check

Independent learning program for GPs

Unit 481 April 2012

Communicable diseases

The Royal Australian College of General Practitioners

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The five domains of general practice

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

The Royal Australian College of General Practitioners

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This unit of *check* looks at communicable diseases and provides clinical scenarios relating to diagnosis and management of some of the more common or significant communicable diseases. Transmission of pathogens can occur in a range of ways. These include through contaminated food, water or airborne means, contact with fomites, physical contact, infected blood or body fluids, or through animals and vectors such as mosquitoes.

Comprehensive and focused history taking is an important part of assessing a suspected communicable disease. History taking should, where relevant, include obtaining information about food intake, travel, sexual or other contacts, current occupation and previous immunisations. Other important tasks of managing a communicable disease include prompt diagnosis in order to treat an index case and prevent transmission to others, contact tracing and consideration of prophylaxis or treatment of contacts.

Management of an index case may involve exclusion from others, such as household or community contacts and even other patients and staff in your practice, so a practice policy in dealing with suspected cases of communicable diseases is essential. Basic hygiene measures such as hand washing are important mainstays of infection control and should be reinforced and implemented on a routine basis.

The authors of this unit bring a wealth of clinical experience to the topic.

The authors of this unit are:

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The learning objectives of this unit are to:

- display an increased awareness of the clinical features, diagnosis and management of some common or significant communicable diseases
- recognise the requirement for notification of specific communicable diseases
- understand the importance of contact tracing, and prophylaxis and treatment of contacts where relevant
- understand the importance of measures to prevent transmission of communicable diseases
- identify professional resources relating to communicable diseases.

We hope this unit of *check* will assist you to diagnose and manage patients who present with communicable diseases in the general practice setting.

Kind regards

Catherine Dodgshun

Medical Editor

CASE 1

JASON HAS A FEVER AND ABDOMINAL PAIN

Jason, aged 32 years, is an investment advisor. He presents with a 3 day history of fever, malaise and nausea. This morning he developed upper abdominal discomfort and dark urine. Jason has been well in the past with no significant medical illnesses and is not taking any medications. On specific questioning, Jason said he has not travelled overseas and had no visitors from overseas. He had also not eaten anything unusual. Jason has been married for 5 years and said he had no sexual partners in that time, other than his wife. He rarely drinks alcohol and does not take recreational drugs. Jason has had no vaccinations for hepatitis A or B, and no family history of gallstones.

On examination Jason is febrile with a temperature of 38°C. His abdomen is tender below the right costal margin, he has hepatomegaly with a liver span of 13 cm and his sclerae are icteric.

QUESTION 1

What investigations would you request?

FURTHER INFORMATION

Jason's bilirubin, alanine transaminase (ALT) and aspartate transaminase (AST) are elevated. Hepatitis B surface antigen (hepBsAg) and hepatitis C antibody (hepCAb) are negative, but hepatitis A IgM is positive, indicating acute hepatitis A infection.

QUESTION 2

Is there any requirement to notify this case to public health authorities?

FURTHER INFORMATION

You notify the local public health unit of the diagnosis. The public health physician advises there have been no other reports of hepatitis A in the local area in the past 4 months.

QUESTION 3

What further information would the public health unit require to ascertain the possible source of this infection and also to determine his risk of passing on the infection to others?

FURTHER INFORMATION

Jason has a daughter, Katrina, who attends the local childcare centre. The public health unit contacted the childcare centre to ascertain if any of the children had been ill. The centre director indicated that one of boys in Katrina's toddler group (Ajay) has an aunt – who normally brings the child to the centre – who had recently been very ill with fevers, vomiting and stomach pains. Ajay had only recently returned to the centre after a visit to his family in South East Asia. The public health unit gained permission to liaise with the aunt's general practitioner (GP) and requested hepatitis A testing. Ajay's aunt tested positive for hepatitis A.

QUESTION 4

What is the possible chain of transmission?

FURTHER INFORMATION

Katrina and Ajay were both tested and had evidence of recent hepatitis A infection.

QUESTION 5

How can GPs help to prevent importations of hepatitis A from overseas?

CASE 1 ANSWERS

ANSWER 1

Full blood examination (FBE), liver function tests (LFTs) and hepatitis A, B and C serology should be requested.

An upper abdominal ultrasound could also be requested to exclude extrahepatic bile duct obstruction.

ANSWER 2

Hepatitis A is a notifiable disease in all states and territories in Australia.

ANSWER 3

The public health unit will request information from Jason on his association[1] with:

- childcare centres/kindergartens
- educational/residential facilities
- hospitals/healthcare facilities.

The public health unit will also require Jason's history of:

- consumption of food from food outlets
- food handling
- shellfish consumption
- contact with known cases of hepatitis A
- overseas travel (or receiving visitors from overseas)
- visiting (or receiving visitors from) Indigenous communities.

ANSWER 4

It is likely that Ajay was unvaccinated when visiting family in South East Asia, and staying in a village and eating food with local family members. Hepatitis A is endemic in many parts of South East Asia. The incubation period for hepatitis A is 15–50 days. Small children often have asymptomatic infection, so the family would have been unaware that the child had the disease. Children in nappies often transmit the infection to other family members through the faecal oral route. It is a common experience to only become aware that a child has had hepatitis A infection when an adult contact develops the disease. Ajay most likely infected his aunt and other children and staff at the childcare centre.

ANSWER 5

Visiting friends and relatives (VFR) is a well recognised risk of transmission of many travel related infections.[2–4] Families originating from an overseas country may not perceive health risks in travelling back to their homeland. Many VFR travellers do not present to GPs or travel medicine clinics for pre-travel advice.[5] GPs must be alert about travel back to home countries when seeing these patients for other reasons, and opportunistically warn them of risks (especially to children). Travel medicine advice and vaccinations should be offered.

CASE 2

CAT REQUESTS TESTING FOR SEXUALLY TRANSMISSIBLE INFECTIONS

Cat, aged 17 years, presents to your practice, asking if she can be tested for sexually transmissible infections (STIs). Cat has been a patient of yours since the family moved to the area 10 years ago. She has no past medical history, is on no medications and has no allergies.

QUESTION 1

What further information would you like to know?

FURTHER INFORMATION

Cat reports that she has just found out that her new boyfriend has been 'sleeping around' with several other girls. Although she has ended the relationship she is now worried that she may have 'caught something' because they did not use condoms. The last time they had sex was 2 weeks ago. You determine that Cat has no symptoms of an STI and that her menstrual periods are regular, with her last normal period occurring 3 weeks ago. Cat says she is not using any other form of contraception.

QUESTION 2

What investigations would you request (after appropriate pretest counselling)?

QUESTION 3

What are some of the other medical issues that need to be addressed at this consultation?

FURTHER INFORMATION

The urinary polymerase chain reaction (PCR) for chlamydia is positive. All other tests are negative at this time.

QUESTION 4

What treatment would you prescribe for this positive chlamydia result?

QUESTION 5

How would you organise contact tracing?

QUESTION 6

What follow up investigations would you arrange?

CASE 2 ANSWERS

ANSWER 1

In a nonjudgemental manner, obtain a sexual history to assess Cat's risk of STIs and bloodborne viruses. You could ask about any other sexual contacts (male or female), the type of sexual activity (oral, vaginal or anal sex), the use of condoms or other contraception, and the influence of alcohol or drugs on sexual activity.

Also ask Cat about the timing of last sexual intercourse and any symptoms of an STI infection and obtain a menstrual history including the timing of her last normal menstrual period.

It would also be appropriate to assess whether Cat knows if her partner injects drugs, or has sex with men or women from high prevalence countries in order to assess which tests to request.

