

# check

Independent learning program for GPs

Unit 597  
September 2022

## Preschooler health

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*We acknowledge the Traditional Custodians of the lands and seas on which we work and live, and pay our respects to Elders, past, present and future.*








# Preschooler health

Unit 597 September 2022

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## About this activity

Optimising the health of children in the preschool years (aged 3–5 years) – for example, by making healthy food choices, improving sleep and understanding developmental milestones – has the potential to affect their subsequent health, wellbeing and opportunities in life.

Gastroenteritis is common in young children, with the majority of cases (70%) caused by viruses.<sup>1</sup> The number of children aged <5 years who visited a general practitioner has dropped significantly since the introduction of the rotavirus vaccine to the National Immunisation Program.<sup>2</sup>

Sleep problems are common, affecting 30–40% of children prior to school age; concerns include frequent night waking and problems at bedtime.<sup>3</sup> Fussy eating is exhibited by approximately 13–50% of children and generally peaks during the preschool years.<sup>4</sup> Developmental delay affects approximately 10% of children, with boys more commonly affected than girls.<sup>5</sup>

Preschool-aged children are also due for routine immunisations at four years of age as per the National Immunisation Program Schedule; these include diphtheria, tetanus, pertussis (whooping cough) and polio vaccinations.<sup>6</sup>

This edition of *check* considers the investigation and management of conditions affecting preschool-aged children in general practice.

## References

1. Perth Children's Hospital. Gastroenteritis. Nedlands, WA: PCH, 2021. Available at <https://pch.health.wa.gov.au/For-health-professionals/Emergency-Department-Guidelines/Gastroenteritis> [Accessed 5 August 2022].
2. National Centre for Immunisation Research and Surveillance. Rotavirus. Westmead, NSW: NCIRS, 2013. Available at [www.tri.edu.au/filething/get/45874/rotavirus-vaccine-fact-sheet.pdf](http://www.tri.edu.au/filething/get/45874/rotavirus-vaccine-fact-sheet.pdf) [Accessed 5 August 2022].
3. Waters KA, Suresh S, Nixon GM. Sleep disorders in children. *Med J Aust* 2013;199(8):S31–35. doi: 10.5694/mja13.10621.
4. Deakin University. Media release: Deakin research to determine if fussy kids are touch sensitive. 15 January 2020. Available at [www.deakin.edu.au/about-deakin/news-and-media-releases/articles/deakin-research-to-determine-if-fussy-kids-are-touch-sensitive#:~:text=Dr%20Russell%20said%20estimates%20of,at%20some%20point%20in%20childhood](http://www.deakin.edu.au/about-deakin/news-and-media-releases/articles/deakin-research-to-determine-if-fussy-kids-are-touch-sensitive#:~:text=Dr%20Russell%20said%20estimates%20of,at%20some%20point%20in%20childhood) [Accessed 5 August 2022].
5. Department of Communities, Child Safety and Disability Services. My child has developmental delay: Information for Queensland families of young children. Brisbane, Qld: Queensland Government, 2014. Available at [www.ideas.org.au/uploads/resources/342/my-child-has-developmental-delay.pdf](http://www.ideas.org.au/uploads/resources/342/my-child-has-developmental-delay.pdf) [Accessed 5 August 2022].
6. Department of Health and Aged Care. Immunisation for infants and children. Canberra, ACT: DHAC 2022. Available at [www.health.gov.au/health-topics/immunisation/when-to-get-vaccinated/immunisation-for-infants-and-children](http://www.health.gov.au/health-topics/immunisation/when-to-get-vaccinated/immunisation-for-infants-and-children) [Accessed 5 August 2022].

## Learning outcomes

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

- outline the differential diagnosis to consider for a child presenting with ongoing diarrhoea
- describe strategies that can be used by parents to lower levels of fussy eating in children
- discuss the assessment of developmental and behavioural problems using the Parents' Evaluation of Developmental Status tool
- list the common evidence-based methods used to manage limit setting and sleep onset association disorder in children
- explain the difference between adverse events following immunisation and vaccine administration errors, as well as the steps that follow each.

