION 4

What is the most likely diagnosis?

QUESTION 5

What investigations can be performed to confirm your provisional diagnosis?

FURTHER INFORMATION

The X-ray of John's hips shows changes consistent with femoro-acetabular impingement (FAI) (see *Figure 1*). There is a typical Cam lesion at the junction of the femoral neck and femoral head. There is also some sclerosis of the lateral acetabulum. FAI occurs when there is a mechanical mismatch between the ball and socket of the hip joint. When this occurs, the femoral head and acetabulum rub abnormally, damaging the hip joint. This situation can be caused by extremes of movement occurring with hyperflexion and internal rotation such as in kicking. A Cam lesion describes the loss of 'roundness' of the femoral head/neck, causing a mechanical mismatch in the joint.

Figure 1. X-ray showing FAI with a typical Cam lesion and some sclerosis of the lateral acetabulum

QUESTION 6

How should John be treated in the first instance?

QUESTION 7

How should John be managed if the pain does not settle?

CASE 3 ANSWERS

ANSWER 1

The most common causes of athletic pubalgia (groin pain) include hip joint pathology and pubic stress syndrome (PSS). Other causes are included in *Table 1*.

Table 1. Causes of athletic pubalgia[1]

Hip-related pain	PSS	Other
• FAI – Pincer, Cam • Acetabular labral tear • Femoral neck stress fracture • Post-traumatic synovitis • Inflammatory arthritis – e.g. rheumatoid, psoriatic, ankylosing spondylitis • Degenerative arthritis – previous Perthes disease, slipped upper femoral epiphysis (SUFE)	• Adductor origin tendinopathy/tear • Osteitis pubis • Pubic ramus stress fracture • Rectus abdominus tendinopathy • Conjoint tendon tear	• Iliopsoas tendinopathy or bursitis • Rectus femoris origin tendinopathy or tear • Sartorius origin tear • Hernia • Referred pain from T12 or L1 • Local lymphadenitis • Testicular cause for pain

ANSWER 2

The key features on the history that help differentiate the origin of groin pain are summarised in *Table 2*.

Table 2. Symptoms that differentiate various types of groin pain[1]

Hip joint pain	• Pain in the central groin • Radiation into the anterior thigh and, possibly, knee • Sharp groin pain with twisting and squatting
Pubic stress syndrome	• Pain in the medial groin • Radiation to the medial thigh and, possibly, lower abdomen • Pain with hip adduction stress
Conjoint tendon injury or hernia	• Groin pain with cough, sneeze and strain
Stress fracture	• Pain with hopping, jumping and leg jarring
Hernia or lymphadenitis	• Presence of a lump
Inflammatory arthritis	• Morning stiffness, rash, other joints involved

ANSWER 3

While the positive predictive value of isolated examination techniques may not be high, the key examinations shown in *Table 3* add greatly to the history and other findings.

Table 3. Examination for groin pain[1]

Hip origin	• Groin pain with full hip flexion ± overpressure • Groin pain with FADIR, FABER • Groin pain ± click with inner or outer quadrant test
Pubic stress syndrome	• Pain with adductor squeeze (0° and 60° hip flexion) • Tender adductor origin (usually adductor longus) • Tender over the pubic symphysis
Hernia	• Mass or impulse with cough
Lymphadenitis	• Tender lumps in the femoral triangle

ANSWER 4

The most likely diagnosis after history and physical examination is hip-related pain. The most likely causes are evolving rim lesion, FAI, labral tear and degenerative hip disease.

ANSWER 5

With a good history and examination, investigations can be minimised to those that will confirm the diagnosis. With John, an X-ray of the hip and pelvis would almost certainly be sufficient (see *Table 4*).

Table 4. Imaging for groin pain[1]

X-ray of the hip[2,3]	• Should show degenerative change and old Perthes or SUFE • Should show dysplasia from congenital dislocation of the hip • Will usually show evidence of FAI with lateral acetabular sclerosis, femoral neck Cam lesion • May show signs of a femoral neck stress fracture
X-ray of the pelvis	• May show sclerosis of the margins of the symphysis as well as erosions of the symphysis • May show evidence of a pubic ramus stress fracture
Soft tissue ultrasound	• Hernia, conjoint tendon tear
MRI	• Pubic stress syndrome (marrow oedema of pubic body) • Stress fracture (marrow oedema ± fracture)
MR arthrogram of the hip	• Detect labral tears not seen on plain MRI
Three-phase bone scan	• May localise source of pain in difficult cases

ANSWER 6

Many people with niggling FAI respond very well to an anti-inflammatory medication in association with a rehabilitation program and this should be suggested to John.

A rehabilitation program is designed to improve hip stability through gluteal and short hip rotator strengthening, to improve any imbalance between quadriceps and hamstring strength, and flexibility to avoid uncontrolled hyperflexion of the hip. A good appraisal of John's kicking style is also important so that cross-body kicking is avoided in favour of a fairly straight kick. This reduces the risk of the femoral neck jamming up into the supero-medial acetabulum.

FURTHER INFORMATION

In non-kicking sports where FAI is common, such as cycling, a similar approach is taken. In cycling, an alteration in the seat height and adducted position of the knee can stop the impingement that occurs in the racing position.

ANSWER 7

While many players with FAI will settle with the rehabilitation described above, those that don't settle will tend to have hip joint synovitis or a labral tear. In the first instance, John could be offered a hip joint corticosteroid injection for active synovitis, although there is dispute about the availability of this. This should be followed by a period of rest and then a graded return to sport.

If the steroid injection fails to settle things in the long term, a magnetic resonance arthrogram is generally performed as a preliminary investigation in the workup for surgery.[4,5] This test will normally be performed by a specialist.

In some instances, surgery in the form of arthroscopic debridement of the labral tear with or without debridement of the Cam lesion may be employed to remove the ongoing cause.[6–8]

FURTHER INFORMATION

While a great deal is made of PSS (osteitis pubis and related conditions), FAI is the most common cause of groin pain in the sporting community other than in the elite football group.[9]

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RESOURCES

For tips on physical examination of the hip, see the British Journal of Sports Medicine educational videos on examination techniques at http://bjsm.bmj.com/site/education/index.xhtml#videos

CASE 4

WAYNE HAS ELBOW PAIN

Wayne, aged 45 years, a carpenter, presents to your clinic with right elbow pain. Wayne is self-employed, and has two apprentice carpenters working for his business. He plays competitive tenpin bowling for a local club. He trains once a week and competes most weekends.

Wayne noticed vague right-sided elbow pain a few months ago without a precipitating injury. He first noticed elbow discomfort at work when using a cordless hand-drill. Lately he also experiences elbow pain with lifting and at night. He has significant lateral elbow pain when bowling.

He recalls that he had an elbow ligament injury when playing football many years ago.

When you examine Wayne, he has full range of elbow flexion, extension, pronation and supination with the right elbow equal to the left. He has mild discomfort at the end range of pronation of his right elbow. He had good strength and no pain on resisted actions of the elbow. The lateral elbow pain is reproduced with significant weakness on resisted wrist extension and gripping when compared to the unaffected left side. He has localised tenderness over the lateral humeral epicondyle and head of radius.

QUESTION 1

List the differential diagnoses for Wayne's elbow pain.

QUESTION 2

What are the most likely findings from history and examination to support a diagnosis of lateral epicondylitis (i.e. tennis elbow)?

QUESTION 3

Are any special investigations necessary for Wayne?

QUESTION 4

What would be an appropriate conservative management plan for Wayne?

FURTHER INFORMATION

Wayne presents to you again after 4 months of conservative management. He has responded to treatment and is now mostly pain free at work, even though he still avoids pronated forearm-lifting actions. He still, however, experiences significant elbow pain with tenpin bowling.

QUESTION 5

Describe the pathology of tennis elbow.

QUESTION 6

What special investigations will guide further management?

QUESTION 7

What treatment options are available to Wayne?

CASE 4 ANSWERS

ANSWER 1

The most likely diagnosis of Wayne's pain is lateral epicondylitis (i.e. tennis elbow). Other differential diagnoses (in decreasing likelihood) are elbow osteoarthritis (OA), posterior interosseous nerve (PIN) entrapment and cervical radicular referred pain.

ANSWER 2

Patients with tennis elbow usually experience a gradual onset of lateral elbow pain on lifting, especially lifting with a pronated forearm, and gripping. Patients occasionally experience an acute precipitating event. You would not expect the patient to have pain or clicking on elbow rotation, which may indicate underlying elbow OA, especially if there is a history of previous elbow injury. You would not expect pain to radiate to the forearm and wrist, which may indicate PIN entrapment. If there is a previous history of neck pain or associated upper limb neurological symptoms, it is important to consider a possible cervical radicular cause.

On examination you would expect to find reproduction of lateral elbow pain and weakness on resisted wrist extension and gripping when compared with the unaffected side. Tennis elbow is maximally tender over the lateral humeral epicondyle. You would not expect to find pain or clicking on passive elbow pronation and supination that may indicate elbow OA. Maximal tenderness below the lateral epicondyle may indicate PIN entrapment.

ANSWER 3

Tennis elbow is a clinical diagnosis and no special investigations are necessary.

If you suspect underlying elbow OA, an elbow X-ray may be of value.

ANSWER 4

The conservative management of tennis elbow is based on the principles of avoiding the aggravating actions and strengthening the common extensor tendon.

Wayne should be encouraged to use a safe lifting technique, with a supinated forearm (palm-up position) for all activities of daily living, work duties and sporting activities. He should avoid lifting with a pronated forearm (palm-down position). If typing or computer mouse use causes pain, consider supporting the wrist extensors with a wrist keyboard roll or wrist volar support splint.

In Wayne's case it is also important for him to consider his tenpin-bowling technique. He should always lift the ball using both hands and the right hand under the ball in the palm-up position. He should assess his technique of ball delivery, aiming for an open hand (supinated) delivery rather than closed hand wrist extension delivery.

To improve the strength of the common extensor tendon, Wayne should commence a daily, high-volume, eccentric strengthening program into the pain range. Wrist drops with a straight elbow over the edge of a table and a light weight in hand is recommended (aim to perform three sets of 15 repetitions, twice daily) (see *Figure 1*).

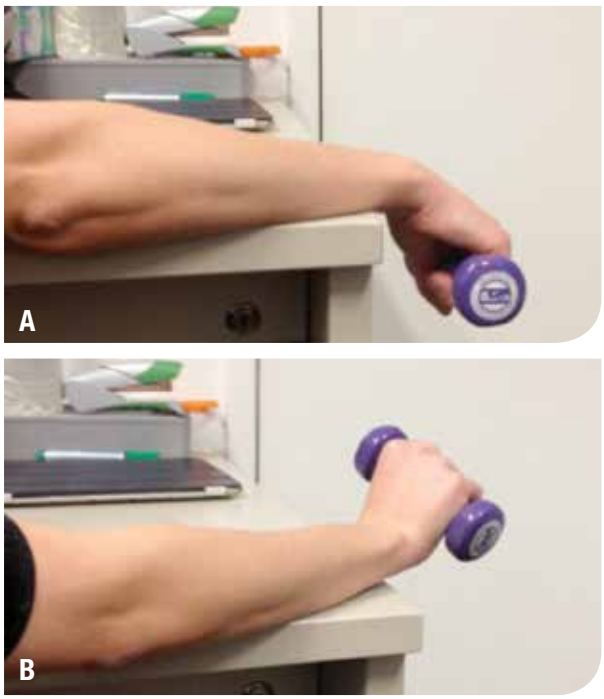

Figure 1. Wrist drops

To improve rotational strength, Wayne should perform broomstick rotations, rotating from a pronated wrist position to the thumbs up position, gradually moving the hand further away from brush side to increase resistance (aim to perform 2–3 sets of 15 rotations daily) (see *Figure 2*).