It may also be appropriate to perform a psychosocial screen. HEADSS is a mnemonic for a psychosocial screen in adolescents, and has been modified to include asking information about:

- Home
- Education, (employment, eating)
- Activities
- Drugs (smoking, alcohol, recreational)
- Sexuality
- Suicide (depression) and safety.[6]

ANSWER 2

You should request a first pass urine test for chlamydia PCR, and, if appropriate, for gonorrhoea PCR. Check Cat's hepatitis B surface antibody (hepBsAb) level (given Cat's age she is likely to have been vaccinated for hepatitis B). Depending on her level of risk and following pre-test counselling, consider screening for bloodborne viruses such as syphilis and HIV, and, if there is a history of intravenous drug use, hepatitis C. Recommending a hepatitis B booster if Cat's vaccination history is incomplete or her hepBsAb level is suboptimal is advised. Performing a pregnancy test is also important, which should be repeated in 1 week.

ANSWER 3

It is important to discuss the use of condoms to prevent STIs and self protection issues. If sexual activity had also taken place more recently, it would be necessary to assess the need for emergency contraception. The subject of ongoing contraception should also be discussed.

ANSWER 4

Azithromycin 500 mg 2 tablets stat orally.[7,8] Alternatively, doxycycline 100 mg twice per day orally for 7 days could be prescribed,[7,8] but adherence could be a problem.

ANSWER 5

Contact tracing should always be attempted, but can be very difficult in the general practice setting. One option is to ask Cat to inform her contact that he may have been exposed to chlamydia and suggest that he present for testing. Some websites allow an individual to send a personal or anonymous short message service (SMS) to a sexual partner (see *Resources*).

ANSWER 6

Test of cure chlamydia testing at 3–4 weeks after treatment is not usually recommended unless adherence with treatment is an issue.

Performing a repeat pregnancy test is important if Cat does not get a normal period.

If there is concern about recent exposure to hepatitis C, syphilis or HIV, repeating serology at 12 weeks would ensure the window period has passed. At this time it is recommended to repeat chlamydia testing in case of failure of treatment or re-infection, as re-infection rates are high.[9]

CASE 3

AQUARIUS' PARENTS HAVE CHANGED THEIR MINDS ABOUT IMMUNISATION

Aquarius is aged 3 years and 8 months. His father Andrew brings him to your surgery today because several of the children at the childcare centre have developed pertussis, and one little girl has been admitted to intensive care. Aquarius' parents had previously refused all vaccinations. They have now changed their minds and want their child to be fully vaccinated, even though they are still frightened about the side effects of vaccines.

QUESTION 1

What are the objectives of catch-up vaccination schedules?

QUESTION 2

In general, how would you go about planning a catch-up vaccination schedule?

QUESTION 3

What vaccines can be given at shorter intervals in a catch-up schedule than in the standard vaccination schedule?

QUESTION 4

What vaccines need fewer doses (or may even not be needed) as the child becomes older?

QUESTION 5

What vaccines have upper limits on the recommended age of administration?

QUESTION 6

What vaccine(s) would you advise for Aquarius today?

QUESTION 7

How would you respond if Andrew said he was worried about the trauma and pain associated with giving Aquarius too many needles at one time?

QUESTION 8

Design a catch up schedule for Aquarius. List the various vaccines required and the time intervals at which Aquarius should return for vaccination.

CASE 3 ANSWERS

ANSWER 1

The objectives of catch up vaccination schedules are to complete the course of vaccination as rapidly as possible and to provide adequate protection.

ANSWER 2

Consider each antigen the patient needs protection against and work out when the vaccine containing that particular antigen is due. Then, noting the current age of the child, consider what vaccines are available and funded and work out the earliest way of providing those vaccines in a catch up schedule. *The Australian Immunisation Handbook* (see *Resources*) provides information on catch up vaccination, including tables outlining the number of doses of a particular vaccine that should have been administered at certain ages and the minimum dose intervals between vaccinations. An online calculator to assist with working out catch up schedules for patients under 7 years of age is also available (see *Resources*).

ANSWER 3

The following vaccines can be given at shorter intervals than in the standard vaccination schedule: diphtheria-tetanus and acellular pertussis (DTPa) vaccine, inactivated poliovirus vaccine (IPV), *Haemophilus influenzae B* (Hib) vaccine, hepatitis B (hepB) vaccine, measles-mumps-rubella (MMR) vaccine, conjugated pneumococcal vaccine and rotavirus vaccines.

ANSWER 4

Hib vaccine and conjugated pneumococcal vaccines need fewer doses (or may not be needed, unless underlying medical conditions are present) as the child becomes older.

ANSWER 5

The safety of the rotavirus vaccines has not been established beyond the ages specified in their product information. For this reason, Rotarix® should not be administered to infants older than 24 weeks of age and Rotateq® should not be administered to children older than 32 weeks of age.[10]

ANSWER 6

Aquarius should have a vaccine consisting of a combination of DTPa, Hep B, IPV and Hib vaccines such as Infanrix hexa®. He should also have MMR, meningococcal C (men C) and varicella (VZV) vaccines. Rotavirus vaccines are not recommended at this age so should not be given.

ANSWER 7

Positive provider attitude is very important. Any hesitation or concern by the provider about the number of needles will reduce the likelihood of the parent accepting the need to give all vaccines due. Same day injection of all required vaccines is preferable for a child who is behind schedule so the child is protected as soon as possible. Most parents, if given a choice after a full explanation, would prefer that multiple injections be given on the same day as this avoids the inconvenience and cost associated with a second visit and it means only one episode of minor side effects.

ANSWER 8

Table 1 outlines a schedule for catch up vaccinations for Aquarius.

Table 1. Catch-up vaccinations for Aquarius[10]

Day of vaccination	Age at vaccination	Vaccine(s) to be given
Today	3 years 8 months	DTPa-hepB-IPV-Hib, MMR, MenC and VZV
In 1 month	3 years 9 months	DTPa-IPV, hepB
In 2 months	3 years 10 months	DTPa-IPV
In 3 months	3 years 11 months	IPV, hepB
In 4 months	4 years	MMR
In 8 months	4 years 4 months	DTPa

An alternative regimen as a compromise to reduce the number of visits and the number of injections is outlined in *Table 2*.

Table 2. Alternative catch-up vaccination regimen for Aquarius

Day of vaccination	Age at vaccination	Vaccine(s) to be given
Today	3 years 8 months	DTPa-hepB-IPV-Hib, MMR, MenC, VZV
In 1 month	3 years 9 months	DTPa-IPV, hepB
In 4 months	4 years	DTPa-IPV, hepB, MMR
In 9 months	4 years 5 months	DTPa-IPV

CASE 4

JAMAGEE'S KNEE IS SWOLLEN AND PAINFUL

Jamagee, aged 10 years, is an Aboriginal boy from a remote northern Australian community. He arrived in town yesterday to participate in a football carnival. His father has brought him in to see you on the advice of his coach, who noticed that Jamagee's right knee became swollen and painful during training. He is now having trouble walking on it.

QUESTION 1

What are your differential diagnoses based on the information so far?

FURTHER INFORMATION

Jamagee said he feels unwell. On specific questioning, he said he experienced a very sore throat about three weeks ago for which he had no treatment. On examining Jamagee, his temperature is 38.9°C, and you note that his right knee is swollen, hot and tender. There are no signs of tendon or ligament injury and there is no focal bony tenderness. There are no other joints involved. Examination of his heart reveals no cardiac murmurs.

QUESTION 2

Is there sufficient clinical evidence for you to consider a diagnosis of acute rheumatic fever (ARF)?