## Authors

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#### Abbreviations

<b>ADHD</b>	attention deficit hyperactivity disorder
<b>AEFI</b>	Adverse Event Following Immunisation
<b>AIR</b>	Australian Immunisation Register
<b>ASCIA</b>	Australian Society of Clinical Immunology and Allergy
<b>AUDIT-C</b>	Alcohol Use Disorders Identification Test – Consumption
<b>DTPa</b>	diphtheria, tetanus, acellular pertussis
<b>ECEI</b>	early childhood early intervention
<b>EPDS</b>	Edinburgh Postnatal Depression Scale
<b>GP</b>	general practitioner
<b>Hib</b>	<i>Haemophilus influenzae</i> type b
<b>IPV</b>	inactivated poliovirus
<b>K10</b>	Kessler Psychological Distress Scale
<b>MCS</b>	microscopy, culture and sensitivity
<b>MMR</b>	measles, mumps, rubella
<b>NDIS</b>	National Disability Insurance Scheme
<b>PEDS</b>	Parents' Evaluation of Developmental Status
<b>PHU</b>	public health unit
<b>REM</b>	rapid eye movement
<b>TGA</b>	Therapeutic Goods Administration
<b>VAE</b>	vaccine administration errors
<b>VMP</b>	vaccine management protocol



**Further information**

Pranpriya returns to see you two weeks later. She states that while the initial acute illness has largely settled, Anchana is having ongoing intermittent diarrhoea. She seems more bloated and gassy than usual but otherwise has returned to her normal self. Pranpriya provides you with a letter from the local public health authority advising that the childcare outbreak of gastroenteritis was caused by rotavirus. You repeat Anchana's examination and find no specific abnormality. Her height and weight remain on the 50th percentile.

**Question 5**  

What pathology do you think explains Anchana's symptoms, and what advice would you provide Pranpriya?

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**Further information**

Some months later, Pranpriya returns with Anchana. While Anchana no longer vomits, Pranpriya reports that Anchana frequently complains of nausea and abdominal bloating and upset. She also tends to frequent somewhat loose, foul-smelling stools.

**Question 6**  

What is your new differential diagnosis?

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**Further information**

You order a faeces microscopy, culture and sensitivity (MCS); ova, cysts and parasite examination; and faecal multiplex polymerase chain reaction and arrange further follow-up when the results are available. Pranpriya returns with Anchana. The faeces result is normal for all tests. Anchana's physical examination remains unchanged, although she looks somewhat pale. You repeat her height measurement, which is just below the 50th percentile, and weight, which has dropped to the 25th percentile.

**Question 7**  

What further testing would you arrange for Anchana?

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**CASE 1** **Answers**

**Answer 1**

Anchana presents with typical symptoms of gastroenteritis. History-taking should focus on exclusion of significant 'red flag' alternative diagnoses and assist in assessing the likely degree of dehydration. Examination should include the assessment of dehydration and abdominal examination to further exclude any red flags.

Red flags for serious alternative diagnoses include:<sup>1,2</sup>

- bilious (green) vomiting – indicates a surgical emergency requiring exclusion of bowel obstruction
- altered mental state – consider sepsis, raised intracranial pressure or severe dehydration
- vomiting and fever without diarrhoea – carefully consider alternative diagnoses of infection, especially urinary tract infection
- abnormal findings on abdominal examination – consider surgical causes including hernia, appendicitis or intussusception
- blood in stool – consider bacterial colitis or inflammatory bowel disease.



An accurate estimate of Anchana's fluid deficit can be calculated by comparing a recent weight, if available, to an in-clinic measurement. If no recent and reliable weight measurement is available, dehydration may be assessed by synthesising a combination of signs to provide an estimate of dehydration. The Children's Health Queensland Paediatric Emergency Guideline for Gastroenteritis ([www.childrens.health.qld.gov.au/guideline-gastroenteritis-emergency-management-in-children](http://www.childrens.health.qld.gov.au/guideline-gastroenteritis-emergency-management-in-children)) provides a useful guide to assessing percentage of dehydration in children, categorised as:<sup>3</sup>

- mild or none (<5%)
- clinical dehydration (5–10%)
- clinical shock (>10% dehydration).

### Answer 2

Anchana's observations are largely normal, with only dry lips meeting the criteria for clinical dehydration. On the basis of the examination findings, Anchana would be assessed as having mild (<5%) dehydration.

### Answer 3

Approximately 70% of gastroenteritis in children is caused by viruses, 15% by bacteria and the remainder by protozoa, such as *Giardia lamblia*.<sup>4</sup> Since the rotavirus vaccine was introduced to the National Immunisation Program in 2007, there has been a significant decline in hospitalisation of children as a result of rotavirus infection.<sup>5</sup> This may have some bearing on Anchana's case, with delayed immunisation precluding vaccination with rotavirus vaccine,<sup>6</sup> making her more susceptible to rotavirus infection. Rotavirus vaccination has a strong and durable effect on reducing illness years after initial vaccination<sup>7</sup> but must be initiated prior to 14 weeks of age.<sup>6</sup>

### Answer 4

It would be recommended to provide Pranpriya with a brief explanation of the natural history of acute gastroenteritis in children.<sup>8</sup> The combination of initial fever, vomiting and diarrhoea is likely due to a viral gut infection such as rotavirus, and symptoms generally resolve within 3–7 days. It is important to reinforce the need for careful hand hygiene because of faecal–oral routes of transmission, and the need to isolate Anchana at home until 24 hours after the last loose stool. If there is a potential outbreak at the childcare centre, the childcare centre should contact the local public health unit for advice.<sup>9</sup>

Anchana has only mild dehydration at this stage, and oral rehydration should be sufficient to manage her condition. Frequent sips of small amounts of oral rehydration solution at a rate of 0.5 mL/kg every five minutes are recommended, and Pranpriya should be encouraged to continue breastfeeding if she is still doing so. It is advisable to remind Pranpriya of the red flags that would prompt further review that you assessed in your initial assessment and ask her to return with Anchana for review if the illness has not resolved within seven days.