Figure 2. Broomstick rotations

ANSWER 5

There is no consensus on the pathology of tendinopathy. It can be best described as a chronic degenerative condition, where there is disorganisation of tendon fibres, with occasional tearing and abnormal neurovascular in-growth. Even though tendinopathy is not considered an inflammatory condition, there is growing evidence[1] of neurogenic inflammation as the main cause for pain, maintaining the pathology process and explaining short-term responsiveness to corticosteroids.

ANSWER 6

An ultrasound scan is a low-cost diagnostic investigation that confirms lateral epicondylitis, and helps plan further treatment options in patients who do not respond to initial conservative management.

An MRI scan may be of value for those patients where there is a suspicion of intra-articular pathology.

ANSWER 7

Patients who do not respond to initial conservative treatment should be encouraged to continue strengthening exercises and avoid aggravating actions. A physiotherapist may help with soft tissue measures around the elbow and to guide the strengthening program.

Most patients will have a favourable prognosis. In one trial, 80% of patients with elbow pain lasting longer than 4 weeks duration recovered after 1 year by following an expectant policy with no specific treatment.[2]

Patients with high-grade tendon neovascularity may respond to sclerosing injections,[3] while patients with tearing or large tendon hypoechoic areas may consider autologous blood or platelet-rich plasma injections. However, there is no evidence yet to support this decision-making process.[2] The current evidence suggests no difference between the outcomes of the above-mentioned interventions, apart from patients receiving corticosteroid injections being worse off long-term, even worse than wait-and-see groups.[4,5]

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CASE 5

KATIE GETS SHORT OF BREATH WHEN SHE EXERCISES

Katie, a tall, 17-year-old state-level freestyle swimmer, presents to your clinic with her mother, Elizabeth. For the past 4 months, Katie has had shortness of breath, chest tightness, wheezing and a dry cough during and after high-intensity swimming bouts. She tends to cough and have difficulty getting her breath between her swimming sets. She also gets frontal headaches, sinus congestion and rhinitis, which have been somewhat worse in spring. Katie has started to notice a decline in her training performance and has been increasingly tired over the last few months. She does not have a cough at night and does not wake short of breath.

Katie has recently moved to a new indoor swimming centre under a new coach. She trains in six sessions a week: four mornings, one afternoon session and one gym session. She has a rest day on Sunday.

She normally sleeps 7 hours a night with reasonable-quality sleep, waking at 5 am to get to training by 6 am for her 90-minute sessions.

Katie is not vegetarian and eats red meat 2–3 times a week. Her menarche was at the age of 14 and she has regular, light monthly periods.

Katie is otherwise well, does not take any medications and has no known allergies to any medications. She does not have a history or family history of asthma or eczema, nor any family history of sudden cardiac death under the age of 50 years.

On examination, Katie is a well-looking young woman with no pallor or dehydration. She is afebrile with a regular heart rate at 48 beats per minute and blood pressure of 110/70 mmHg with no postural drop. Her ear, nose, throat and cardiorespiratory system are unremarkable.

QUESTION 1

What is your differential diagnosis of Katie's problem?

QUESTION 2

What investigations would you order for Katie?

FURTHER INFORMATION

You order blood tests for Katie, which do not show anaemia or a nutritional deficiency.

Standard spirometry testing shows forced expiratory volume in 1 second (FEV_1) and forced vital capacity (FVC) in the normal range with the FEV_1/FVC ratio of 75% are suggestive of an obstructive pattern. Katie demonstrates a 12% increase in FEV_1 in response to two inhalations of salbutamol.

QUESTION 3

What are two likely diagnoses for Katie?

QUESTION 4

How would you treat these conditions?

FURTHER INFORMATION

You review Katie after 6 weeks. She reports that her cough following her swimming sessions improved and her wheeze and shortness of breath during sessions also improved. She responded well initially to the inhaled salbutamol you prescribed. However, she is now using two puffs of salbutamol prior to each swimming session and two puffs during and after each session. She has noticed that her chest tightness and shortness of breath are returning, her training times are slowing and her fatigue is returning.

QUESTION 5

What medications would you change and why?

CASE 5 ANSWERS

ANSWER 1

The most likely diagnosis of Katie's condition is exercise-induced asthma/bronchoconstriction. Differential diagnoses include allergic rhinosinusitis, nutritional deficiency – commonly iron, vitamin D or B_{12}, and overtraining – where the athlete is not allowing adequate recovery between training bouts, which results in fatigue and a decline in performance

ANSWER 2

Investigations that you should order for Katie are blood tests looking for anaemia or a nutritional deficiency – full blood examination (FBE), iron studies, vitamin B_{12} and vitamin D levels. You could also order spirometry.

ANSWER 3

The most likely diagnoses of Katie's condition are exercise-induced asthma and allergic rhinosinusitis.

ANSWER 4

The treatment of exercise-induced asthma includes the options described below.

- Discuss, diagnosis and educate – Exercise-induced asthma is defined as asthma that is triggered by exercise. Asthma is defined on spirometry as an increase in FEV_1 from baseline of 12% or greater in response to two inhalations of salbutamol. In 60% of cases it has an allergic component, which in Katie's case might be due to pollens and dust mites associated with hay fever or allergic rhinitis. The shortness of breath and chest tightness is caused by drying out of the upper bronchial airways in response to the large tidal volumes associated with high-intensity aerobic exercise. Following high-intensity bouts, fluid is drawn into the airways due to osmotic effects, causing bronchoconstriction and airflow restriction.[1]
- Minimise exposure to triggers
  - chlorine – exposure to high concentrations of chlorine and ammonia metabolites, which accumulate at the air–water interface just above the water level, can cause irritation of the upper airways of the lungs, further exacerbating airway inflammation.[2] To reduce this, indoor pools should be well ventilated to prevent such high concentrations accumulating above the pool
  - cold air
  - pollens.

- An adequate warm-up can induce a refractory period for 2 hours where the athlete has reduced susceptibility to exercise-induced bronchoconstriction (EIB)/exercise-induced asthma.
- Medications
  - start with a preventer inhaled corticosteroid[3], such as fluticasone 250 µg one inhalation twice a day via spacer or as accuhaler for 6 weeks
  - add an inhaled β_2-agonist reliever,[3] salbutamol 100 µg, two inhalations via a spacer as required for symptom relief.
- Patient must have the appropriate asthma plan – should the patient not respond to five sets of two inhalations of salbutamol, an emergency ambulance should be called.
- It is important not to prescribe terbutaline as this remains on the 2013 World Anti-Doping Agency (WADA) prohibited list both in and out of competition.[4] If an athlete is competing where drug testing may occur (in Australia by the Australian Sports Anti-Doping Authority [ASADA]), the athlete must have documented evidence by means of spirometry test that proves asthma – FEV_1 increase of >12% post inhaled bronchodilator *OR* EIB – FEV_1 decrease of >10% post bronchoprovocation test. (The most sensitive bronchoprovocation tests are the eucapnic voluntary hyperpnoea and the mannitol test. These are far more sensitive than exercise, histamine, methacholine or hypertonic saline challenge tests.) The athlete must then submit an application for a therapeutic use exemption (TUE)[5] to the Australian Sports Drug Medical Advisory Committee (ASDMAC) or the International Sport Governing body, depending on the athlete's level of competition and await approval for the TUE to allow use of the terbutaline. Alternatively, the athlete should instead use inhaled salbutamol as the reliever or consult their local sport and exercise physician for further advice.

The treatment for allergic rhinosinusitis includes the following:

- Avoid triggers
  - pollens.
- Medications
  - saline irrigations
  - oral antihistamines.
- Intranasal
  - topical decongestants – oxymetazaline nasal spray for 3–5 days. Avoid prolonged use as this can lead to rebound nasal congestion[6]
  - intranasal corticosteroids for 2–6 weeks.

It is important not to prescribe over-the-counter preparations containing pseudoephedrine as this is banned in competition above a urinary concentration 150 µg/L. It is best to avoid this in the week before and during competition to avoid possible adverse findings on doping tests.

ANSWER 5

Katie is developing tolerance to inhaled β_2 agonists, which can exacerbate EIB symptoms via tachyphylaxis. You should advise her to use inhaled salbutamol for symptom control only. Addition of a mast cell stabiliser or cromone such as nedocromil 2 mg, 2 inhalations 20 minutes prior to exercise via a spacer will reduce salbutamol needs and improve exercise-induced asthma control for up to 4 hours.

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CASE 6

BRENDAN HAS ANKLE PAIN

Brendan, aged 21 years, comes to your clinic with a 3-day history of left ankle pain. He is a university student who regularly plays soccer and basketball. He tells you that 3 days previously, he injured his foot at basketball and sustained an inversion injury to his right ankle. He was immediately unable to bear weight on the ankle. The lateral aspect of the left ankle and foot immediately became swollen and this was followed by bruising.

Brendan presented to the emergency department at the local hospital. X-rays ruled out fractures and tibia–fibula widening (Brendan brought the X-rays and the report with him). Brendan was advised to apply ice and a compression bandage, to elevate the left lower limb and to non-weight-bear. He was given crutches.

Brendan tells you his pain at rest is now 3/10. He has no night pain and is able to weight-bear partially on the left foot.

Brendan has had no previous history of ankle sprains and he has never used orthotics.

QUESTION 1

Which is the most commonly injured ligament in an ankle sprain?

FURTHER INFORMATION

On examining Brendan, you find he has localised oedema on the lateral aspect of the ankle and bruising on the left heel and lateral aspect of the ankle to the mid foot; he has tenderness on the anterior talofibular ligament (ATFL), the calcaneofibular ligament (CFL) and the lateral ankle joint line. Brendan is able to weight-bear partially on the left foot. His range of active motion shows plantar flexion, 50°; dorsiflexion, 10°; eversion, 10°; inversion, 20°. Passive movements show plantar flexion causing pain on resistance, but there is no pain on resisted dorsiflexion, eversion or inversion.

The anterior drawer test and the talar tilt test (for CFL) are positive. Tests for syndesmotic injury are negative.

Examination of the Achilles tendon and the toes is normal, as is the neurovascular examination.

QUESTION 2

What is your diagnosis? What are the differential diagnoses?

QUESTION 3

Which clinical tests are used to diagnose a syndesmotic sprain?

QUESTION 4

How would you manage Brendan today?

QUESTION 5

Why is an exercise rehabilitation program/physiotherapy vital in the management of ankle sprains?

QUESTION 6

Is there a role for lace-up shoes/braces in the initial management of ankle sprains?