QUESTION 3

What investigations would you need to perform to confirm the diagnosis?

FURTHER INFORMATION

Jamagee's anti-streptolysin (ASO) titre is 340 IU/mL (normal <320 IU/mL) and his anti-deoxyribonuclease B (anti-DNAase B) titre is 390 IU/ml (normal <380 IU/mL). His C-reactive protein (CRP) is 50 mg/L (normal <6 mg/L). His erythrocyte sedimentation rate (ESR) is 13 mm/hr (normal <5 mm/hr). There are no abnormal findings on throat swab culture and blood cultures reveal no growth. There is no prolongation of the PR interval on electrocardiograph (ECG). His knee aspirate confirms aseptic inflammation with no organisms on culture.

QUESTION 4

Does Jamagee meet the criteria for a diagnosis of ARF now?

QUESTION 5

Name the high risk groups for ARF in Australia.

QUESTION 6

What are the major and minor criteria for the diagnosis of the initial episode of ARF in Australia, and how do the criteria differ between low risk and high risk groups?

QUESTION 7

How should this acute episode of ARF be managed?

QUESTION 8

How can ARF be prevented in children from high risk groups?

QUESTION 9

What secondary prophylaxis should be provided for Jamagee?

QUESTION 10

What other follow up is required and how would you coordinate this?

CASE 4 ANSWERS

ANSWER 1

Aside from sporting injuries, infective conditions, such as septic arthritis and osteomyelitis, are possible diagnoses and they are more common in Aboriginal children. You should also consider acute rheumatic fever (ARF) as this is also more common in Aboriginal and Torres Strait Islander children.

ANSWER 2

Yes, Jamagee's mono-arthritis and his fever ≥38°C satisfy one major and one minor manifestation respectively in the Australian Guidelines for the Diagnosis of ARF.[15] See *Table 3* for the Australian guidelines for the diagnosis of the initial episode of ARF.

Confirming ARF will require evidence of a preceding group A streptococcus (GAS) infection, evidence that the mono-arthritis is aseptic, together with an elevated ESR or CRP, or prolongation of the PR interval on the electrocardiograph (ECG).

Table 3. Australian guidelines for the diagnosis of the initial episode of acute rheumatic fever (ARF)[11]

Two major or 1 major and 2 minor manifestations plus evidence of preceding Group A streptococcus infection*

	High risk groups†	All other groups
Major manifestations	Carditis Chorea Erythema marginatum Subcutaneous nodules Polyarthritis, aseptic mono-arthritis or polyarthralgia	Carditis Chorea Erythema marginatum Subcutaneous nodules Polyarthritis
Minor manifestations	Fever†† Erythrocyte sedimentation rate ≥30 mm/hr or C-reactive protein ≥30 mg/L Prolonged PR interval on electrocardiograph	Fever†† Erythrocyte sedimentation rate ≥30 mm/hr or C-reactive protein ≥30 mg/L Prolonged PR interval on electrocardiograph Aseptic mono-arthritis or polyarthralgia

* Elevated or rising anti-streptolysin O or other streptococcal antibody, or a positive throat culture or rapid antigen test for GAS

† High risk groups are those living in communities with high rates of ARF (incidence >30 per 100 000 per year in 5–14 year olds) or rheumatic heart disease (all age prevalence >2 per 1000)

†† Oral, tympanic or rectal temperature ≥38ºC on admission or documented during the current illness

ANSWER 3

Investigations should include anti-streptolysin (ASO) titre and anti-deoxyribonuclease B (anti-DNAase B) titre looking for recent evidence of GAS infection; throat swab for culture and blood cultures looking for GAS infection; FBE looking for an elevated white cell count; ESR; CRP, which may be elevated in the setting of inflammation; knee fluid aspirate for microscopy and culture, which would be negative in the arthritis of ARF; and an ECG looking for prolongation of the PR interval.

ANSWER 4

Yes, he now has evidence of preceding GAS infection, and one major manifestation (aseptic mono-arthritis) and two minor manifestations (fever >38˚C and CRP ≥30 mg/L) so he meets the criteria for a diagnosis of ARF in the Australian Guidelines for the Diagnosis of ARF.[11]

ANSWER 5

The high risk groups for ARF in Australia are Aboriginal and Torres Strait Islander peoples living in rural or remote areas. Aboriginal or Torres Strait Islander groups living in urban settings, Maori and Pacific Islander people and some migrant groups from high risk areas are also possible high risk groups.

ANSWER 6

Major and minor criteria for the diagnosis of the initial episode of ARF in Australia are listed in *Table 3*. Note that aseptic mono-arthritis and polyarthralgia are major criteria for high risk groups only.

ANSWER 7

Jamagee should be given IM benzathine penicillin and admitted to hospital for an echocardiogram and development of a management plan.

ANSWER 8

Children from high risk groups who develop pharyngitis/tonsillitis should be treated with a course of oral phenoxymethylpenicillin for 10 days, or given benzathine penicillin IM stat.[7]

ANSWER 9

Jamagee should have monthly IM benzathine penicillin at least until he is 21 years of age.

In general, the duration of secondary prophylaxis is determined by age, time since the last episode of ARF and the harm from recurrent ARF. Secondary prophylaxis is usually for a minimum of 10 years after the last episode of ARF, or until the age of 21 years (whichever is greater).[11]

ANSWER 10

Contact should be made with the local medical service in his home community to ensure regular penicillin injections, and regular paediatric/cardiac review and investigations. In some jurisdictions, ARF is notifiable to public health authorities.

CASE 5

WILL TIMMY'S CHICKEN POX AFFECT HIS PREGNANT MOTHER?

Timmy, 9 months of age, is brought to you by his father Tom. Timmy has obvious chicken pox, which began yesterday. Tom is concerned because his partner Skye is 19 weeks pregnant with their second child and is certain she never had chickenpox as a child.

QUESTION 1

What would you say to Tom about the likelihood of Skye being exposed to the chicken pox virus in this situation?

QUESTION 2

What are the indications for zoster immune globulin (ZIG) and how would this apply to Skye? How would you access ZIG if necessary?

CASE 5 ANSWERS

ANSWER 1

Chickenpox (varicella zoster) is spread by airborne transmission of respiratory tract droplets or by direct contact with nasopharyngeal secretions or lesions of an infected person, or by direct contact with lesions of a shingles case. It is highly infectious and unlikely that Skye would have avoided exposure in the home setting.

FEEDBACK

Chickenpox infection in pregnancy can result in congenital varicella syndrome, which includes limb, eye, neurological and skin abnormalities. The risk to the fetus might be higher if infection occurs during the second trimester.[10] Infection around the time of delivery carries a high risk of severe (fatal) neonatal varicella.

VZV vaccine is a live attenuated vaccine, which means it is contraindicated in pregnancy.

ANSWER 2

ZIG is recommended for high risk contacts with significant exposure to varicella zoster. These include:[10]

- pregnant women who are presumed to be susceptible to varicella infection
- neonates whose mothers develop varicella between 7 days prior to and 2 days after delivery
- neonates exposed to varicella in the first month of life, if the mother has no personal history of varicella infection and is seronegative
- premature infants (born at <28 weeks gestation or <1000 g birthweight) exposed in hospital, regardless of maternal history of varicella
- patients with immune suppression, particularly if known to lack detectable antibodies to varicella.

Significant exposure for these contacts is defined as living in the same household as a person with active chickenpox or shingles, direct face-to-face contact with a person with chickenpox or shingles for at least 5 minutes, or being in the same room for at least 1 hour.