### Answer 5

Approximately 5% of children who contract rotavirus infection will experience protracted diarrhoea.<sup>10</sup> This is referred to as post-gastroenteritis syndrome and is thought to be the result of either prolonged viral shedding or transitory lactose intolerance as a result of blunted villi due to increased turnover of enterocytes. Diarrhoea due to transitory lactose intolerance may be managed by advising a reduction of lactose in the diet for a few weeks until symptoms resolve. Where a child is still breastfeeding, continuation should be encouraged. It would be advised to see Anchana for further review after a month should her symptoms fail to resolve.

### Answer 6

Anchana's diarrhoea can now be considered chronic as it has persisted for more than four weeks. The differential is broad and can be categorised as watery, fatty or inflammatory.<sup>11</sup> Major causes include irritable bowel syndrome, inflammatory bowel disease, coeliac disease and chronic infection (most commonly *Giardia* spp.).

### Answer 7

Given her ongoing symptoms, pallor, the drop in weight percentile and the normal stool MCS, it is reasonable to proceed with further testing at this stage to exclude other major differential diagnoses of chronic diarrhoea. Recommended tests include full blood examination, iron studies, C-reactive protein, electrolytes and liver function, and coeliac serology with immunoglobulin A.

### Conclusion

You receive the results of Anchana's blood tests, which demonstrate an iron deficiency anaemia and a positive anti-tissue transglutaminase result. You advise Pranpriya that it is likely Anchana has developed coeliac disease and arrange referral to your local paediatric gastroenterologist. You commence oral iron supplementation in the interim while awaiting gastroenterology review.

### Summary

Gastrointestinal complaints in children are a common presentation to general practice, with Bettering the Evaluation and Care of Health data showing that children aged <5 years are the most likely to present to general practice with diarrhoea, at a rate of 3.4 per 100 encounters.<sup>12</sup> Acute gastroenteritis is usually self-limiting, without the need for investigation in the general practice setting, but chronic diarrhoea requires consideration of a broader differential and further testing.

Coeliac disease affects 1–2% of the Australian population<sup>13</sup> and is an important differential diagnosis that should be considered in children with chronic abdominal symptoms or faltering growth. There is an interesting interplay between genetic susceptibility, gluten exposure and gastrointestinal infection in early life that may modulate risk of coeliac disease. Rotavirus vaccination may mitigate some of this risk.<sup>14</sup>

## References

1. Hartman S, Brown E, Loomis E, Russell HA. Gastroenteritis in children. *Am Fam Physician* 2019;99(3):159–65.
2. Brisbane North HealthPathways. Gastroenteritis in children. Lutwyche, Qld: Brisbane North HealthPathways, [date unknown]. Available at <https://brisbanenorth.communityhealthpathways.org/12652.htm> [Accessed 6 June 2022].
3. Children's Health Queensland Hospital and Health Service. Queensland Paediatric Emergency Guidelines. Gastroenteritis – Emergency management in children. South Brisbane, Qld: Children's Health Queensland Hospital and Health Service, 2020. Available at [www.childrens.health.qld.gov.au/guideline-gastroenteritis-emergency-management-in-children](http://www.childrens.health.qld.gov.au/guideline-gastroenteritis-emergency-management-in-children) [Accessed 6 June 2022].
4. Webb A, Starr M. Acute gastroenteritis in children. *Aust Fam Physician* 2005;35(4):227–31.
5. Dey A, Wang H, Menzies R, Macartney K. Changes in hospitalisations for acute gastroenteritis in Australia after the national rotavirus vaccination program. *Med J Aust* 2012;197(8):453–57. doi: 10.5694/mja12.10062.
6. Australian Government. Australian immunisation handbook – Rotavirus. Canberra, ACT: DoH, 2022. Available at <https://immunisationhandbook.health.gov.au/vaccine-preventable-diseases/rotavirus> [Accessed 6 June 2022].
7. Clark A, van Zandvoort K, Flasch S, et al. Efficacy of live oral rotavirus vaccines by duration of follow-up: A meta-regression of randomised controlled trials. *Lancet Infect Dis* 2019;19(7):717–27. doi: 10.1016/S1473-3099(19)30126-4.
8. Queensland Health. Queensland Health guidelines for public health units – Rotavirus. Brisbane, Qld: Queensland Health, 2018. Available at [www.health.qld.gov.au/cdcdg/index/rotavirus](http://www.health.qld.gov.au/cdcdg/index/rotavirus) [Accessed 6 June 2022].
9. National Health and Medical Research Council. Staying healthy: Preventing infectious diseases in early childhood education and care services. Canberra, ACT: NHMRC, 2013.
10. Sood M, Booth IW. Is prolonged rotavirus infection a common cause of protracted diarrhoea? *Arch Dis Child* 1999;80(4):309–10. doi: 10.1136/adc.80.4.309.
11. Juckett G, Trivedi R. Evaluation of chronic diarrhea. *Am Fam Physician* 2011;84(10):1119–26.
12. Britt H, Valenti L, Miller G, Charles J. Presentations of diarrhoea in Australian general practice. *Aust Fam Physician* 2005;34(4):218–19.
13. Walker MM, Ludvigsson JF, Sanders DS. Coeliac disease: Review of diagnosis and management. *Med J Aust* 2017;207(4):173–78. doi: 10.5694/mja16.00788.
14. Kemppainen KM, Lynch KF, Liu E, et al. Factors that increase risk of celiac disease autoimmunity after a gastrointestinal infection in early life. *Clin Gastroenterol Hepatol* 2017;15(5):694–702.e5. doi: 10.1016/j.cgh.2016.10.033.