CASE 6 ANSWERS

ANSWER 1

The lateral ankle complex is composed of the ATFL, CFL and posterior talofibular ligaments (PTFL). The ATFL is the weakest ligament due to its origin and insertion.[1,2]

ANSWER 2

The clinical diagnosis is a grade 2 lateral ligament sprain.

Differential diagnosis of this condition includes an osteochondral defect of the talar dome, an anterior process of calcaneal fracture, a sprain of the ankle syndesmosis, sinus tarsi synovitis and peroneal tendinopathy.

ANSWER 3

The tests used to diagnose a syndesmotic sprain are the external rotation test, the syndesmotic ligament palpation test and the syndesmosis squeeze test, used in combination.[3] The cotton and fibula translation tests are also used.[4]

Tenderness on palpating along the fibular shaft will be useful to rule out a fracture of the proximal fibula (Maisonneuve fracture) often seen in occurrence with high grade syndesmotic injuries.[2,5]

Associated tenderness over the medial deltoid ligament of the ankle should also arouse suspicion for this injury as it often occurs with high-grade syndesmosis injuries causing diastasis (widening) of the inferior tibiofibular joint.

ANSWER 4

Brendan's management at present should include:

- explanation of the diagnosis using an animated foot model or similar anatomy software (if available)
- continued elevation of the left lower limb at rest
- weaning off crutches and normalisation of gait
- commencement of low-impact activities such as cycling and swimming
- prescription of a short, 1-week course of NSAIDs to reduce inflammatory synovitis pain
- referral to a physiotherapist for an exercise rehabilitation program.

Brendan can attend lectures as he is able to safely arrange transport to and getting around campus.

You should ask Brendan to return in 4 weeks on completion of the rehabilitation program so you can judge the progress of the rehabilitation program and judge his readiness to return to sport.

If ankle pain persists at the 6-week mark, an MRI may be warranted to determine further management.

ANSWER 5

Early referral to a physiotherapist is beneficial in ensuring full range of movement, proprioception, muscle strengthening and functional training. These measures ensure that a patient can return to their pre-injury activity level quicker and they also help reduce the risk of a further sprain.[2,6]

ANSWER 6

Lace-up shoes and braces are shown to decrease oedema and support the ankle when used in ankle sprain management.[7] Lace-up ankle supports were superior to semi-rigid ankle supports, elastic bandages and tape in preventing persistent swelling.[8]

Although lace-up shoes have a role in supporting the ankle in high-impact pivoting sport and exercise, they do not replace the role of a good ankle strengthening and proprioceptive rehabilitation program.

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CASE 7

GREG HAS LEFT ACHILLES TENDON PAIN

Greg, aged 35 years, presents with a 3-month history of left Achilles tendon pain. He is a keen runner, covering 50–60 km over 5 days per week. He regularly attends his local gym.

He gives a history of generalised morning stiffness, which improves through the day at work. The pain initially warms up with his running, but has deteriorated recently.

QUESTION 1

What specific features of Greg's history and examination may be useful?

QUESTION 2

Describe what (if any) investigations you could suggest and what changes might be expected?

QUESTION 3

What is the underlying pathogenesis of Achilles tendinosis?

QUESTION 4

Describe the initial management of Greg's condition?

FURTHER INFORMATION

Ultrasound examination shows a high-grade focal region of deep surface tendinopathy. Greg presents for review 6 weeks later.

QUESTION 5

What other management options are available for Greg?

QUESTION 6

Does surgery play a role in Achilles tendinosis?

CASE 7 ANSWERS

ANSWER 1

The onset of Achilles tendon pain is multifactorial and insidious. You need to ask Greg about any pre-existing factors. These may include:

- increase in training volume or intensity
- change in shoe type
- change in training surface
- resumption of training after another injury lay-off.

You must assess possible underlying mechanical features. Restriction of ankle dorsiflexion range (e.g. after an ankle sprain), a supinated or pronated foot-type or calf weakness may all contribute.

As Greg's pain has recently deteriorated, you need to assess structures adjacent to the tendon, e.g. the paratenon may display thickening and crepitus, or an os trigonum may be causing a posterior-impingement syndrome.

It is important to carefully assess the tendon as to the site of maximal tenderness and swelling, e.g. mid-Achilles or insertional. As Greg's pain has recently deteriorated, you also need to assess other adjacent structures, e.g. the paratenon may display thickening and crepitus, or an os trigonum may be causing a posterior impingement syndrome.

ANSWER 2

In the early presentation of a mid-Achilles tendinosis, the history and examination remain the keys to diagnosis and so it is reasonable to withhold imaging at this stage.

However, if the patient presents with a rapid onset of Achilles pain, displays significant swelling or has any atypical features, ultrasound imaging is indicated. Ultrasound imaging is able to provide clear definition of fibre continuity, regions of swelling and the presence of neo-vascularity (see *Figure 1*). The movement of the tendon dynamically can also be assessed.

X-ray imaging is indicated in the presence of insertional tendinosis or posterior impingement, in which case ectopic bone formation or the presence of an os trigonum may be found (see *Figure 2*).

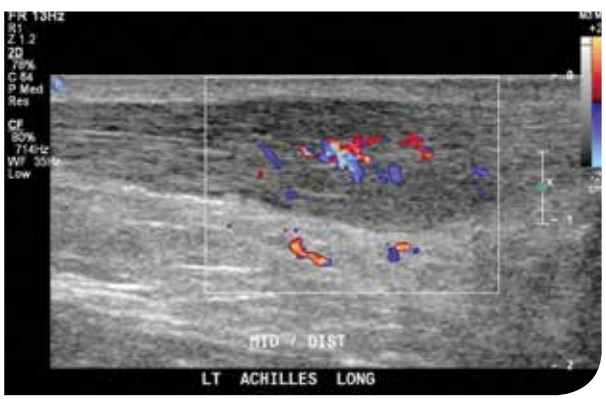

Figure 1. Ultrasound image of a tendon showing fusiform thickening and neovascularity. Image courtesy of Imaging@Olympic Park, Melbourne

Figure 2. Plain X-ray of a footballer with Achilles region pain showing an os trigonum

However, clinical outcomes for Achilles tendinosis are only moderately correlated to ultrasound imaging changes and so should not dominate clinical decision-making.[1]

ANSWER 3

The amount of load that results in tendon pathology is not clear. Insufficient time between training loads to allow for tendon adaptation is thought to contribute. Fully unloading a tendon has also been shown to result in changes that reduce the mechanical integrity of tendons.

Over the last decade, numerous histological studies have shown an absence or only minimal presence of inflammatory cells, so it is felt that other processes contribute. A continuum of tendon pathology has been proposed, in which three stages of tendon pathology exist, each correlating with distinctive clinical and imaging characteristics:[2]

- In the initial stage, a reactive process occurs in an acutely overloaded tendon often in a younger athlete. Tenocyte up-regulation and increased ground substance results in a fusiform region of tendon swelling, but with intact collagen fascicles seen on imaging.
- The second stage relates to tendon dysrepair in which there is an attempt at tendon healing, but with greater matrix breakdown. There is increased proteoglycan production shown as separation of collagen and focal structural changes seen on imaging. Increased vascularity may be evident.
- The third stage relates to degenerative tendinopathy presenting in the chronically overloaded tendon. One or more focal nodular areas characterised on ultrasound as hypoechoic regions are seen often with large areas of matrix breakdown and neovascularity. Individuals often have a history of tendon pain, which resolves on rest but recurs as load increases.

It should be noted that pain may occur at any point along this model. The presence of neuropeptides (such as tumour necrosis factor alpha [TNF-α]) suggests that 'neurogenic inflammation' may be a contributor to the disabling pain of Achilles tendinosis.

ANSWER 4

Greg demonstrates load-bearing pain, so he must have a period off running (6 weeks minimum), to allow the tendon time to adapt. Functional loading progression is the key, with attention to the intensity, duration, frequency and type of load. In conjunction, interventions can be commenced that reduce pain, and are also appropriate for the stage of pathology.

A physiotherapist, experienced in the management of tendinosis, is of great value in the prescription of loading programs, along with biomechanical assessment of lower limb alignment and strength.

Loads that reduce pain can be introduced early, such as isometric muscle contractions performed either bilaterally or unilaterally. Targeted eccentric exercise programs have reported excellent improvements in and reduction of pain, normalisation of tendon anatomy.[3] The full program consists of performing three sets of 15 slow heel drops (both straight and bent knee), twice daily for 12 weeks. A degree of pain is accepted as part of this program, and load can be increased through the use of a backpack with added weight.

If pain reduction occurs earlier in the eccentric program, progression to functional loading can occur. Graduating load through more explosive concentric work (e.g. skipping) and skill-specific eccentric re-education is vital prior to reintroduction of running, which should be in a graduated fashion on alternate days.[4]

Although there is an absence of inflammatory cellular activity in this condition, it has been proposed that specific NSAIDs may act via mechanisms other than those altering the standard inflammatory cascade. The use of ibuprofen has been shown to have a down-regulating effect on cellular responses, in addition to reducing ground substance proteins (aggrecan) responsible for tendon swelling.[2] A standard dosing of 400 mg 3 times daily for 7–10 days is appropriate.[5]

ANSWER 5

In very early reactive tendinopathy or with paratenon thickening, a guided peritendinous corticosteroid injection may have an analgesic effect by dampening cell response and limiting protein production. In Greg's case, however, the tendon has undergone a period of disrepair and corticosteroid injection is best avoided.

Biological therapies such as autologous blood injection (ABI) and platelet-rich plasma (PRP) have gained popularity in recent years with the aim to deliver a spectrum of growth factors to the region of pathology and stimulate a healing response. Numerous low-powered studies[6] have shown encouraging results but these need to be followed up with more rigorous blinded randomised controlled trials. There has not been any advantage shown in using PRP over ABI for mid-achilles tendinopathy.[7] Anecdotally, these injections can cause an acute flare of the tendon lasting up to 2 weeks and are best avoided in early reactive tendinosis.

The use of ultrasound-guided sclerosant therapy (polidocanol) to shut down neovascular changes can improve pain levels, and in one study showed sustained benefit to tendon thickness after 2-years.[8]

Use of topical glyceryl trinitrate (GTN) therapy has shown benefits. Treatment with low dose (1.25 mg) GTN patch daily for 12 weeks combined with eccentric exercises showed improved pain levels compared with placebo patch and similar eccentric program.[9] Appropriate GTN preparations should be used and risk of headache and local skin irritation discussed.

ANSWER 6

Historically, surgery has been a last resort in the management of mid-Achilles tendinosis. Traditional surgical techniques, often involving open resection of macroscopically abnormal tendon tissue, require extensive rehabilitation periods of 9–12 months and results are often variable. Less invasive techniques using ultrasound guidance and a ventral scraping technique to the external tendon have shown promising early results with much shorter rehabilitative time.[10]

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RESOURCES FOR DOCTORS

- Brukner P, Khan K. Pain in the Achilles region. In: Clinical sports medicine. 4th edn. Melbourne: McGraw Hill; 2012. 37:776–801. This book is a good resource for all topics.
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Sports medicine

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
- log onto the *gplearning* website at www.gplearning.com.au and answer the following 10 multiple choice questions (MCQs) online
- 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 RACGP 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 3.
FOR EACH QUESTION BELOW SELECT ONE OPTION ONLY.