The management of Skye's situation will include an urgent request for varicella serology (if not already available) as long as this does not delay ZIG administration for greater than 96 hours from her first exposure.[10] Because ZIG is of most benefit when administered within 96 hours of exposure[10] and varicella is considered infectious from 48 hours before the rash appears (the rash commenced yesterday) time is of the essence. Management of a nonimmune pregnant women exposed to chicken pox should be in consultation with their obstetrician and an infectious disease physician.

ZIG can be obtained through local Australian Red Cross Blood Services.

CASE 6

JAMIE HAS RED EYES, A FEVER AND A RASH

Jamie, aged 11 months, is brought to your surgery because her mother, Samantha, noticed a rash this morning. Jamie has been unwell for a few days. She has been hot and 'sniffly' with a dry cough.

On examination, Jamie is febrile with a temperature of 39°C. She has florid conjunctivitis and a blanching maculopapular rash spreading from the head and neck onto the torso. Her eardrums and throat are injected and her chest is clear. There are no signs of respiratory distress.

QUESTION 1

What is the likely diagnosis?

QUESTION 2

What other diagnoses would you consider in Jamie?

QUESTION 3

What investigations would you request?

QUESTION 4

What is your management plan for Jamie?

QUESTION 5

What are the possible complications of this infection?

QUESTION 6

What groups of individuals are at risk of serious measles complications?

FURTHER INFORMATION

Your practice has been especially busy this morning. Jamie and Samantha have been in your waiting room for 10 minutes while waiting to speak to your reception staff before your practice nurse moved them to the treatment area.

QUESTION 7

What are the implications for your practice?

QUESTION 8

Who is susceptible to measles among your staff and patients?

QUESTION 9

What interventions might prevent further infection among contacts?

CASE 6 ANSWERS

ANSWER 1

It is likely that Jamie has measles infection. The clinical case definition for measles is an illness characterised by the following features:[12]

- generalised maculopapular rash – usually lasting 3 or more days, AND
- fever (at least 38°C if measured) present at the time of rash onset, AND
- cough or coryza or conjunctivitis or Koplik's spots.

ANSWER 2

Other diagnoses to consider include:

- rubella
- erythema infectiosum (also known as fifth disease)
- roseola infantum (also known as sixth disease)
- infection due to one of the echo viruses
- infection due to one of the coxsackie viruses
- infectious mononucleosis
- scarlet fever
- meningococcal infection.

FEEDBACK

Measles is now a relatively uncommon infection in Australia since the national measles vaccination program in the late 1990s. Immunity from one dose of MMR vaccine is approximately 95% and rises to 99% following the second dose. Nationally, more than 90% of 6 year old children have received two doses of MMR vaccine.[10] Most doctors who have recently graduated have not seen acute measles. This places pressure on pathology testing to confirm suspected cases of measles.

ANSWER 3

In the first week of the rash/illness, request:

- nasopharyngeal/throat swab PCR for measles
- urine PCR for measles
- serology IgM and IgG (these may not be elevated in the early stage of illness, but have usefulness in demonstrating seroconversion when compared to a convalescent sample).

After the first week of the rash/illness, request:

- serology IgM and IgG
- specimens for PCR as collection may still be useful up to 3 weeks after the onset of rash.

Advise your local pathology service of the probable diagnosis in order to ensure triage and proper infection control at the collection centre, or to possibly arrange a home visit from a vaccinated pathology collector.

ANSWER 4

Your management plan for Jamie could include:

- confirming the diagnosis
- advising on supportive care
- advising Samantha to watch for complications such as pneumonia or encephalitis, which would need to be referred for paediatric care
- isolating Jamie pending confirmation of the diagnosis.

You should also notify your local public health unit of a probable diagnosis of measles. The public health physician will know if there have been other cases of measles in your area, and will ask you about travel or contact with travellers. They will also advise on management of contacts while awaiting confirmation of diagnosis.

ANSWER 5

The possible complications of measles are:[10]

- otitis media in 9% cases
- pneumonia in 6% cases
- diarrhoea in 8% cases
- encephalitis in 0.1% cases
- subacute sclerosing panencephalitis in 0.0001% cases – on average 7 years later
- spontaneous abortion and premature labour if nonimmune and acquire infection during pregnancy.

ANSWER 6

Individuals who are unvaccinated or immune suppressed, and nonimmune pregnant women, are at risk of serious measles complications.

ANSWER 7

Measles is highly infectious and can be spread by the airborne route. Therefore, pending confirmation of the measles test result, it would be worth reviewing the measles vaccination status of those who have had waiting room or treatment room contact, including staff, and discussing this with your public health unit. The treatment room should be kept unoccupied for two hours after Jamie has left.

ANSWER 8

People at risk of measles (susceptibles) are those who were born:[10]

- on or after 1 January 1966 and who have not had two doses of MMR vaccine, or
- before 1966 and known to be seronegative.

ANSWER 9

Your local public health unit can advise on contact management. MMR vaccine can be offered to nonimmune, nonpregnant and nonimmune suppressed contacts within 72 hours of their exposure to measles infection. Normal human immune globulin can be offered to nonimmune contacts between 72 and 144 hours (6 days) following exposure.[13]

CASE 7

ALLY CAN'T STOP COUGHING

Terri has brought her child Ally, aged 3 years, in to see you. Ally has been coughing for 2 weeks and Terri is concerned because last night 'Ally couldn't stop coughing.' For 1 week prior to the onset of her cough, Ally had a clear runny nose and was 'off her food'. Ally has no siblings and attends kindergarten on two mornings each week. On examination, Ally's temperature is 37.2°C, her throat is not inflamed, her eardrums appear normal, there is no lymphadenopathy and her chest is clear. While sitting in your examination room, Ally has a prolonged bout of coughing followed by gagging.

QUESTION 1

What is your differential diagnosis? What is your working diagnosis?

QUESTION 2

What investigation(s) would you request to confirm your working diagnosis?

QUESTION 3

What treatment would you give Ally? What would you advise Terri about excluding Ally from other people?

FURTHER INFORMATION

Ally's nasopharyngeal swab result comes back pertussis PCR positive. You note that Ally is up to date with her childhood vaccinations. Terry is angry that her child has developed pertussis despite being fully vaccinated and wants to know how this was possible.

QUESTION 4

What would you say to Terri?

QUESTION 5

In general, what contacts of a case of pertussis should receive chemoprophylaxis?

FURTHER INFORMATION

Ally and Terri shared a household with David and Faith and their new baby while infectious with pertussis. David and Faith had received adult pertussis vaccination from their GP shortly after their baby was born.

QUESTION 6

Should David and Faith receive chemoprophylaxis?

CASE 7 ANSWERS

ANSWER 1

Your differential diagnosis includes pertussis, infection due to respiratory syncytial virus or adenovirus and croup. Given the prolonged bout of coughing followed by gagging, pertussis is likely to be the working diagnosis.

Infection with the Bordetella pertussis bacterium causes an acute respiratory illness characterised by a catarrhal phase, which is followed by a paroxysmal cough with or without the characteristic 'whoop' or post-tussive vomiting.

ANSWER 2

It would be appropriate to request a PCR and culture for pertussis (and respiratory viruses) on a nasopharyngeal swab given Ally's history of 2 weeks of (nonparoxysmal) cough. Serology for pertussis could also be requested. See *Table 4* for recommended tests for pertussis based on the duration of cough.