**Question 4** 

What would you consider red flags for Harry's development at three years of age?

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**Further information**

You note that Harry has delayed speech, with only 10 clear words and a further 5–6 animal and car noises. He is not using simple sentences (eg 'Big truck broom'). He prefers to point or grab his mother's hand to indicate his needs. Harry is also using non-verbal cues to display shared enjoyment in the things he likes. For example, he brings his favourite truck to show other children at childcare or follows Ester's gaze if she points to birds in the trees. He is starting to enjoy turn taking but displays frustration when he is not understood by his caregivers or other children. There are no concerns in other developmental domains.

**Question 5** 

How would you proceed with Harry's assessment? Are there any further investigations you would perform?

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**Further information**

You tell Ester that Harry has delays in his communication. Ester wonders if learning two languages simultaneously is affecting Harry's speech development and asks you if she should stop speaking Japanese to him at home.

**Question 6** 

What impact does being raised in a bilingual household have on language development in a child?

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**Further information**

Your examination of Harry, including his growth, is normal. You arrange a hearing test for Harry and discuss options for further assessment, including referral to a speech pathologist, developmental paediatrician or local child development service.

**Question 7** 

What supports can you, as a general practitioner (GP), provide Harry and his parents while they await further assessment for Harry?

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**CASE 2** **Answers**

**Answer 1**

The Parents' Evaluation of Developmental Status (PEDS) tool in the child's personal health record book can assist to guide a discussion about parental concerns ([www.rch.org.au/ccch/peds](http://www.rch.org.au/ccch/peds)).<sup>1</sup> It is important to explore the child's progress against each developmental domain: social emotional, communication, cognition/fine motor/self-care, and gross motor.<sup>2</sup>

Important aspects of Harry's history include enquiring about:

- general medical and surgical history, especially a history of recurrent middle ear infections or grommets
- delays in infant or developmental milestones
- concerns raised by other caregivers
- family history of impaired vision or hearing in childhood; any family members with learning difficulties or developmental delays.

For children with significant developmental concerns, it is important to consider whether it is appropriate to screen for childhood trauma or neglect.

### Answer 2

It would be important to consider:

- pregnancy history including any complications, maternal infections acquired in pregnancy, exposure to medications, alcohol and recreational drugs
- early neonatal events (eg hypoxia, seizures)
- if the child attained infant milestones in the appropriate timeframe.

### Answer 3

Alcohol consumption is fairly common in pregnancy, with 55% of women drinking in early pregnancy before finding out they are pregnant, and 14.5% continuing to drink alcohol after becoming aware of the pregnancy.<sup>3</sup>

Exposure to alcohol during pregnancy can have an adverse impact on cognition and neurodevelopment of a child.<sup>4</sup>

Antenatal alcohol consumption should be enquired about in a non-judgemental manner. Some suggested questions include:<sup>4</sup>

- Was it a planned pregnancy?
- At what time did you become aware of the pregnancy?
- Did you drink alcohol prior to knowing about the pregnancy?
- Once aware of the pregnancy, did you vary your alcohol consumption?
- Did you consume a large amount of alcohol at any time when pregnant (eg special occasions or life events such as a birthday, wedding, New Year's Eve, death in the family)?