QUESTION 1

Ethan is a 16-year-old basketball player and long-distance runner. He has had shin pain for 4 months. Examination and X-ray findings confirm tibial stress fractures. What is important in your management plan for Ethan?

A. Weight-bearing rest for up to 6 weeks
B. Ice packs initially and simple analgesics
C. Cross-training while the pain subsides (upper body gym work, hydrotherapy)
D. A slow progressive return to impact-loading activity
E. All of the above.

QUESTION 2

Luisa is a 14-year-old girl with a 4-month history of anterior knee pain. The pain is worse on climbing stairs and after prolonged sitting. She has recently started training with the cross-country team at school. What is the most likely diagnosis?

A. Patella instability
B. Patellofemoral pain syndrome
C. Osteochondral injury
D. Discoid meniscus injury
E. Bone tumour.

QUESTION 3

Luisa has been chosen to represent the school in the cross-country event at the regional track and field carnival next month. She is keen to participate and has asked your advice on management of her knee pain. Which of the following will be the LEAST likely to help her?

A. Improving vastus medialis oblique (VMO) strength
B. Decreasing iliotibial band tightness
C. Non-weight bearing with crutches
D. Improving hip adductor strength
E. Taping the patella.

QUESTION 4

Steven is a keen Australian Football League (AFL) player with groin pain for 3 months. Which of the following features is MOST likely to indicate femoroacetabular impingement (FAI) of hip origin?

A. Mass or impulse in the groin with cough
B. Pain with FADIR (flexion, adduction and internal rotation) or FABER (flexion, abduction and external rotation) testing and central groin tenderness
C. Tender lumps in the femoral triangle
D. Tenderness over the pubic symphysis
E. Tenderness in the adductor longus origin.

QUESTION 5

Mary-Jo is a 40-year-old, right-handed admin assistant and a keen tennis player. She presents with pain in her forearm that worsened after a game of tennis. On examination, she has tenderness over the lateral epicondyle of her right arm. What is the most likely diagnosis?

A. Medial epicondlyitis
B. Elbow osteoarthritis (OA)
C. Posterior interosseous nerve entrapment
D. Lateral epicondylitis
E. Cervical radicular nerve pain.

QUESTION 6

Damian is a 15-year-old elite swimmer who presents with fatigue shortness of breath, chest tightness, wheezing and a dry cough after high intensity swimming bouts. He has a varied diet and does not have a history of allergy or atopy. What is the most likely diagnosis?

A. Viral upper respiratory tract infection (URTI)
B. Exercise-induced asthma
C. B_{12} deficiency
D. Iron deficiency anemia
E. Bronchitis.

QUESTION 7

Which medication is banned by the World Anti-Doping Agency (WADA)?

A. Terbutaline

B. Salbutamol

C. Anithistamines

D. Fluticasone

E. Oxymetazoline nasal spray.

QUESTION 8

Tamsin, 30 years of age, plays competition netball. She recently injured her foot at the grand final. She landed heavily on her left foot, which turned inwards. What is the most likely structure to be damaged in an ankle sprain?

A. The os trigonom

B. The anterior talofibular ligament

C. The deltoid ligament

D. The posterior talofibular ligament

E. The calcaneofibular ligament.

QUESTION 9

Simon is a 38-year-old distance runner who recently completed his first marathon. He has noticed that since the marathon he has had right Achilles tendon pain during day-to-day activities. You make a diagnosis of Achilles tendinosis. What is the most important step in management?

A. Stretching before he runs

B. Stretching after he runs

C. Allowing the tendon to adapt by having a period off running

D. Reducing his running time by half

E. Orthotics.

QUESTION 10

Elliot is a keen gardener and sports person. He has noticed tenderness in his left forearm for some weeks. On examination he has tenderness over the lateral epicondyle. You diagnose tennis elbow and outline a management plan for Elliot. What is the most appropriate advice?

A. Perform daily high-volume eccentric strengthening exercises into the pain range with wrist drops and broomstick rotations

B. Practice safe lifting techniques using the palm-up position

C. Avoid lifting with a pronated forearm

D. Consider using a wrist volar support splint for typing

E. All of the above.

check

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Unit 500 November 2013

Men's health

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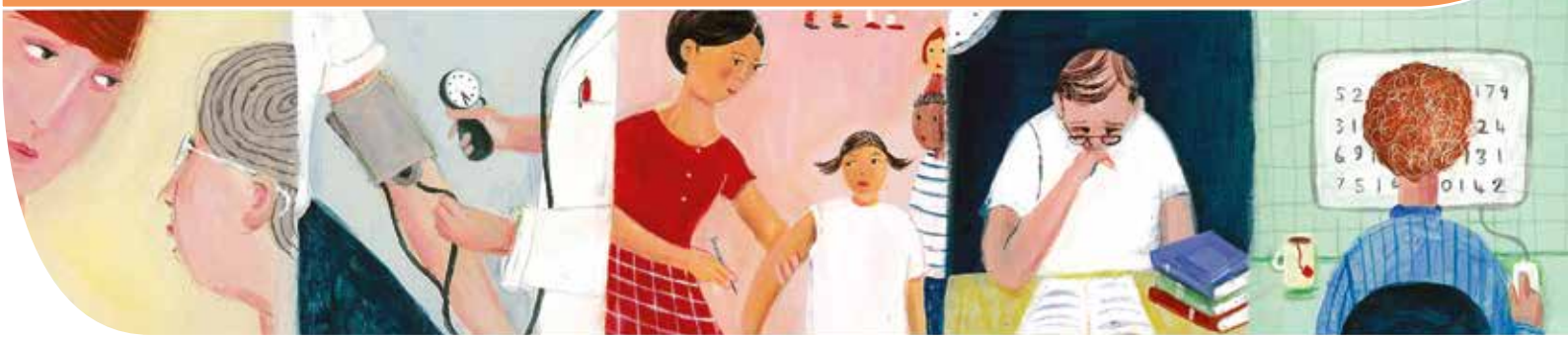

Men's health

Unit 500 November 2013

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

Bettering the Evaluation and Care of Health (BEACH) data reveal that men seek medical assistance and use medical services at significantly lower rates than women. When men access general practice services, their consultations tend to be brief and they may not always address key health issues.[1]

The Australian Institute of Health and Welfare (AIHW) reports that the rate of unhealthy lifestyle practices such as tobacco use, alcohol consumption, poor nutrition and a lack of physical activity is higher among men than women.[2] It is therefore important for general practitioners (GPs) to opportunistically address these lifestyle risk factors through screening and counselling, to promote disease prevention or for early detection and management.[3] However, BEACH data suggest there has been a significant decline in the last 10 years in rates of these preventive activities at GP visits.[1]

Given that twice as many men's deaths, compared with women's deaths, are avoidable,[4] there is a need for ongoing education on key men's health issues.

This unit of *check* examines a number of men's health issues that may present in general practice and makes recommendations for the diagnosis, management and treatment to assist you in managing men who present in your clinic.

Learning objectives

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

- adopt a systematic approach to the management of sexually transmissible infections
- describe the differential diagnosis for testicular torsion and patient outcomes based on timely surgery
- identify ways to assess suicide risk in patients with depression
- list possible causes for erectile dysfunction and management options
- opportunistically assess overall wellbeing, incorporating preventive activities, for men.

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

Ab	antibody	ICI	Intra-corporal injection therapy	SHBG	Sex hormone binding globulin
AIDS	acquired immunodeficiency syndrome	IIEF	International Index of Erectile Dysfunction	SHIM	Sexual Health Inventory for Men
ATAPS	Access to Allied Psychological Services	IPP	Intrapenile prosthesis	SNAP	smoking, nutrition, alcohol, physical activity
BMI	body mass index	K10	Kessler Psychological Distress Scale	SSRIs	selective serotonin reuptake inhibitors
BPH	benign prostatic hyperplasia	MBS	Medicare Benefits Schedule	STI	sexually transmissible infection
bpm	beats per minute	MSM	men who have sex with men	TPPA	Treponema pallidum particle agglutination
CBT	cognitive behavioural therapy	NAT	nucleic acid test	URTIs	upper respiratory tract infections
DSM-V	Diagnostic and Statistical Manual of Mental Disorders, 5th Edition	NGU	non-gonococcal urethritis	VCDs	vacuum constriction devices
DM	Diabetes mellitus	NNDSS	National Notifiable Diseases Surveillance Systems		
ED	erectile dysfunction	NOS	Nitric oxide synthase		
HEADSS	Home, Education & Employment, (Eating & exercise) Activities and peers, Drugs, Sexuality, Suicide and depression, Safety, Spirituality	PCR	polymerase chain reaction		
		PDE-5	Phosphodiesterase type 5 inhibitor		
		PSA	Prostate specific antigen		
HIV	human immunodeficiency virus	RPR	rapid plasma reagin		

CASE 1

JACOB HAS PAIN WHEN PASSING URINE

Jacob is a 19-year-old Aboriginal man who is new to your practice. You have seen his mother, Ruby, in the past. You call Jacob into your consulting room and he seems quiet and shy. You ask him why he has come to see you and he laughs nervously and says, 'It hurts when I piss'.

QUESTION 1

When consulting with Aboriginal and Torres Strait Islander youth, what steps can you take to make them feel more at ease?

FURTHER INFORMATION

You gently enquire about Jacob's pain when passing urine and find he has had symptoms for a few weeks now. He has been too embarrassed to see a doctor. Jacob tells you he has had some discharge from his penis, but has no ulcers or sores. He has been seeing a 17-year-old woman for the last few weeks and has had several other casual female partners over the last 3 months. He 'sometimes' uses condoms, but usually only if the girl wants him to. He has never had male-to-male sex.

Jacob denies any injecting drug use, but you notice what appear to be homemade tattoos on his forearms. He agrees to being examined and you see that he has some tissue paper inside his underwear to collect the thick yellow discharge that is present at his meatus.

QUESTION 2

What are the likely diagnoses for Jacob's condition? What tests will you perform?

QUESTION 3

You tell Jacob the results may take a few days to come back. How will you manage him while you wait for the results?

FURTHER INFORMATION

Jacob's results show:

- Meatal swab – microscopy – leucocytes 2+, Gram negative intracellular cocci - ++
- Culture – moderate growth *Neisseria gonorrhoeae* – ß-lactamase negative
- *Chlamydia trachomatis* detected by PCR
- Syphilis EIA – reactive, RPR 1:64, TPPA – reactive
- Hepatitis BcAb – not detected, hepatitis BsAg – not detected, hepatitis BsAb – 50 IU/ml
- Hepatitis C Ab – detected
- Human immunodeficieny virus (HIV) antibodies/antigen – not detected.

QUESTION 4

Explain what these results mean. What are your next steps to manage Jacob?

QUESTION 5

How will you determine Jacob's stage of syphilis? What will you do about his hepatitis C result?