Table 4. Recommended tests for pertussis based on the duration of cough[14]

Duration of cough (or paroxysmal cough)	Recommended tests
<2 weeks (<1 week)	PCR and culture on a nasopharyngeal aspirate or swab
2–4 weeks (1–3 weeks)	PCR on a nasopharyngeal aspirate or swab and IgG and IgA serology
>4 weeks (>3 weeks)	IgG and IgA serology

Adapted and reproduced with permission. Queensland Health control guidelines. Queensland Health Guidelines for Public Health Units: Pertussis. Available at www.health.qld.gov.au/cdcg/index/pertussis.asp

ANSWER 3

Ally has clinical features of pertussis and should be treated with one of the antibiotics listed in *Table 5*.[7] Once symptoms are established antibiotics have little impact on the progression of the illness in the individual. However, for public health purposes the aim of antibiotic treatment is to reduce the patient's infectious period to others. Antibiotics should be commenced within 3 weeks of the onset of cough.

Ally should be excluded from kindergarten until she has received 5 days of antibiotic. In general, all cases with an association with childcare, family daycare, preschools, schools or other settings where there are susceptible individuals such as young children and infants should be excluded from those settings for 21 days after the onset of illness, or until they have received 5 days of a 7 day course of appropriate antibiotics (or the full 5 day course if using azithromycin).[7]

Ally's suspected pertussis should be notified to the local public health unit or health department and advice sought on prophylaxis for contacts. In general, confirmed or probable cases of pertussis should be notified to your public health unit or health department as per the Australian National Notifiable Diseases case definition.[15]

ANSWER 4

You could explain to Terri that pertussis vaccination is approximately 84–89% effective in preventing pertussis infection.[16] Furthermore, protection from the vaccine does wane over time and booster doses are necessary. Consequently, it is not uncommon to see an older vaccinated child with pertussis infection. However, vaccination is very effective in preventing death or serious illness from pertussis in young children. You could commend Terri for having Ally fully vaccinated and reassure her that it is highly unlikely that Ally will develop severe disease.

ANSWER 5

In general, chemoprophylaxis is limited to a narrow range of contacts who have been exposed to an infectious case of pertussis in the previous 3 weeks and depends on the risk that it poses to young or unvaccinated infants.[17] The definitions of eligible contacts (other than household contacts) for pertussis chemoprophylaxis are complex and best discussed with your local public health unit, which will follow up contacts.

ANSWER 6

Yes. While David and Faith are most likely to be protected by their recent vaccinations, the setting and potential for them to acquire infection from Ally and transmit it to their unimmunised newborn would warrant provision of chemoprophylaxis to 'all family members when there is an unvaccinated infant in the household'.[17]

Table 5. Antibiotics for cases and eligible contacts[7]

Antibiotic*	Dose†	Duration	Notes
Azithromycin††	Adult: 500 mg orally on day 1, then 250 mg orally, daily for a further 4 days Child ≥6 months: 10 mg/kg up to 500 mg orally on day 1, then 5 mg/kg up to 250 mg orally, daily for a further 4 days Child <6 months: 10 mg/kg orally, daily for 5 days	5 days	Recommended agent for children aged <1 month Not a listed PBS indication, except for tablets only under RBPS
Clarithromycin††	Adult: 500 mg orally, 12 hourly Child >1 month: 7.5 mg/kg up to 500 mg, orally, 12 hourly	7 days	Not recommended for children aged <1 month
Erythromycin††	Adult: 250 mg orally, 6 hourly Child >1 month: 10 mg/kg up to 250 mg, orally, 6 hourly	7 days	Not recommended for children aged < 1 month
Trimethoprim+ sulfamethoxazole	160+800 mg orally, 12 hourly Child >2 months: 4+20 mg/kg, orally, 12 hourly	7 days	If hypersensitivity or intolerance to macrolides

Notes:

* There is currently insufficient clinical evidence to recommend the use of roxithromycin for management of pertussis

† Children's doses: up to the adult maximum if required

†† In general azithromycin or clarithromycin are preferred to erythromycin. However, erythromycin is the recommended agent for use in pregnancy. Some agencies also endorse the use of azithromycin in pregnancy to minimise gastrointestinal upset, but refer to the Antibiotic Guidelines in the first instance

CASE 8

HELEN WAS SCRATCHED BY A MONKEY

Helen, aged 24 years, is a receptionist who presents on her return from a trip to Bali. During her time in Bali Helen was scratched on the head by a monkey at a tourist attraction. She said the monkey did not appear sick, but was very aggressive and climbed on her to get the food she was holding. Helen had not received pre-exposure vaccination for rabies prior to travel.

Helen has a copy of notes from the local hospital in Bali requesting you continue her care for rabies post-exposure treatment. The letter from the local hospital is brief and indicates that the scratch was washed and two doses of purified vero rabies vaccine (Verorab® 0.5 mL) were given 3 days ago.

QUESTION 1

What is the risk of Helen acquiring rabies in this situation?

QUESTION 2

In general, what is the recommended post-exposure treatment for contact with rabies that involves single or multiple transdermal bites or scratches?

QUESTION 3

Given that Helen was given two doses of Verorab® 3 days ago, would you alter the subsequent course of rabies vaccines to take account of this?

QUESTION 4

How would you obtain supplies of HRIG and rabies vaccines for Helen?

QUESTION 5

If Helen reported a past history of allergy to eggs, would this alter your management?

QUESTION 6

What other medical conditions should you be concerned about preventing in Helen?

CASE 8 ANSWERS

ANSWER 1

Rabies is an almost invariably fatal infection transmitted through percutaneous or permucosal exposure to the neural tissue or saliva of infected animals. Although animal bites are more likely to transmit rabies than animal scratches, cases of rabies illness from scratches have been reported in the literature.[18]

The risk of rabies in animals in Bali has been documented since August 2008. Since then, more than 100 people have died from rabies in Bali, and cases continue to be reported.[19] All mammals are considered potential reservoirs, although dogs and monkeys are the most commonly associated with potential human exposures through bites or scratches. The health of the animal is not a guarantee of the animal's rabies status and all mammals in endemic areas are considered to be potentially infected with rabies.

ANSWER 2

In previously nonimmune people (ie. those who have not undergone complete pre-exposure vaccination or post-exposure treatment with cell derived rabies vaccine), the post-exposure treatment for contact with rabies includes:

- thorough washing of the wounds with soap and water, followed by application of an antiseptic such as povidone iodine
- infiltration of the wounds with human rabies immune globulin (HRIG) at a dose of 20 IU/kg, which aims to provide immediate local inactivation of any rabies virus in the wound[20]
- a course of 4 doses of rabies vaccine given at day 0, 3, 7 and 14,[20] which aims to provide longer term protection against rabies virus.

This post-exposure protocol has been highly effective in protecting people from rabies infection when administered properly.

For those who have contact with rabies who have undergone complete pre-exposure vaccination, two intramuscular doses of a cell derived vaccine are required.

ANSWER 3

Contact your local public health unit or health department to obtain advice on the timing of future doses. The administration of a double first dose of rabies vaccine without HRIG is common in countries with less access to pharmaceuticals.[21] Considerations include whether the vaccines were administered by a reputable vaccine provider using a WHO approved vaccine and whether HRIG should be administered. If the patient has not received HRIG and the first (day 0) rabies vaccines were administered less than 7 days previously, HRIG should be administered.

ANSWER 4

Supplies of HRIG and rabies vaccine are available through your local public health unit or health department. HRIG is a product in short supply internationally and its use in accordance with strict protocols will ensure optimum use of this scarce resource.

ANSWER 5

One of the rabies vaccines (Rabipur®) may contain traces of egg protein and is contraindicated in those with egg allergy. An alternative vaccine is available (Merieux®).