The Alcohol Use Disorders Identification Test – Consumption (AUDIT-C; Table 1) is a standardised assessment of fetal risk associated with alcohol use in pregnancy.<sup>5,6</sup>

### Answer 4

Red flags for Harry's development at three years of age could include:<sup>2</sup>

- social emotional – little interest in interacting or playing with other children; difficulty noticing and understanding emotions (eg happy, sad) in himself and others
- communication – speech is hard for people to understand,

**Table 1. Alcohol Use Disorders Identification Test – Consumption (AUDIT-C) questions<sup>6</sup>**

#### How often do you have a drink containing alcohol?

Answer	Never	Monthly or less	Two to four times a month	Two to three times a week	Four or more times a week
Score	0	1	2	3	4

#### How many drinks containing alcohol do you have on a typical day?

Answer	One or two	Three or four	Five or six	Seven to nine	10 or more
Score	0	1	2	3	4

#### How often do you have six or more drinks on one occasion?

Answer	Never	Less than monthly	Monthly	Weekly	Daily
Score	0	1	2	3	4

even those close to Harry; not using simple sentences (eg 'Big car go')

- cognition, fine motor and self-care – does not perform daily self-care skills (eg feeding or dressing); has difficulty manipulating small objects (eg threading beads)
- gross motor – unable to run/jump, or to walk up and down stairs without assistance.

### Answer 5

For any child with a developmental delay, examination should include growth measurements, noting of any dysmorphic features, neurological examination and a vision and hearing screen. If the child attends childcare, carer feedback can also provide useful insights from a different environment and social context.

Language delay is more common in boys, children with a family history of language or communication problems, and children with hearing issues or a developmental disorder such as autism spectrum disorder.<sup>7</sup> Further assessment often requires a multidisciplinary approach including an audiologist, child health nurse, speech pathologist, psychologist and developmental paediatrician.<sup>7</sup> GPs have a key role in coordinating assessment and ongoing care.

### Answer 6

There are many benefits to raising a child in a bilingual or multilingual household for both the individual and community, such as improving academic achievement, emotional and cultural bonds and providing diverse career opportunities.<sup>8</sup> Australia is a multicultural and linguistically diverse nation, with more than 300 languages identified in the most recent census.<sup>8</sup> In fact, one in five Australians speaks a language other than English at home.<sup>9</sup>

Families choose different approaches to teach children their native languages. Families may adopt a one-parent-one-language or one-environment-one-language policy.<sup>10</sup> For example, a child's father may speak French to the child while a child's mother speaks Arabic. Alternatively, Japanese is spoken whenever the child is home, while English is spoken at school or the shops. Parents should be encouraged to converse in the language with which they are most comfortable.<sup>10</sup>

GPs have a pivotal role in supporting parents who wish to provide a bilingual environment for their children. This can be done by addressing common myths such as, 'learning multiple languages at once is the cause for language delays'.<sup>11</sup> GPs can affirm to caregivers that bilingual children acquire language in the same timeframes as monolingual children.<sup>11</sup> It is normal for children to mix languages in conversation.<sup>10,11</sup> Bilingual children with significant delays in communication require further assessment, not reassurance or advice to drop the native or home language of the family.<sup>11</sup>

### Answer 7

GPs can support the family by discussing the educational, social and emotional benefits of being bilingual or multilingual and providing families with parenting tips from resources such as Raising Children Network (<https://raisingchildren.net.au/preschoolers/development/language-development/language-3-4-years>) and the Hanen Centre ([www.hanen.org/Helpful-Info/Parent-Tips.aspx](http://www.hanen.org/Helpful-Info/Parent-Tips.aspx)). GPs can also connect families to a local early years hub, where there are often free 'read and grow' programs or parenting workshops.

Children with developmental concerns but not a diagnosis may be eligible through the early childhood early intervention (ECEI) program under the National Disability Insurance Scheme (NDIS) to support evidence-based early intervention.<sup>12</sup> The ECEI program aims to increase parental capacity to respond to their child's needs, improve participation in childcare and social settings and connect families to parent support groups or appropriate services.

Families can contact early childhood partners, who are funded to deliver the early childhood approach. GPs can support families by providing the contact details of NDIS, where early childhood partners can be found through a postcode search function, telephoning NDIS on 1800 100 110 or via email (at [enquiries@ndis.gov.au](mailto:enquiries@ndis.gov.au)). A free translator or interpreter phone service is available on 131 450.<sup>13</sup>

### Conclusion

The hearing test for Harry shows moderate bilateral conductive hearing impairment. Harry sees an ear, nose and throat specialist who inserts grommets. Following six months of therapy with a speech pathologist, Harry makes significant improvements in his communications for both Japanese and English. At his four-year-old review and immunisation appointment, you note that he has now caught up with his peers, and both his parents and childcare providers feel he will be ready for school next year.