CASE 1 ANSWERS

ANSWER 1

Many Aboriginal and Torres Strait Islander youth, especially those from rural and remote settings, may be very uncomfortable seeing a GP, especially one they don't know. It is culturally appropriate for Aboriginal and Torres Strait Islander patients to see a GP of the same gender and this should be arranged when possible. Some patients will have taboos in speaking to the opposite sex as there is a notion of 'men's business' and 'women's business' that should be respected. These patients may refuse to be examined by someone who is not the same gender.

Taking time to establish rapport by asking about family and personal interest might help reduce anxiety and shyness, and can constitute part of a HEADSS[1] assessment. Try to avoid looking directly at the young person, but rather keep your eyes lowered – they are likely to do the same. If you have access to Aboriginal and Torres Strait Islander Health Workers, make use of their services as their expertise can be invaluable. Cultural awareness training is available from many sources and can be of great value in helping to bridge the gap that one may experience.[2]

ANSWER 2

A thick, purulent discharge is likely to be due to gonorrhoea caused by *Neisseria gonorrhoeae*, although on occasion it may also be caused by organisms such as *C. trachomatis* and *Mycoplasma genitalium*.[3] In general, non-gonococcal urethritis (NGU) tends to be less dramatic in its presentation; it has a clear, mucoid discharge and less dysuria, although presentations may vary widely and it is unwise to make a definitive diagnosis solely on clinical presentation. Tests should include a swab of the discharge for microscopy and culture, and a swab for *C. trachomatis* polymerase chain reaction (PCR) testing. PCR testing for *N. gonorrhoeae* can also be performed on the swab for chlamydia, but is not necessary if the culture specimen will be received promptly at your local laboratory. The sensitivity of a male meatal swab for gonorrhoea is excellent.

As Jacob has one sexually transmissible infection (STI) it is recommended to look for others. For a young heterosexual man this should include a blood test for syphilis and hepatitis B, as well as HIV. Given Jacob's homemade tattoos, a test for hepatitis C is also worthwhile, even though this is not considered an STI.

ANSWER 3

Jacob should be treated straight away. The general rule for those with STIs is to offer treatment on the spot to reduce the risk of transmission to others. The recommended treatment for a urethral discharge is ceftriaxone 500 mg via intramuscular injection, plus 1 g of oral azithromycin.[4] This regimen will treat both gonorrhoea and chlamydia with a very high cure rate.

ANSWER 4

Jacob has gonorrhoea and chlamydia, and the treatment you provided will work very well. There is no need for a test-of-cure, given the high efficacy of treatment, although a test-of-reinfection is recommended at 3 months as people who contract chlamydia are at high risk of reinfection. Approximately 15–20% of those diagnosed and treated for chlamydia will have it again when retested some months later.[5]

In addition, Jacob has syphilis as all of his blood tests for this infection are reactive. He has adequate immunity to hepatitis B through vaccination, and he has acquired hepatitis C at some stage. He has no evidence of HIV infection.

Confirmed cases of gonorrhoea and chlamydia (laboratory definitive evidence) should be notified to the Commonwealth's National Notifiable Diseases Surveillance System (NNDSS). Hepatitis C (unspecified) that is confirmed by laboratory definitive evidence, that does not meet the criteria for newly acquired infection and has been present more than 24 months should also be notified to NNDSS. For more information, refer to the Australian Government Department of Health website at www.health.gov.au/casedefinitions#c

Partner notification (contact tracing) should be carried out either by yourself (if he gives you the names of his sexual contacts) or by Jacob, who can contact his sexual partners and advise them to have testing and treatment. Australian guidelines recommend that sexual partners for the previous 6 months should be followed up for chlamydia and those for the previous 2 months for gonorrhoea.[6] Follow-up of syphilis will depend on the stage of infection, i.e. primary, secondary or early latent.

ANSWER 5

The easiest way to determine Jacob's syphilis stage is to ask him whether he has previously been treated for syphilis, or has ever had signs of early syphilis (such as a chancre or skin rash, especially on the palms and soles). Examination may be helpful, looking for a chancre, rash, mucosal lesions, patchy alopecia or lymphadenopathy. If he cannot recall any of these (and this is a not-uncommon occurrence), and nothing is present on examination, then he should be treated for 'syphilis of unknown duration' – an intramuscular injection of 1.8 g benzathine penicillin is given weekly for 3 weeks.[7] Follow-up serology (using the rapid plasma reagin [RPR], which will fall with effective treatment) should then be performed at 1, 6 and 12 months.[8]

Jacob's hepatitis C antibodies are reactive, indicating exposure at some stage in his life. Approximately 25% of those who contract hepatitis C will clear it spontaneously, though they will remain antibody-positive.[9] A hepatitis C PCR test should be ordered; if negative, it indicates Jacob has cleared the infection. If positive, he has ongoing hepatitis C infection and should be followed up for this chronic viral infection, which is curable in most cases with modern antiviral treatments.[10]

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CASE 2

SAM PRESENTS WITH TESTICULAR PAIN

Sam is a 15-year-old male, whose family you have known for many years. His past history includes only minor problems such as upper respiratory tract infections (URTIs) and sports injuries – he is a keen AFL player. Your receptionist has asked you to see Sam as a matter of urgency as his mother, Jane, is very worried about him. You usher Sam and Jane into your consulting room.

You notice Sam is walking gingerly and appears pale and in pain. You sit him down and ask why they are here. Jane tells you that Sam woke a couple of hours ago with some pain down there and didn't eat breakfast. You ask Sam if he would like his mother to stay for the consult – he looks at her and Jane offers to leave.

Now on his own, Sam tells you his ball is really sore. He feels nauseated, although he hasn't vomited. He doesn't feel like he has a fever and he doesn't have any abdominal pain as such. You ask if he has a girlfriend and Sam replies, 'sort of'. When pressed, he says they had sex a couple of weeks ago for the first time and that she is his first sexual partner.

QUESTION 1

What are the possible diagnoses for testicular pain in a teenager? How might you distinguish them on examination?

FURTHER INFORMATION

You examine Sam and find his oral temperature is 37°C and a pulse of 88 beats per minute (bpm). He has no tenderness on palpation of the abdomen, but on examination of his genitalia the scrotum is erythematous, especially on the right side. The right testicle is high and is very tender to palpation. There is no cremasteric reflex on that side. The left testicle is normal on examination.

QUESTION 2

Are these findings in keeping with a testicular torsion? Would you order any investigations at this stage?

QUESTION 3

How would you manage Sam?

FURTHER INFORMATION

Two weeks later Sam is in your waiting room again, but this time he is in school uniform and has come by himself. You call him in and ask how he is getting on. He lets you know that he is still a bit sore, but he is very grateful to you and the surgeon for saving his testicle. The surgeon told him he should be able to resume football training in a couple of weeks and he is looking forward to that. He then looks embarrassed and says that he has a problem with his foreskin. When he had sex with his girlfriend, it hurt him a lot and there was some bleeding from the under-surface of his penis. He wonders if there is something wrong with him.

QUESTION 4

What do you do now?

CASE 2 ANSWERS

ANSWER 1

Examination of a prepubescent or adolescent male with lower abdominal and/or testicular pain is mandatory. Embarrassment may lead young males to omit or deny symptoms of testicular pain, so examination of the external genitalia should be carried out in a sensitive manner. The diagnosis to be excluded is torsion of the testicle, as rapid surgical treatment is necessary to save the testicle from necrosis. Torsion of the testicle is the most common cause of testicular loss in young males. Some 26% of cases of acute scrotal pain are due to torsion.[1] Other possibilities include epididymo-orchitis and torsion of a testicular appendix. The most common age group affected is 12–16 years, although it can occur at any age.

Torsion is more likely with pain of less than 24 hours' duration, nausea or vomiting, a high position of the testicle, transverse lie of the affected testis and an abnormal cremasteric reflex.[2]

ANSWER 2

The examination findings are typical of testicular torsion, but epididymo-orchitis and torsion of a testicular appendix are also possible, though less likely. With epididymo-orchitis, there may be erythema of the scrotum and testicular and epididymal tenderness, but the cremasteric reflex is generally not affected.

It is important to note that treatment should not be delayed by ordering investigations. Investigations such as Doppler ultrasound of the scrotal contents can improve diagnostic accuracy significantly, especially when the probability of testicular torsion is considered low.[3] In epididymo-orchitis the vascular flow to the epididymis and adjacent testicle is increased, whereas with torsion the blood flow is compromised and much reduced. Radionuclide scans are very accurate but time-consuming and not always available.

ANSWER 3

Suspected torsion of the testicle is a surgical emergency and rapid referral is vital to save the testicle. If treated surgically within 6 hours, there is a high chance (approximately 90%) of preserving the testicle.[4] At 12 hours the rate decreases to 50%, at 24 hours it drops to 10% and after 24 hours the rate of preservation approaches 0%.[4] Analgesia should be given parenterally if Sam is in significant pain.

Manual detorsion can be performed if there will be a significant delay in attending surgery. The procedure for manual detorsion of the testis is similar to the 'opening of a book' when the physician is standing at the patient's feet. Most torsions twist inward and toward the midline; thus, manual detorsion of the testicle involves twisting outward and laterally. Unfortunately, lateral rotation has been described in up to one-third of testicular torsions and in such cases further lateral rotation will worsen the condition. In the literature, the success rate of manual detorsion has varied widely: success rates ranged from 26.5% to more than 80%.[5] Generally speaking, surgical referral is far preferable.

ANSWER 4

Once again it is necessary to examine Sam. You find that he has a tight phimosis and that the foreskin cannot be retracted over the glans penis. You let him get dressed again and explain the situation – he has a constriction of the foreskin that has probably been present for a long time, but has only become a real problem since becoming sexually active (though some men find it is a problem with masturbation, too).

It may be helpful to provide some basic information about the foreskin and encourage Sam to gently retract the skin and wash regularly when bathing or showering.

The treatment initially involves daily application of a potent corticosteroid cream such as betamethasone dipropionate (0.05%) for 2–4 weeks to the scarred area in order to thin the scar tissue and allow stretching of the constricted foreskin. This conservative treatment is often effective.[6] If not, then preputioplasty (in which a limited dorsal slit with transverse closure is made along the constricting band of skin) can be performed by a surgeon. It has the advantage of limiting pain and a short healing period relative to circumcision and avoids cosmetic effects.[7] It is rare to require formal circumcision if more conservative measures are tried.

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CASE 3

MICHAEL FEELS TIRED

Michael, aged 48, is a school teacher in a country town. He attends at the urging of his wife, who is concerned about his wellbeing. Michael says he has been struggling at work due to tiredness for 6 months or so. He finds it difficult to concentrate and he often comes home from work exhausted. He also has difficulty sleeping.

The school principal has expressed some concern that Michael is not performing as well as he used to and he is behind in marking papers. Michael tells you he has lost interest in his work and does not have the passion he once had. He has previously been healthy and does not usually see doctors. He does not take any regular medications.

QUESTION 1

What are possible causes of Michael's tiredness?

QUESTION 2

How would you assess Michael? What examinations and investigations would you consider?

FURTHER INFORMATION

Michael does not have any evident abnormalities on physical examination, other than an estimated weight loss of 5 kg over 6 months.