ANSWER 6

Tetanus prophylaxis should be considered in accordance with the recommendations in the current edition of *The Australian Immunisation Handbook*. As this was a scratch not a bite, prophylactic treatment with antibiotics is not required. If the wound becomes infected, antibiotic treatment should be based on the recommendations in the current edition of *Therapeutic Guidelines: Antibiotic*.

Herpes B virus (*Herpesvirus simiae*) exists in macaque monkeys in Bali. Currently, there is no national consensus that routine prophylaxis of herpes B virus infection is recommended for these types of exposures.

CASE 9

IS THERE AN INFLUENZA OUTBREAK IN HARRY'S AGED CARE FACILITY?

Two days ago you were called to the local aged care facility to see Harry, aged 89 years. When you saw Harry he had a 1 day history of cough, shortness of breath and fever, and was reported by the staff to be lethargic and anorexic. Examination at that stage revealed an unwell looking man with a fever of 38°C, pulse rate of 88 beats/min in sinus rhythm, blood pressure of 135/82 and respiratory rate of 16 breaths/min. His chest was clear. Your provisional diagnosis was influenza. You requested nose and throat swabs for influenza PCR and culture, and blood tests including serology for influenza and atypical pneumonia as a baseline for comparison with a convalescent sera. You commenced Harry on oseltamivir.

On the following day, the nose and throat swabs were positive for influenza A. Harry remained stable.

Today you receive another call from the clinical nurse consultant of the facility. Two other residents in the same unit and one staff member are exhibiting similar symptoms. One of these patients, Maude, aged 82 years, has significant comorbidities and her condition is deteriorating rapidly. You visit the facility, assess Maude and recommend transfer to hospital.

QUESTION 1

What is the definition and symptoms of an influenza-like illness (ILI)?

QUESTION 2

Would this constitute an influenza outbreak? What is the threshold for declaring an influenza outbreak?

QUESTION 3

What is the role of the visiting GP in an influenza outbreak in a residential care facility?

QUESTION 4

What general strategies are employed to control such an outbreak?

QUESTION 5

When can an outbreak be declared over?

CASE 9 ANSWERS

ANSWER 1

The definition of ILI varies, but common to most definitions is an illness of sudden onset of fever and cough. A useful definition of ILI is:[22]

- sudden onset of fever (≥38°C), PLUS
- cough and/or other respiratory symptoms such as shortness of breath, PLUS
- one or more systemic symptom/s (fatigue, muscle soreness, headache).

Other symptoms may include sore throat and stuffy/runny nose, and, in the elderly, onset of or, increase in, confusion, exacerbation of chronic obstructive pulmonary disease or loss of appetite. Fever is usually a dominant symptom of influenza even in the elderly, but occasionally, fever may be lower than 38°C or absent.

Residents with respiratory and systemic symptoms should be tested for influenza if there are clinical suspicions.

ANSWER 2

A facility would be on alert for a potential influenza outbreak if three or more cases of ILI occur in residents or staff of the facility within a period of 72 hours.[23] Harry's positive laboratory test means the residential care facility where he lives would likely move from an alert to a declaration of an influenza outbreak. In general, an influenza outbreak is declared if:

- three or more epidemiologically linked cases of ILI in residents or staff of the facility within 72 hours, PLUS
- at least one case having a positive laboratory test, OR at least two having a positive point-of-care test.[23]

Laboratories notify positive influenza results, but clinicians should notify public health units if three or more cases have occurred. Public health units will liaise with the facility and ensure that an outbreak control team is convened and national recommendations are followed.

ANSWER 3

The role of the GP in the acute event is focused on patient management, including testing and consideration of antiviral medication. If a patient requires transfer to hospital, the GP should ensure the ambulance service and the receiving hospital are advised of the outbreak and the patient's suspected or confirmed diagnosis of influenza.

The GP may participate in the outbreak management team at the facility. Responsibilities may include facilitating staff and resident vaccination and antiviral prophylaxis during the event, and ensuring that infection control practices are in place. The GP may be involved in a debrief once the outbreak is declared over.

A well planned response to an outbreak occurs prior to the event and involves facility GPs in response planning. Activities may include establishing standing orders for prophylactic antivirals for residents, advocating and facilitating resident and staff vaccination (see *The Australian Immunisation Handbook* for vulnerable groups and eligibility for funded vaccines, including pneumococcal vaccine as appropriate).

ANSWER 4

Residential care facilities are considered high risk and have legal responsibilities in relation to infection control.

Actions in response to a potential outbreak alert or outbreak declaration include implementation of general infection control measures (hand hygiene and personal hygiene, precautions to prevent droplet transmission), education of staff, residents and volunteers, and opportunistic education of visitors. It also includes increased personal protective measures, isolation/cohorting of residents, restricting opportunities for transmission including exclusion of infectious staff, environmental measures and control of movements of patients, staff and visitors.

ANSWER 5

In general, influenza outbreaks can be declared over if no new cases have occurred in 8 days from the onset of symptoms of the last resident case.

CASE 10

JAMES HAS A HEADACHE AND HIGH FEVER

James, aged 19 years, is a normally fit student. He presents with a 24 hour history of feeling very unwell with a high fever and headache. He has no significant past medical history. On examination, James looks unwell and is drowsy. His temperature is 38.9°C, his pulse rate 104 beats/min, his blood pressure 102/63 and respiratory rate 16 breaths/min. He has no neck stiffness and Kernig's sign is negative. His chest is clear.

QUESTION 1

What is your differential diagnosis at this stage?

QUESTION 2

What are the symptoms and signs of invasive meningococcal disease (IMD)?

FURTHER INFORMATION

You ask James to undress and carefully look for petechial haemorrhages. His skin appears clear except for some tiny nonblanching spots under the elastic of his underpants.

QUESTION 3

How would you manage James?

QUESTION 4

Why is there a need to contact the public health unit?

FURTHER INFORMATION

James' girlfriend Jess also attends your practice and phones you later to let you know that James is in intensive care and that IMD has been confirmed. She asks if she is going to get sick and if there is anything she needs to do.

QUESTION 5

How would you respond to Jess?

CASE 10 ANSWERS

ANSWER 1

Your differential diagnosis includes an influenza-like illness, atypical pneumonia, IMD, meningitis due to other causes and encephalitis. IMD is a term that includes meningococcal meningitis, due to other causes as well as encephalitis, and meningococcal septicaemia. It is important to have a high index of suspicion for IMD as a delay in diagnosis and treatment may increase the likelihood of serious complications or death.

ANSWER 2

In adults and older children, symptoms may include vomiting, fever, headache, neck stiffness, photophobia, drowsiness, joint pain or haemorrhagic rash (in the early stage of development, the rash may blanch with pressure thus resembling a viral exanthem). In infants, symptoms may include fever (possibly with cold extremities), refusing feeds or vomiting, high pitched moaning cry or whimpering, dislike of being handled, fretfulness, haemorrhagic rash, blank and staring expression, bulging fontanelle and lethargy or pale blotchy complexion. A study of children under 16 years of age in the United Kingdom has shown that leg pain, cold extremities, and abnormal skin colour are frequently seen in the first 12 hours of meningococcal disease.[24]

Meningococcal infection may also present as arthritis or conjunctivitis. Primary meningococcal conjunctivitis may be associated with invasive disease and should be treated systemically.

ANSWER 3

Arrange urgent transfer to hospital. Take blood for culture and PCR testing (only if this does not delay the start of treatment with antibiotics), obtain intravenous access then commence empirical treatment with antibiotics (benzylpenicillin 1200 mg IV or alternatively, ceftriaxone 50 mg/kg (up to 2 g IM or IV)[25] before transfer to hospital. There is evidence of a significant survival advantage the earlier the antibiotics are started. Contact the local public health unit.