### Resources for doctors

- The Royal Children's Hospital Melbourne – Parents' Evaluation of Developmental Status PEDS, [www.rch.org.au/ccch/peds](http://www.rch.org.au/ccch/peds)
- Murdoch Children's Research Institute – PEDS eLearning (a Royal Australian College of General Practitioners Continuing Professional Development Accredited Category 2 Activity, attracting six points in the 2020–22 triennium), <https://mcri.learnupon.com/store/287147-the-royal-australian-college-of-general-practitioners-racgp-peds-courses-1-2>

### References

1. The Royal Children's Hospital Melbourne. Centre for Community Child Health. Parents' Evaluation of Developmental Status (PEDS). Parkville, Vic: RCH, 2022. Available at [www.rch.org.au/ccch/peds](http://www.rch.org.au/ccch/peds) [Accessed 7 June 2022].
2. Children's Health Queensland Hospital and Health Service. Child Development Program. Red flags early identification guide (for children aged birth to five years). 2nd edn. Brisbane, Qld: Children's Health Queensland Hospital and Health Service, 2016. Available at [www.childrens.health.qld.gov.au/wp-content/uploads/PDF/red-flags.pdf](http://www.childrens.health.qld.gov.au/wp-content/uploads/PDF/red-flags.pdf) [Accessed 7 June 2022].
3. Australian Institute of Health and Welfare. National drug strategy household survey 2019 – Priority population groups. Canberra, ACT: AIHW, 2020. Available at [www.aihw.gov.au/getmedia/be5b58c7-3e58-4a0d-a853-f0a73b04c077/aihw-phe-270-Chapter8-Priority-groups.pdf.aspx](http://www.aihw.gov.au/getmedia/be5b58c7-3e58-4a0d-a853-f0a73b04c077/aihw-phe-270-Chapter8-Priority-groups.pdf.aspx) [Accessed 19 July 2022].
4. FASD Hub Australia. FASD diagnosis: Australian guide to the diagnosis of FASD. FASD Hub Australia, 2016. Available at [www.fasdhub.org.au/siteassets/pdfs/australian-guide-feb2020/australian-guide\\_sectiona\\_feb2020.pdf](http://www.fasdhub.org.au/siteassets/pdfs/australian-guide-feb2020/australian-guide_sectiona_feb2020.pdf) [Accessed 7 June 2022].
5. Bower C, Elliott J. Report to the Australian Government Department of Health: Australian guide to the diagnosis of fetal alcohol spectrum disorder (FASD). Canberra, ACT: DoH, 2016.
6. Bush K, Kivlahan DR, McDonell MB, Fihn SD, Bradley KA. The AUDIT alcohol consumption questions (AUDIT-C): An effective brief screening test for problem drinking. *Arch Intern Med* 1998;158(16):1789–95. doi: 10.1001/archinte.158.16.1789.
7. Raising Children Network. Language delay. [Location unknown]: Raising Children Network, 2022. Available at <https://raisingchildren.net.au/babies/development/language-development/language-delay> [Accessed 7 June 2022].
8. Raising Children Network. Multilingual and bilingual children: Questions and answers. [Location unknown]: Raising Children Network, 2022. Available at <https://raisingchildren.net.au/babies/connecting-communicating/bilingualism-multilingualism/bilingualism> [Accessed 7 June 2022].
9. Australian Bureau of Statistics. Census of population and housing: Reflecting Australia – Stories from the Census, 2016. Canberra, ACT: ABS, 2016. Available at [www.abs.gov.au/ausstats/abs@.nsf/Lookup/2071.0main+features302016](http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/2071.0main+features302016) [Accessed 7 June 2022].
10. Speech Pathology Australia. Raising bilingual children. Melbourne, Vic: Speech Pathology Australia, [date unknown]. Available at [www.waverley.nsw.gov.au/\\_data/assets/pdf\\_file/0010/183169/Raising\\_Bilingual\\_Children.pdf](http://www.waverley.nsw.gov.au/_data/assets/pdf_file/0010/183169/Raising_Bilingual_Children.pdf) [Accessed 7 June 2022].
11. Lauren L. Bilingualism in young children: Separating fact from fiction. Toronto, ON: The Hanen Centre, 2016. Available at [www.hanen.org/helpful-info/articles/bilingualism-in-young-children--separating-fact-fr.aspx](http://www.hanen.org/helpful-info/articles/bilingualism-in-young-children--separating-fact-fr.aspx) [Accessed 7 June 2022].
12. National Disability Insurance Scheme. The early childhood approach. Canberra, ACT: NDIS, 2022. Available at [www.ndis.gov.au/understanding/families-and-carers/early-childhood-approach](http://www.ndis.gov.au/understanding/families-and-carers/early-childhood-approach) [Accessed 7 June 2022].
13. National Disability Insurance Scheme. Contact information. Canberra, ACT: NDIS, 2022. Available at [www.ndis.gov.au/contact](http://www.ndis.gov.au/contact) [Accessed 7 June 2022].