He reluctantly admits that he feels on the verge of tears most of the time and finds no enjoyment in life. His mother died 12 months ago and there has been increased stress at work due to internal restructuring, leading to him taking on more responsibilities, for which he feels unprepared. He has felt more irritable and tired during this time, leading to social withdrawal. He has stopped playing cricket and going out with friends. He has also started consuming alcohol on a daily basis, often drinking half a bottle of wine most days of the week. He finds that the alcohol helps him sleep, although at times he feels worse the next day. His drinking leads to conflict with his wife regarding his level of alcohol use. He says that he has never felt like this before.

QUESTION 3

What is your working diagnosis?

QUESTION 4

How can depression be differentiated from normal sadness?

QUESTION 5

Given Michael's diagnosis, what other important issue needs to be explored?

QUESTION 6

In developing a management plan for Michael what would you consider?

FURTHER INFORMATION

You order blood tests and ask Michael to return in a few days to discuss the results. You advise him to reduce his use of alcohol to no more than two standard drinks per day. You also provide him with written information about depression and emergency contact numbers.

When he returns, he is still low in mood, but feels hopeful that things will improve. He has reduced his alcohol use and the blood test results are unremarkable.

QUESTION 7

What further interventions would you offer?

CASE 3 ANSWERS

ANSWER 1

A large number of medical conditions can lead to feelings of tiredness. In general practice, tiredness is the second most common complaint after cough with 5–7% of patients presenting with this symptom.[1] Physical conditions such as infections, endocrine problems, nutritional deficiencies, sleep apnoea, coeliac disease and diabetes can all present with fatigue.

People with mental health issues such as stress, bereavement, depression, anxiety and chronic fatigue syndrome may also present with tiredness. A 2009 Australian survey reported a 45.5% lifetime prevalence of any mental health issue in the general population.[2]

ANSWER 2

To help differentiate the cause(s) of Michael's tiredness, consider a systematic enquiry of the main organ systems, sleep duration and quality, infections, pain, and review of mood and physiological shift symptoms (appetite, weight, motivation, concentration, memory, guilt, hopelessness) as well as drug and alcohol use.

A general examination of the patient including assessment of weight, blood pressure and temperature should be undertaken, as well as performing a urinalysis. For those with prolonged fatigue and infrequent consultations with general practitioners, baseline blood tests including a full blood count, erythrocyte sedimentation rate, liver function, renal function, thyroid function and blood sugar levels would be helpful first-line investigations.

If depression is suspected, use of a validated psychological assessment tool such as the Hamilton Depression Rating Scale or the Kessler Psychological Distress Scale (K10) may help determine the level of depression and anxiety at baseline and can provide a means by which to assess treatment response.[3]

ANSWER 3

The Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-V) describes a major depressive episode as consisting of either depressed mood or diminished interest, with changes in appetite, weight, energy, concentration, motivation or guilt for a period of at least two weeks.[4] Hence, Michael fulfils the criteria for a major depressive episode (see *Table 1*). Differential diagnosis includes alcohol-induced mood disorder or a mood disorder due to a general medical condition.

Table 1. Diagnostic criteria for major depression[3]

Pervasive depressed mood (or irritable mood in children) and/or marked loss of interest or pleasure unexplained by personal circumstances, e.g. grief, plus four or more of the following for greater than 2 weeks:

- 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

Men are less frequently diagnosed with depression, compared with women. Possible socio-cultural reasons for this may include the masculine gender role, which is less emotion-focused and more likely to interpret seeking help as incompetent or dependent. Consequently, depression is less likely to be recognised by men, who are then less likely to seek help.[5] Men also may present with substance use issues and anger when depressed rather than complaints of depressed mood.

ANSWER 4

Although there may be a continuum of severity and pervasiveness from sadness to clinical depression, depression can be considered to be an exaggerated or disproportionate response to adverse life events.[6] Many who are exposed to stressful life events do not develop a depressive syndrome. The physical changes (lethargy, amotivation) and cognitive changes (guilt, hopelessness) are more likely described by those suffering with depression rather than sadness.

ANSWER 5

Current guidelines recommend questioning people with depression directly about suicide risk.[7,8] This can be achieved through sensitive use of open-ended questions to gently explore the risk of harm, including suicide ideation and intent. Where the risk of harm is deemed to be significant, consider referral to specialist services.

Current risk factors for suicide in Michael's case include being middle aged, male, abusing alcohol and having depression. Along with risk factors, protective factors also need to be identified (see *Table 2*).

Table 2. Assessing suicide risk[9, 10, 11]

Risk factors for suicide	• Feeling of hopelessness • Previous self harm/suicide attempt(s) • Diagnosis of a psychiatric condition • Substance abuse (alcohol, drugs) • Family history of suicide • Recent stress or major loss • Age, gender, marital status (older age, male, divorced)
Asking about suicide	Example questions: • Do you ever feel like giving up? • Does your life ever feel so bad that you wish you could die? • Are you having thoughts of suicide? • Are you thinking about killing yourself? • Have you taken any steps to do something? • How close have you come to doing something? (access to methods of suicide, e.g. firearms, stockpiling medications)

ANSWER 6

A supportive and empathic relationship between doctor and patient is important in formulating a management plan tailored to the needs of the individual.[7,9] Factors that could be considered might include the treatment setting, patients' preferences, concomitant psychiatric and physical disorders, concurrent drugs, patients' experiences with previous treatments, the severity of depressive symptoms or subtypes of depression, risk of suicide and the availability of treatment options.

Most patients with depression can be managed in the general practice setting, and this may involve using the GP Mental Health Care Items through the Medicare Benefits Schedule (MBS), which include preparation of written mental health care plans for individual patients. Specialist referral is indicated for severe depressive states or those at immediate risk of harm. In a rural area, access to specialist mental health services may be limited and the benefits of referral to specialist treatments in metropolitan settings need to be weighed against the disruption of lifestyle and relationships that may result from a change of setting.

Provision of education regarding depression and treatment options, as well as written information including after hours contact details in case of clinical deterioration or emergencies need to be discussed with the patient and family.

ANSWER 7

Psychological and/or pharmacological interventions could be offered to Michael.

Psychological interventions could be offered given the presence of psychosocial issues such as grief and work-related stress.[11] In mild to moderate depression, psychological treatments are as effective as antidepressant medication.[12] Cognitive behavioural therapy (CBT) and interpersonal therapy have the strongest evidence for efficacy in mild to moderate depression.[11] The Access to Allied Psychological Services Program (ATAPS) is part of the Better Outcomes in Mental Health Care Initiative, which is funded by the Department of Health and managed locally by Medicare Locals. ATAPS allows GPs to refer patients to mental health professionals for a maximum of 12 sessions per calendar year, with the possibility of an additional six sessions, at minimal cost to the patient. Lastly, advising Michael to engage in regular exercise and improve his lifestyle by socialising and engaging with support systems in the community is also important.[13]

Antidepressants are indicated in moderate to severe major depression. While it is generally accepted that antidepressants have similar efficacies, individual patient responses may vary. Selective serotonin reuptake inhibitors (SSRIs) are often considered to be appropriate first-line treatment choices given their favourable risk–benefit ratio, particularly in overdose. Full antidepressant response may not be seen for 6–8 weeks; however improvement is often seen within several weeks.[3,11] Patient preference is an important consideration in determining treatment options. Patients who do not respond to an adequate trial of antidepressants should be referred to a psychiatrist.

Although Michael's weight loss is consistent with a depressive disorder, given his age, other causes of weight loss, such as carcinoma, should be considered and excluded through history taking and investigations as considered appropriate.

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RESOURCES FOR DOCTORS

- General practitioners can freely obtain advice, either by phone, fax or email from a psychiatrist within 24 hours by contacting GP Psych Support on 1800 200 588 or www. psychsupport.com.au
- A tele-health assessment with a psychiatrist over the internet can also be arranged and the names of participating psychiatrists can be obtained from the Royal Australian and New Zealand College of Psychiatrists website at www.ranzcp.org

RESOURCES FOR PATIENTS

- beyondblue offers web and phone-based resources for men in managing depression (www.beyondblue.org.au).
- SANE (www.sane.org) provides fact sheets and podcasts with easy-to-read explanations on a wide range of mental disorders, treatments and related issues, for patients and their families.
- Crisis support for patients is available from lifeline, which offers free calls from mobile phones 24 hours each day (www.lifeline.org.au).
- The National Prescribing Service offers a comprehensive leaflet with support groups and links for people with depression, including men, children, teens, the over 65s and people from culturally and linguistically diverse communities (www.nps.org.au).

CASE 4

JOHN COMPLAINS OF ERECTION DIFFICULTIES

John is a 62-year-old accountant, who has been married to Jan for 32 years. He has a 2-year history of progressively worsening erectile dysfunction (ED). He achieves partial erections that are sufficient for penetration on approximately 30% of attempts. He no longer experiences waking erections or erections in response to sexual fantasy or solitary pleasuring. He is surprised, angry and embarrassed, and he avoids intimacy and sexual intercourse. John is concerned that his relationship with Jan has deteriorated.

QUESTION 1

John asks, 'Why me …?' How would you respond?

QUESTION 2

Why do you think John has developed a pattern of sexual avoidance?

FURTHER INFORMATION

John has a 10-year history of type 2 diabetes mellitus (DM) complicated by diabetic retinopathy, obesity (BMI 32.9 kg/m^2, waist circumference 108 cm), hypertension and hyperlipidaemia. His current medication includes gliclazide (160 mg bd), metformin controlled release formulation (1000 mg bd), telmisartin (40 mg mane) and atorvastatin (20 mg mane). He smokes 15 cigarettes a day and admits to 20 standard drinks per week.

QUESTION 3

Given this additional information, what could be the possible causes of John's ED?

QUESTION 4

How common is ED in men with diabetes mellitus?

QUESTION 5

How would you evaluate John?

FURTHER INFORMATION

Results of John's investigations include:

- fasting glucose 16.3 mmol/L
- HBA1c 9.6%
- total cholesterol 7.9 mmol/L
- LDL cholesterol 4.7 mmol/L
- triglycerides 1.9 mmol/L
- total testosterone 12.1 mmol/L
- prostate-specific antigen (PSA) 1.2 µg/L.

First-line pharmacotherapy for ED includes undertaking a trial of phosphodiesterase type 5 (PDE-5) inhibitors. John has previously failed to respond to a trial of multiple doses of *on-demand* sildenafil (100 mg) and tadalafil (20 mg). John was managed with a number of lifestyle modifications, including a low calorie diet and an exercise program, and review of the management of his diabetes by his endocrinologist. His ED was treated with *daily* tadalafil (5 mg) and at 6-week review he reported a good response with no significant adverse effects.

QUESTION 6

Comment on the results of John's investigations.

QUESTION 7

How would you explain John's failure to respond to on-demand PDE-5 inhibitor drugs?

QUESTION 8

What other treatment options could you consider if John had failed to respond to daily tadalafil?

CASE 4 ANSWERS

ANSWER 1

Community-based epidemiological studies[1] suggest ED is a common disorder in men, affecting up to 52% of men aged 40–70 years and is associated with reduced quality of life. Data from Australian, US and UK studies[2,3] are similar, and estimate the prevalence of complete ED as approximately 5% among 40-year-olds, 10% among men in their 60s, 15% among men in their 70s and 30–40% among men in their 80s. It is projected that by 2025, 322 million men worldwide will have ED.[4] Prevalence studies[4,5] show that, when controlling for other factors, increasing age, obesity, diabetes, hypertension, hyperlipidaemia and vascular disease are contributive factors.