FEEDBACK

Antibiotics are advised for suspected meningococcal disease prior to transfer to hospital as follows:[7,25]

- children aged less than 1 year: 300 mg benzylpenicillin
- children aged 1–9 years: 600 mg benzylpenicillin
- adults or children aged 10 years or over: 1200 mg benzylpenicillin.

Benzylpenicillin should be given intravenously. However, if it is not possible to access the intravenous route, it is appropriate to administer benzylpenicillin by the intramuscular route.

Ceftriaxone 50 mg/kg up to 2 g can be used an alternative to benzylpenicillin.

ANSWER 4

IMD is a nationally notifiable disease. Clinicians are required to notify suspected and confirmed cases. Laboratories notify on positive pathology results, but clinical notification is important so that public health action can commence while awaiting confirmation of diagnosis.[25]

ANSWER 5

Jess is not likely to become unwell. A patient usually acquires the infection from a healthy contact in their close circle of contacts, who is an asymptomatic carrier of meningococcus in their nasopharynx (10% of the population at any one time).

Jess will be contacted by the public health unit as a potential contact of James. She may require clearance antibiotics. The rationale for these antibiotics is to clear the bacteria from the nasopharynx of the potential carriers. These are not treatment antibiotics, so Jess and other contacts need to be on the look out for symptoms in themselves and present early for assessment.

Contacts are not restricted in any way, so Jess may go about life as usual. You might also discuss opportunistic meningococcal vaccination, but acknowledge this would only offer protection from future exposures.

CASE 11

GRACE PRESENTS WITH 2 DAYS OF DIARRHOEA

Grace, aged 43 years, is a long term patient of your practice. She presents with a 2 day history of diarrhoea, nausea, abdominal pain and mild headache. She vomited once yesterday and has felt shivery at times. Grace has had five liquid diarrhoeal motions today, but has not noticed blood or mucus in her motions. Her last menstrual period began 6 days ago, lasted for 4 days and was a normal period.

Grace is usually well and her past attendances have been for routine Pap tests. Significant past history includes two uncomplicated caesarean sections and an open appendicectomy as a child. She does not take any regular medication.

On examination, Grace appears unwell and is clutching her abdomen. Her temperature is 38.2°C and there is generalised tenderness of her abdomen, with voluntary guarding and no rebound tenderness. There are no masses or organomegaly. Rectal examination reveals no blood. You assess that she appears adequately hydrated.

QUESTION 1

What is the most likely diagnosis?

QUESTION 2

What other history would you like to obtain?

FURTHER INFORMATION

Grace works in the kitchen of a company that supplies meals to childcare centres. She has not travelled overseas or interstate for at least 10 years. Three days ago, Grace ate a meal at a local café that included a hamburger with a side of warm chicken and rice salad. She ate homemade chocolate mousse with 'farm-fresh eggs' for dessert at a local cafe. She shared this meal with her daughter and a friend, both who became unwell yesterday with similar symptoms.

QUESTION 3

What investigations, if any, would you request?

QUESTION 4

What is your management plan for Grace?

QUESTION 5

Do you have any legal obligations in this case?

CASE 11 ANSWERS

ANSWER 1

Infectious diarrhoea/gastroenteritis (viral, bacterial or parasitic), possibly foodborne, is the most likely diagnosis.

ANSWER 2

You should seek information about unwell contacts, recent travel (especially in the last 3 months), occupation (especially food handling or working with vulnerable populations: children, elderly, immunosuppressed) and a food history.

ANSWER 3

For clinical and public health purposes, request faeces for microscopy culture and sensitivity and ova, cysts and parasites. Additionally, in some circumstances samples of faeces and vomit may be tested for toxins and viruses, and left over food (if available), may be tested bacteriologically, providing useful information for public health purposes. Clinical notes on pathology request forms are essential, especially if there has been a history of overseas travel, or if uncommon agents are suspected. Viral testing will only be performed if specifically requested.

ANSWER 4

Advise Grace on maintaining adequate hydration, consuming bland food and a gradual return to normal diet. Instruct Grace about the likely diagnosis and mode of transmission and the methods of infection control including exclusion from work until 48 hours after symptoms have ceased.[26] Inform Grace you will be notifying the public health unit.

Antibiotics are unlikely to be necessary, but will depend on the results of the tests and how her symptoms progress.[27]

ANSWER 5

In all Australian states and territories, Grace's presentation is notifiable to the local public health unit under the category of a possible food or water borne illness in two or more cases (whether or not a specific microbiological agent is identified). Additionally, in some jurisdictions (QLD, WA and NT), this presentation is notifiable as a possible food or water borne illness in a food handler.[28] Public health unit investigation may involve environmental health assessments and epidemiological and laboratory analysis with the aim of implementing measures to prevent further cases.

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FURTHER INFORMATION – MARCH 2012

In the March 2012 *check* unit, Case 1 was about Sophie, a teenager with cardiovascular risk factors, who was on the combined oral contraceptive pill. The medical eligibility criteria for contraceptive use by the World Health Organization could be helpful in assessing the benefits and risks of continuing the combined oral contraceptive pill in this individual and it would be prudent to review her at 1 month.

RESOURCES FOR DOCTORS

General

- The 'blue book' is produced by the Department of Health, Victoria and outlines clinical features, control measures and public health significance of various communicable diseases including vaccine preventable diseases such as pertussis, measles, chicken pox and influenza. It is available at http://ideas.health.vic.gov.au/bluebook.asp
- The 'yellow book' is a book produced by the Centers for Disease Control and Prevention and provides information on communicable diseases related to travel. It is available at wwwnc.cdc.gov/travel/page/yellowbook-2012-home.htm
- Information about communicable disease surveillance is available at www.health.gov.au/internet/main/publishing.nsf/Content/ohp-communic-1
- *The Australian Immunisation Handbook* is available at www.health.gov.au/internet/immunise/publishing.nsf/content/handbook-home
- An online calculator to assist doctors in working out catch up immunisation schedules for patients under 7 years of age is available at www.health.sa.gov.au/immunisationcalculator.

Hepatitis

- Information on the hepatitides is available at www.hepatitisaustralia.com.

Meningococcal disease

- Guidelines for the early clinical and public health management of meningococcal disease in Australia are available at www.health.gov.au/internet/main/publishing.nsf/content/BC329B583B663546CA25736D007674AA/$File/meningococcal-guidelines.pdf.

Rabies

- Information on rabies and post-exposure treatment is available at www.who.int/mediacentre/factsheets/fs099/en.

Rheumatic fever

- Guidelines on the diagnosis of acute rheumatic fever and rheumatic heart disease in Australia are available at www.racgp.or.gau/Content/NavigationMenu/ClinicalResources/RACGPGuidelines/DiagnosisandmanagementofacuterheumaticfeverandrheumaticheartdiseaseinAustralia/NHFA-CSANZ_ARF_RHD_2006.pdf.

Sexually transmissible infections

- Melbourne Sexual Health Centre provides guidelines for doctors on management of a range of sexually transmissible infections, educational videos on chlamydia testing, partner notification and sexual health checks, as well as information for patients on sexually transmissible infections. Its website is at www.mshc.org.au
- Australasian Society for HIV Medicine. *Australasian contact tracing manual,* 'A practical handbook for health care providers managing people with HIV, viral hepatitis, STIs and HIV-related TB'. Available at http://ctm.ashm.org.au.