damaging to a child's health.<sup>3</sup> There is a risk that children may associate the provision or denial of certain foods with emotions, which can contribute to the child forming unhealthy relationships with food.<sup>3</sup>

Research into fussy eating in children has shown that responsive feeding, with awareness of hunger and satiety cues, as well as using the concept of division of responsibility in feeding ('parent provides, child decides') is associated with lower levels of fussy eating in children.<sup>4</sup> In contrast, non-responsive feeding, including pressure to eat and use of food as a reward, is associated with a higher level of fussy eating.<sup>4</sup>

### Answer 3

Management of this situation will begin with an examination of Kumail to check for signs of nutritional deficiency and/or poor growth. This will include:

- general appearance (well/unwell, skin colour, hydration status)
- abdominal examination
- growth measurements.

Following this, it is important to provide some education to Kumail's parents regarding the prevalence and natural history of fussy eating to assist with setting expectations. Fussy eating is common.<sup>2,4,5</sup> In one prospective study of 120 children aged 2–11 years in the USA, at any given age, between 13% and 22% of the children were reported to be fussy ('picky') eaters.<sup>5</sup> A meta-analysis from 2017 also estimated the prevalence of fussy eating to be 22%.<sup>6</sup>

It may also be helpful to discuss normal child development, including how children can learn to assert independence through testing boundaries with food choices.<sup>2</sup>

Finally, it would be helpful to discuss some meal time strategies to promote positive experiences and reset parental expectations, such as introducing the Satter 'division of responsibility in feeding' model, which is summarised by the statement, 'parent provides, child decides'.<sup>7–9</sup> This means that parents are responsible for the 'what, when and where' related to feeding a child, while the child is responsible for how much and whether they eat. Such an approach can assist parents to trust in their child's hunger and satiety homeostatic mechanisms and support the child to regulate their own hunger, which is associated with eating competence and wider food acceptance.<sup>4,9</sup>

### Answer 4

Health risks associated with fussy eating are usually minimal.<sup>4</sup> Kumail appears to be growing well, with no physical findings of concern on examination. There may be some benefit to checking for iron deficiency with a test for serum ferritin, given that his diet is low in iron-rich foods such as meat. Typical symptoms of iron deficiency in children include:

- behavioural difficulties
- cognitive impairment

- lethargy
- pica.

A ferritin result <20 µg/L would indicate iron deficiency.<sup>10</sup>

### Answer 5

There are a range of strategies that parents of so-called 'fussy eaters' can try. These can include, but are not limited to, the following.<sup>2,3,11</sup>

#### Encourage your child's independence

##### Provide choices

It is important to limit the options to only 2–3 healthy food items to reduce overwhelm. For example, 'would you like strawberries or carrot sticks?'

##### Grow food at home

Where possible, planting and growing herbs, fruits and vegetables at home can increase a child's interest in new healthy foods, especially if they can pick these items fresh from their own garden.

##### Involve your child in meal preparation

Allow your child to assist with choosing a recipe; selecting the ingredients from the grocery store, pantry or refrigerator; and preparing fruit and vegetables for meals.

#### Manage behaviour

##### Remain calm

Do your best to avoid becoming visibly angry, frustrated or upset if your child refuses food. It may be that your child is testing their boundaries and waiting to see your reaction, asserting their independence by making decisions about what they might eat.

##### Praise the positives

Give plenty of positive encouragement with smiles and words of praise; for example, 'great job for trying something new'.

##### Be a good role model

Eat healthy foods regularly and show your child that you like them. Children are more likely to copy behaviour that they see (observational learning), rather than following verbal instructions, especially if their caregivers do not 'do what they say'.

#### Make meal times interesting and enjoyable

##### Make food attractive

The concept of 'eating a rainbow' rings true here. It is important to offer children a variety of different colours, shapes, textures and sizes of new foods.

##### Make mealtimes social

Look for opportunities for your child to share meals with other children. Children may be more willing to try new foods if they see other children eating them too.

### Offer different foods from each of the food groups

For example, if your child does not like diced tomatoes, they might prefer cucumber sticks.

### Keep it simple and consistent

#### Serve your child an appropriately sized portion of the family meal

Avoid preparing separate meals for fussy eaters and trust in your child's hunger and satiety mechanisms.

#### Regularly offer new foods at different times

Children may need to see a food on the plate 10–20 times before they will try it. Place a small amount of a new food on their plate with a familiar food that you know that your child already likes.

#### Avoid snacking too close to mealtimes

Your child is more likely to try food if they are hungry.