TABLE 1. Risk factors associated with erectile dysfunction[6,7]	
Lifestyle	Alcohol
	Obesity
	Recreational drugs
	Smoking
Medical	Hypertension
	Cardiovascular disease
	Diabetes mellitus
	Hyperlipidaemia
	Depression
	Sleep apnoea
	Multiple sclerosis
Surgical	Prostate surgery
Medications	Antihypertensives and diuretics (beta-blockers, thiazides, clonidine)
	Antidepressants (selective serotonin reuptake inhibitors, tricyclic antidepressants, lithium, monoamine oxidase inhibitors)
	Chemotherapy and hormonal medications
	Opiate analgesics
Other	Peyronies disease
	Spinal cord trauma
	Pelvic trauma
	Pelvic radiotherapy

ANSWER 2

It is increasingly recognised that a diagnosis of ED can have a profound impact on the patient's and partner's quality of life. ED can lead to withdrawal from intimacy, avoidance of all physical contact with a partner and an increase in emotional stress, which itself can perpetuate any psychogenic component to the ED. The condition can affect a man's self-esteem and self-image, and lead to anxiety and hence depression. Treatment of ED has been shown to lead to resolution of depression and restoration of self-esteem, and thus improvement in quality of life.[8]

ANSWER 3

It is now recognised that vascular disease of the penile arteries is the most common cause of ED in John's age group, accounting for up to 80% of cases.[9] Apart from age, the main risk factors are those for vascular disease (smoking, diabetes mellitus, hypertension, abnormal lipid profile, obesity and lack of exercise). Essentially, any condition that damages endothelial function can result in ED. ED may be an early manifestation of generalised endothelial dysfunction and a predictor and a precursor of other forms of cardiovascular disease. More than half of men with ED who have no cardiac symptoms have an abnormal stress test, and 40% have been found to have significant coronary artery disease when studied.[10]

Endocrine disorders, such as hypogonadism, have a significant role in ED physiology. Testosterone regulates cavernosal nerve structure and function, nitric oxide synthase (NOS) expression and activity, PDE-5 and corporal smooth muscle cell growth and differentiation. Men with benign prostatic hyperplasia (BPH) have a high prevalence of ED.[11] The explanation for this association remains unclear, and the quality of life of men with BPH is reduced by its effects on sexual function.

Although in most men, ED has an underlying vascular cause, usually related to endothelial dysfunction, there is always a contributing, sometimes substantial, psychogenic component related to performance anxiety. Treatment of this psychological component alone may be sufficient to restore normal erections. Lastly, use of certain medications, including commonly prescribed antihypertensives, may contribute to ED.

Given the above considerations, the following are possible contributors to John's ED: his age, diabetes, hypertension, dyslipidaemia, obesity, smoking and use of telmisartin.

ANSWER 4

ED is reported to occur in 35–70% of men with DM.[12] More than 50% of men develop ED within 10 years of being diagnosed with DM.[13] ED occurs at an earlier age in men with DM, compared with men without DM and the age-adjusted probability of complete ED is nearly 3 times higher.[1,12] The prevalence of ED increases with age, from 9% in men with DM aged 20–29 years to 95% in men >70 years, and increases with duration, poor glycaemic control, and complications of DM such as vascular and microvascular disease and neuropathies.[14] One study reported that as many as 11% of men seeking treatment for ED have undiagnosed DM.[15]

ANSWER 5

Evaluation should include a full history (medical, sexual and psychosocial), physical examination and consideration of appropriate investigations.

A full history and thorough clinical examination of the patient is needed to:

- confirm that the patient is suffering from ED and/or another sexual dysfunction, such as hypoactive desire or premature ejaculation
- assess the severity of the condition
- determine whether ED is psychogenic or organic in origin
- identify risk factors or comorbid disease
- assess the fitness of the patient for resuming sexual activity.

There are a range of suitable initial questions to ask the patient with ED, for example:

- What is the problem with your erections?
- How frequently do you have the problem?
- When did you last have successful sexual intercourse?
- How strong is your desire for sex, now and in the past?

- What has been the effect of your sexual difficulties on your relationship with your partner?
- What is your partner's attitude to the problem?
- What are you and your partner hoping to gain from any treatments that may be available?

Several validated questionnaires have been developed to score the erectile problem objectively. Questionnaires may be completed in the waiting room, before a consultation or between consultations. The short five-question form of the International Index of Erectile Function (IIEF), or the IIEF-5 or Sexual Health Inventory for Men (SHIM), are useful for both diagnosis and assessment of response to treatment.

The association between anxiety and ED should be established. Psychogenic ED can be caused by a number of problems, principally performance anxiety, but also guilt, depression, relationship problems, or fear and personal anxiety. Careful enquiry should be made about current medications, such as beta-blockers, thiazide diuretics and anti-depressants, as well as the use of recreational drugs.

Physical examination of a man with ED will be directed, to a certain extent, by his history, and should include assessment of the external genitalia, the endocrine and vascular systems, and the prostate gland in most patients. The penis should be carefully palpated to exclude the presence of fibrous Peyronie's plaques and to check for phimosis. Prostatic induration or a palpable nodule should raise the suspicion of prostate cancer.

ANSWER 6

The degree to which men should undergo clinical investigation depends on the patient's history and examination findings. General investigations include serum concentrations of total testosterone (before 11am), fasting glucose and fasting lipids and, in men over 50 years of age, prostate-specific antigen (PSA). Further investigations may be required based on the results of these initial investigations including serum concentrations of free testosterone, sex hormone binding globulin (SHBG), luteinizing hormone and prolactin.

John's raised fasting glucose and HBA1c indicate poor glycaemic control of his diabetes with an increased risk of diabetic microvascular complications. Similarly, John's raised lipids and central obesity suggest metabolic syndrome and an increased risk of coronary artery and cerebrovascular disease. John's total testosterone is within the normal range and is consistent with his eugonadal appearance.

ANSWER 7

Three highly potent, selective PDE-5 inhibitors (sildenafil, tadalafil and vardenafil) are currently available for the treatment of ED in Australia. The overall efficacy of the different PDE-5 inhibitors appears similar[16] and is related to the extent and severity of ED, with significantly reduced efficacy demonstrated in patients with severe vasculogenic ED, diabetic ED and post-radical prostatectomy ED.[17–19] Despite the demonstration of efficacy and tolerability in a broad range of ED aetiologies and severities in multiple large multicentre clinical trials, 30–35% of patients will fail to respond.[20] PDE-5 inhibitors are contraindicated in those with a recent myocardial infarct, concurrent users of nitrate therapy and those at high risk of cardiovascular disease.[21–23]

The reasons for initial or delayed PDE-5 inhibitor failure are diverse and manifold, and include severe ED at first presentation, worsening of endothelial dysfunction and progression of penile atherosclerosis, post-radical prostatectomy ED, unrecognised hypogonadism, inadequate patient education and incorrect drug usage, the possible development of tachyphylaxis or drug tolerance, and the presence or development of comorbid psychosocial factors.

It may be useful to explain the indications for PDE-5 inhibitors, how they work and their correct use, as this may lead to improved efficacy.

ANSWER 8

Second- and third-line treatment options include intra-corporeal injection therapy (ICI), vacuum constriction devices (VCDs) and intrapenile penile prostheses (IPP).

ICI: Treatment with patient-administered ICI using vasodilator drugs such as alprostadil, which relaxes the arterial and trabecular smooth muscle, is an effective treatment for ED.[24] ICI can be used in most men with ED, but is especially useful in men who fail to respond to oral pharmacological agents.[25] Alprostadil resulted in an erection of sufficient rigidity for sexual intercourse in 72.6% of men with ED.[24] Self-injection technique should be taught by either the physician or the practice nurse. Relative contraindications to ICI include anticoagulant therapy, previous poor compliance and a history of priapism.

VCD: This involves application of a vacuum to the penis in a vacuum cylinder causing tumescence and rigidity, which is sustained using a constricting ring at the base of the penis. Vacuum constriction devices require enthusiasm on the part of the patient and a sympathetic partner. They are more popular in middle and older age group couples, and are an uncommon treatment choice in single younger men. Approximately 60–70% of men find using the device straightforward.[26]

IPP: Surgical treatment of ED with an IPP is usually reserved for patients in whom more conservative therapy has failed, or for whom conservative therapy is contraindicated.[27] Most of these patients will have significant arterial or venous disease, penile corpus cavernosum fibrosis or Peyronie's disease or will, by choice, prefer the prospect of a 'one-off' solution. While the outcome of surgical intervention may be more reliable in certain selected patients, the incidence of morbidity and complications is significantly greater than with medical treatment.[28] Multi-component inflatable penile implants are associated with high patient satisfaction rates, and device failure and prosthetic infection are uncommon.[28] Infection is the most problematic complication following surgery and often requires removal of the prosthesis and either immediate replacement or staged re-implantation at a later stage.

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RESOURCES FOR DOCTORS

- Andrology Australia has produced a clinical summary guide, 'Erectile dysfunction: diagnosis and management', which is available at www.andrologyaustralia.org/health-professionals/clinical-summary-guidelines

RESOURCES FOR PATIENTS

- The Better Health Channel provides an erectile dysfunction leaflet on its website at www.betterhealth.vic.gov.au/bhcv2/bhcarticles.nsf/pages/Erectile_dysfunction?open

CASE 5

ROBERT INJURED HIS ANKLE

Robert is a 22-year-old librarian who presents one Monday morning with a swollen left ankle. He tells you he tripped the previous evening. Robert has never had ankle problems in the past. On examination he has a minor strain, which you manage.

QUESTION 1

What other information would you want to ask Robert?

FURTHER INFORMATION

When assessing Robert's lifestyle risks, he reports that he had been out drinking the night before and injured his ankle when he slipped while leaving the pub. Further questions revealed unsafe levels of alcohol consumption. You discuss his alcohol use non-judgmentally and explain what constitutes safe levels of drinking. He states that he does not smoke, but used ecstasy once about 18 months ago and has not used it since.

Nine months later, Robert presents with dysuria and a urethral discharge.

QUESTION 2

What else would you want to know? What tests would you order?

FURTHER INFORMATION

Robert informs you that he had unprotected anal sex with another man. His test results confirm that he has gonococcal urethritis. Chlamydia was not detected, nor was HIV infection.

QUESTION 3

How would you treat Robert? What follow-up would you recommend?

QUESTION 4

Is there any relationship between Robert's previous ankle injury and other risk-taking activities?

QUESTION 5

What further advice would you give Robert?