Notification

The government health department of each jurisdiction provides information on communicable diseases and most provide information on notification. Their websites are as follows:

- Australian Capital Territory Government Health www.health.act.gov.au/c/health
- Department of Health and Human Services Tasmania http://www.dhhs.tas.gov.au/service_information/services_files/infectious_diseases_communicable_diseases
- Department of Health, Victoria http://ideas.health.vic.gov.au/notifying.asp
- Government of Western Australia, Department of Health www.public.health.wa.gov.au/3/282/2/procedure_for_notification_of_communicable_disease.pm
- New South Wales Government Health www.health.nsw.gov.au/publichealth/infectious/notification.asp
- Queensland Health www.health.qld.gov.au/health_professionals/diseases/default.asp
- South Australia Health, Department of Health www.sahealth.sa.gov.au.

RESOURCES FOR PATIENTS

General

- Better Health Channel has an A to Z list of medical conditions including various communicable diseases, where information can be obtained. Available at www.betterhealth.vic.gov.au/bhcv2/bhcarticles.nsf/AToZConditions?Openview&RestrictToCategory=A&count=500
- Immunise Australia provides information for patients on various aspects of the Australian Immunisation schedule. Available at http://immunise.health.gov.au
- The Australian Government's smartraveller website provides information on preventing ill health, including from communicable diseases, in relation to travel. Available at www.smartraveller.gov.au/tips/health.html.

Sexually transmissible infections

- Melbourne Sexual Health Centre provides information for patients on sexually transmissible infections. Available at www.mshc.org.au
- There are various websites available for persons infected with certain sexually transmissible infections to assist in informing their sexual partners that they could be at risk. These websites provide information on sexually transmissible infections for patients. One is available at www.letthemknow.com.au. One that provides information specifically for men who have sex with men is available at www.thedramadownunder.info.

Communicable diseases

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.

QUESTION 1

Ling So, aged 32 years, is a neuroscientist who recently returned to Australia from visiting relatives in South East Asia. She presents with fever, abdominal pain and jaundice. You diagnose hepatitis A infection after appropriate investigations. She asks you a lot of questions about hepatitis A infection. Which of the following is true regarding hepatitis A infection?

A. It is rare in South East Asia

B. It is usually transmitted via infected blood

C. The incubation period is 5–10 days

D. It is often symptomatic in small children

E. It is a notifiable disease in all jurisdictions of Australia.

QUESTION 2

Carita, aged 19 years, is a shift worker who presents for a PAP smear. She is asymptomatic. You offer her a screening test for chlamydia in the form of a chlamydia PCR on a first pass urine and the result comes back positive. Which of the following is the most appropriate treatment for Carita?

A. Azithromycin 500 mg 2 tablets orally stat

B. Azithromycin 500 mg twice per day orally for 7 days

C. Doxycycline 100 mg 2 tablets orally stat

D. Doxycycline 100 mg twice per day orally for 10 days

E. Cefriaxone 500 mg intramuscularly stat in 1% lignocaine.

QUESTION 3

Jamil, aged 6 years, recently immigrated with his parents to Australia. He has had no past medical conditions. He has not been vaccinated previously and presents for catch up vaccinations. You plan his catch up vaccinations. For which of the following vaccines has safety not been established for administration to children of Jamil's age?

A. *Haemophilus influenzae* vaccine

B. Conjugated pneumococcal vaccine

C. Rotavirus vaccines

D. Measles-mumps-rubella vaccine

E. Inactivated poliovirus vaccine.

QUESTION 4

Tahlia, aged 8 years, is of Torres Strait Islander background. She had a sore throat 3 weeks ago and now presents with a new cardiac murmur and a fever of 38˚C. You consider whether she may have acute rheumatic fever (ARF) and revise the criteria for diagnosis in your mind. According to the Australian guidelines for the diagnosis of the initial episode of acute rheumatic fever, what is the difference in diagnostic criteria for ARF in high and low risk groups?

A. In high risk groups evidence of preceding Group A streptococcus infection is not required

B. Aseptic monoarthritis and polyarthralgia are major criteria in high risk groups only

C. In high risk groups, all possible manifestations are major criteria

D. Carditis and chorea are minor criteria in low risk groups

E. There is no difference; the diagnostic criteria in high and low risk groups are the same.

QUESTION 5

Lee, aged 32 years, is currently 8 weeks pregnant and gives a history of significant exposure to chicken pox as she had direct face-to-face contact with her niece, aged 2 years, who has chicken pox, for 10 minutes yesterday. You request an urgent test to check her antibodies to the varicella zoster virus, which are absent. You discuss Lee with your local obstetrician. The most appropriate management is to:

A. reassure Lee and advise no further action

B. request a repeat test for antibodies to varicella zoster virus in 2 weeks

C. administer Zoster immune globulin to Lee

D. administer varicella zoster vaccine to Lee

E. advise Lee to terminate the pregnancy.

QUESTION 6

Sam, aged 6 years, has parents who are conscientious objectors to vaccination. Sam presents with measles. You determine that several people in the waiting room could be at risk. You document who was exposed and phone your local public health unit. It is likely they will advise you to offer which of the following to nonimmune, nonpregnant and nonimmune suppressed contacts within the next 72 hours?

A. Prophylactic antibiotics

B. Normal human immune globulin

C. Measles-mumps-rubella vaccine

D. Normal human immune globulin and measles-mumps-rubella vaccine

E. Reassurance alone.

QUESTION 7

Chandra, aged 9 years, presents with 7 days of a paroxysmal cough, which you suspect is due to pertussis. It may be necessary to exclude Chandra from school. You advise Chandra's parents to:

A. exclude Chandra from school until she has received 2 days of a 7 day course of appropriate antibiotics (or 2 days of the full 5 day course if using azithromycin)

B. exclude Chandra from school until she has received 5 days of a 7 day course of appropriate antibiotics (or the full 5 day course if using azithromycin)

C. exclude Chandra from school for the next 7 days

D. exclude Chandra from school until her cough has resolved

E. continue to send Chandra to school and that exclusion is not necessary.

QUESTION 8

You are participating in volunteer work as a doctor in Bali and Simone, aged 18 years, presents to you soon after being bitten by a monkey. Simone did not undergo pre-exposure vaccination. You administer post-exposure treatment. Post-exposure treatment of rabies in a person who is nonimmune involves which of the following?

A. Thorough washing of the wound(s) with soap and water

B. Application of an antiseptic such as povidine iodine

C. Infiltration of the wound(s) with (or intramuscular administration of) human rabies immune globulin

D. Administration of a course of rabies vaccine beginning at day 0

E. All of the above.

QUESTION 9

Elva, aged 91 years, is unwell and you believe she has an influenza-like illness. Regarding an influenza-like illnesses in an elderly patient such as Elva:

A. fever of greater than or equal to 38˚C is essential for the diagnosis

B. fever greater than or equal to 38°C is commonly a dominant symptom

C. lack of fever suggests an underlying diagnosis of immune deficiency

D. a respiratory symptom is not required for the diagnosis

E. a systemic symptom is not required for the diagnosis.

QUESTION 10

Tui, aged 13 years, presents to your practice with a fever without localising symptoms. She looks unwell, is drowsy, has a fever of 38.2˚C and is tachycardic with a pulse rate of 108 beats/min. You consider the diagnosis of meningococcal disease. Which of the following is true regarding invasive meningococcal disease in general?

A. A haemorrhagic rash is usually present as an early sign in invasive meningococcal disease

B. Leg pain and cold extremities are frequently seen in the first 12 hours in meningococcal disease

C. A definitive diagnosis based on investigations should be established prior to treatment

D. Erythromycin is the drug of choice to treat meningococcal disease

E. Notification is not a requirement in most jurisdictions of Australia.