CASE 5 ANSWERS

ANSWER 1

In addition to asking questions to manage Robert's ankle injury, this presentation provides an opportunity to assess his general wellbeing and lifestyle risk factors, aiming to reduce future risk. Young adult men aged 15–24 years present less often to their GPs, compared with women in the same age group (men in this age group comprise 3.1% of GP encounters, compared with 5.4% for women).[1]

Young men are more likely to report unhealthy behaviours, compared with women. In the 20–29 year age group, 19.7% of men report daily smoking, compared with 16.3% of women; 3.4% of men report daily drinking, compared with 0.9% of women.[2] Similarly, 30.5% of men report using illicit drugs compared to 24.3% of women.[2] In 2011, 95.2% of cases of newly diagnosed HIV/AIDS cases in Australia were in men.[3]

For men of Robert's age, age-specific preventative activities should be considered. Questions could be asked using the SNAP framework to explore weight and nutrition (N), alcohol use (A) and physical activity (P) on a two-yearly basis. Smoking (S) should be broached opportunistically and ideally at every visit. Blood pressure should be checked every two years, or more often for those at high cardiovascular risk. Review of sexual health, including chlamydia risk should be assessed opportunistically every 12 months. Chlamydia is the most commonly diagnosed and curable STI in Australia and regular screening in sexually active people aged 15–29 years is recommended to minimise risk of complications.[4]

ANSWER 2

In addition to obtaining a sexual history for the presenting complaint (e.g. duration of symptoms, amount and nature of discharge), you should conduct a risk assessment of Robert's sexual behaviour in a non-judgmental manner. When determining sexual behaviour risks, elicit information on the number and gender of recent sexual partners, the nature of sexual activity, sexual contact with sex workers and use of condoms for insertive intercourse. In the event of the diagnosis of a sexually transmissible infection, notification of sexual partners should be discussed.

Depending on Robert's responses, a number of tests could be considered. For example, a full check for STIs including HIV infection would be appropriate. Gonococcal infection has been shown to be a co-factor in the acquisition of HIV infection although the impact of the current pattern of STIs of men who have sex with men in Australia on the acquisition of HIV is not clear.[5]

A complete physical examination to check for the presence of other STIs, such as syphilis, and ordering of a urethral Gram stain, gonococcal culture and PCR testing for ***C. trachomatis,*** pre- and post-test counselling for HIV antibody test would be reasonable.[6] Hepatitis A, B and C screening and/or vaccination may also be relevant.[4, 7] Robert's informed consent is required for all tests.

ANSWER 3

Treatment of gonococcal urethritis should be based on the results of urethral (if discharge is evident) or endocervical swab Gram stain; bacterial culture for *N. gonorrhoeae* and other possible bacterial pathogens and, if relevant, susceptibility testing, and/or nucleic acid test (NAT) on first stream urine or genital swab for *C. trachomatis*, *N. gonorrhoeae* and *M. genitalium*.[8]

Reports of gonococcal strains resistant to penicillin, tetracyclines and fluoroquinolones are common in most Australian communities (including urban centres).[5] Given that in Robert's case chlamydia infection was ruled out, an intramuscular infection of ceftriaxone 500 mg in 2 mL of 1% intramuscular lignocaine, as a single dose, is appropriate.[8] Dissolving ceftriaxone in lignocaine reduces the pain associated with injecting ceftriaxone intramuscularly.[9]

A confirmed case of gonorrhoea (laboratory definitive evidence) should be notified to the Commonwealth's NNDSS.

Robert's sexual contacts from the last 6 months should be contacted and treated presumptively and any follow up undertaken in line with current guideline recommendations (e.g. in cases of chlamydia, repeat testing for reinfection after 3–12 months may be appropriate).[4,9]

Robert should be retested in 6 weeks for HIV infection, as HIV antibodies can take some time to appear after HIV exposure.

Hepatitis A, B and C serology and/or immunisation for hepatitis A or B could also be considered.[7]

ANSWER 4

The presence of high-risk alcohol consumption that contributed to Robert's ankle injury may be an indication of general high risk taking, which is more common in younger men.[10] This includes sexual risk taking, the use of recreational drugs and risk of accidental injury.

ANSWER 5

Robert needs to be counselled to help reduce the high-risk behaviours that may have resulted in this infection. This encounter provides an important opportunity to reinforce education about safe sexual practices and discuss any possible anxiety or other risk behaviours to help prevent Robert from acquiring HIV or other infection(s).

This discussion should include the increased risk of harm associated with alcohol and recreational drug use in the context of men who have sex with men and strategies for reducing this risk. This may require referral to a counsellor skilled in this area.[11]

The lifetime risk of alcohol-related injury increases more rapidly for men. Nearly one-third of self-inflicted injuries and suicides are linked to alcohol consumption in men.[12]

The discussion should inform Robert that safe drinking levels constitute two standard drinks per day for men,[12] and recommend annual screening for STIs in line with current recommendations for gay men and men who have sex with men (MSM). The provision of written materials would be appropriate.

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RESOURCES FOR DOCTORS

- The Australasian Society for HIV Medicine produces a primary care guide for the management of HIV, viral hepatitis and STIs. It is available at www.ashm.org.au/images/publications/monographs/hiv_viral_hepatitis_and_stis_a_guide_for_primary_care/hiv_viral_hepatitis_and_stis_whole.pdf

RESOURCES FOR PATIENTS

- STI care, treatment guidelines and fact sheets are available from the NSW Sexually Transmissible Infections Program Unit at www.stipu.nsw.gov.au
- Information for gay men on STIs, including notification advice, is available at www.thedramadownunder.info
- Online partner notification systems include www.letthemknow.org.au, www.bettertoknow.org.au (for Aboriginal and Torres Strait Islander youth).

Men's health

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 3.

FOR EACH QUESTION BELOW SELECT ONE OPTION ONLY.

QUESTION 1

Sean is a 33-year-old bisexual male artist who has recently started to date a new partner. He presents with a thick purulent creamy discharge from his penis and complains of pain when passing urine. He has had these symptoms for over a week. There are no ulcers or sores on his penis or anus. What would be an appropriate course of action?

A. Treat presumptively for gonorrhoea and chlamydia.

B. Take samples for microcopy and culture and arrange a follow-up appointment for Sean.

C. Perform STI screening and undertake partner notification and appropriate follow-up.

D. A + B.

E. A + B + C.

QUESTION 2

Which of the following is incorrect with regards to the management of syphilis?

A. Examination of patients is unlikely to provide information about the stage of syphilis.

B. The diagnosis of syphilis is usually made on the basis of serological testing.

C. Syphilis of unknown duration should be treated with an intramuscular injection of 1.8 mg benzathine penicillin weekly, for three weeks.

D. In syphilis of unknown duration repeat serology should be performed at 1, 6 and 12 months.

E. A person with syphilis should be screened for other STIs.

QUESTION 3

Various non-cancerous problems can affect the testicles, including testicular torsion, which occurs when the spermatic cord twists and cuts off the blood supply to the testicle. Which of the following statements is incorrect about testicular torsion?

A. Torsion of the testicle is the most common cause of testicular loss in young males.

B. While testicular torsion can occur at any age, the most common age for presentation of testicular torsion is 12–16 years.

C. Differential diagnosis for testicular torsion should also include epididymo-orchitis and torsion of testicular appendix.

D. Symptoms of testicular torsion may include severe pain, scrotal swelling, presence of a testicle lower than normal and nausea.

E. Suspected testicular torsion is a surgical emergency with a 90% chance of preserving the testicle if treated within 6 hours.

QUESTION 4

Leon is a 47-year-old married man whose older brother passed away three months ago following unexpected complications arising from routine surgery. He says he is not sleeping well, is tired and a bit flat most days, yet feels he is coping reasonably well at work. Which of the following do you DISAGREE with regarding Leon's situation?

A. Leon currently does not meet the criteria for a diagnosis of major depression.

B. A course of antidepressants should be prescribed.

C. Leon is most likely experiencing normal sadness and grief following the loss of his brother.

D. Investigations for Leon's tiredness are probably not warranted at this presentation.

E. Leon may benefit from non-pharmacological interventions such as referral to a psychologist.

QUESTION 5

Adam is an 83-year-old retired man living in a granny flat on the family farm now managed by his son. His wife passed away a year ago and since then he has become withdrawn. He says life is not worth living. He cannot sleep and feels tired and confused most of the time. He has lost 16 kg in weight. A friend of his recently took his own life and he cannot stop thinking about dying. Which of the following is INCORRECT?

A. Adam meets the criteria for a diagnosis of major depression.

B. Adam may benefit from a course of antidepressants.

C. If antidepressants are prescribed, Adam should be advised of the

risk–benefit profile of the agent and the expected time course for efficacy.

D. Adam should be assessed for suicide risk and questioned about suicide ideation and intent.

E. Based on his current presentation Adam is at low risk for suicide.

QUESTION 6

Which of the following is not a DSM-V diagnostic criterion for major depression?

A. Marked change in weight

B. Occasional insomnia

C. Feelings of worthlessness

D. Suicide ideation

E. Indecisiveness.

QUESTION 7

Andrew, a 56-year-old divorced solicitor, presents with an 18-month history of ED. He is a drinker and a smoker. He weighs 108 kg and is 167 cm tall. He is currently being treated for hypertension and dyslipidaemia. He had sleep apnoea diagnosed a year ago and has had recurrent genital herpes since his late twenties. Which of the following is UNLIKELY to be contributing to Andrew's ED?

A. Weight

B. Drinking and smoking

C. Hypertension

D. Genital herpes infection

E. Sleep apnoea.

QUESTION 8

Scott is a 68-year-old recently retired business man. He has come to see you regarding his increasing difficulty sustaining an erection during sexual encounters with his partner. He was diagnosed with diabetes mellitus (DM) 13 years ago and commenced insulin two months ago. His blood pressure was well controlled on a low dose thiazide until recently when atenolol was added. He is of average height and weight, and is a non-smoker. He confesses he feels quite anxious about retirement. Which of the following is INCORRECT?

A. More than 50% of men develop ED within 10 years of being diagnosed with DM.

B. Scott's recent medication changes may be contributing to his ED.

C. PDE-5 inhibitors are first-line pharmacotherapy for ED.

D. Men with diabetic ED demonstrate better-than-average efficacy on PDE-5 inhibitors.

E. Scott's anxiety about retirement should be explored.

QUESTION 9

Men attend general practice less often than women across the life cycle. It is important that clinicians seek opportunities to discuss general wellbeing and to undertake age-specific preventive activities with men when occasions arise. Which of the following statements is INCORRECT?

A. Young men are more likely to report unhealthy behaviours, compared with women.

B. Men are less often diagnosed with depression compared with women.

C. In younger men, review of smoking and sexual health, including chlamydia risk, should be assessed at least every 12 months.

D. The SNAP framework may assist GPs to have discussions with men about their wellbeing.

E. High-level alcohol consumption in younger men may be an indication of general high risk taking.

QUESTION 10

Which of the following statements is INCORRECT with regards to current guidelines for the management of gonococcol urethritis in most urban centres in Australia?

A. IM injection of ceftriaxone 500 mg in 2 mL of 1% lignocaine as a single dose is recommended.

B. IM injection of ceftriaxone 500 mg, in 2 mL of 1% lignocaine, as a single dose, plus appropriate treatment for chlamydia if infection has not been ruled out is recommended.

C. Reports of gonococcal strains resistant to penicillin, tetracyclines and fluoroquinolones are common in most Australian urban centres.

D. Partner notification (contact tracing) should be carried out.

E. Partners of infected patients should be examined and treated empirically.