### Conclusion

Fussy eating is a normal developmental stage for many preschool-aged children. The Satter 'division of responsibility in feeding' model states that the parent is responsible for the 'what, when and where' related to feeding a child, while the child is responsible for how much and whether they eat; that is, 'parent provides, child decides'. Meal times ideally should be low-pressure, fun and social experiences. It is important to continue offering a wide variety of healthy foods, as some children may need to see a food 10–20 times before deciding to try it. Children will look to their parents for examples of how to behave at family meal times.

Parents can further address fussy eating by providing their child with some independence around meal times. This may include providing them with a limited number of healthy food choices to select from, as well as involving them in meal preparation.

### Resources for doctors and families

- Raising Children Network – Fussy eating, <https://raisingchildren.net.au/preschoolers/nutrition-fitness/common-concerns/fussy-eating>
- Nutrition Australia – Helping kids to become great eaters, <https://nutritionaustralia.org/fact-sheets/helping-kids-to-become-great-eaters>
- Healthy Kids Association – Solutions for fussy eaters, <https://healthy-kids.com.au/parents/developing-positive-eating-behaviours/solutions-for-fussy-eaters>

### References

1. Strangor C, Walinga J. Chapter 8: Learning. 8.2 Changing behaviour through reinforcement and punishment: operant conditioning. In: Introduction to Psychology – 1st Canadian Edition. Victoria, BC: British Columbia Campus Open Education, 2014. Available at <https://opentextbc.ca/introductiontopsychology/>

- chapter/7-2-changing-behavior-through-reinforcement-and-punishment-operant-conditioning [Accessed 8 July 2022].
2. Raising Children Network. Fussy eating. [Location unknown]: Raising Children Network, 2019. Available at <https://raisingchildren.net.au/preschoolers/nutrition-fitness/common-concerns/fussy-eating> [Accessed 6 March 2022].
3. Queensland Health. Queensland Health. Ask an expert: What's wrong with rewarding or punishing children with food? Brisbane, Qld: Queensland Government. Available at [www.health.qld.gov.au/news-events/news/ask-an-expert-reward-punish-children-with-food](http://www.health.qld.gov.au/news-events/news/ask-an-expert-reward-punish-children-with-food) [Accessed 9 July 2022].
4. Wolstenholme H, Kelly C, Hennessy M, Heary C. Childhood fussy/picky eating behaviours: A systematic review and synthesis of qualitative studies. *Int J Behav Nutr Phys Act* 2020;17(1):2. doi: 10.1186/s12966-019-0899-x.
5. Mascola AJ, Bryson SW, Agras WS. Picky eating during childhood: A longitudinal study to age 11 years. *Eat Behav* 2010;11(4):253–57. doi: 10.1016/j.eatbeh.2010.05.006.
6. Cole NC, An R, Lee SY, Donovan SM. Correlates of picky eating and food neophobia in young children: A systematic review and meta-analysis. *Nutr Rev* 2017;75(7):516–32. doi: 10.1093/nutrit/nux024.
7. Healthy Kids Association. The division of responsibility in eating. St Leonards, NSW: Healthy Kids Association, 2017. Available at <https://healthy-kids.com.au/the-division-of-responsibility-in-eating> [Accessed 6 March 2022].
8. Ellyn Satter Institute. Raise a healthy child who is a joy to feed. Madison, WI: Ellyn Satter Institute, 2022. Available at [www.ellynsatterinstitute.org/how-to-feed/the-division-of-responsibility-in-feeding](http://www.ellynsatterinstitute.org/how-to-feed/the-division-of-responsibility-in-feeding) [Accessed 6 March 2022].
9. Satter E. Eating competence: Definition and evidence for the Satter Eating Competence model. *J Nutr Educ Behav* 2007;39(5 Suppl):S142–53. doi: 10.1016/j.jneb.2007.01.006.
10. The Royal Children's Hospital Melbourne. Iron deficiency. Parkville, Vic: RCH, 2019. Available at [www.rch.org.au/clinicalguide/guideline\\_index/Iron\\_deficiency](http://www.rch.org.au/clinicalguide/guideline_index/Iron_deficiency) [Accessed 6 March 2022].
11. Queensland Government. Guidelines for fussy eating. Brisbane, Qld: Queensland Government, 2013. Available at [www.health.qld.gov.au/\\_data/assets/pdf\\_file/0017/151505/paedcs\\_fussyeaters.pdf](http://www.health.qld.gov.au/_data/assets/pdf_file/0017/151505/paedcs_fussyeaters.pdf) [Accessed 6 March 2022].





**Question 7** 

How would you counsel Gemma on the use of melatonin in management of sleep problems in children?

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**CASE 4** **Answers**

**Answer 1**

A detailed clinical history is the first step in the assessment of sleep problems in children. History should cover the neonatal period, early developmental milestones, general medical history, social history and parental concerns about behaviour. Social history is important as changes to a child’s environment and disruptions to routine can influence a behaviour, which can affect sleep. Although neurodevelopmental conditions, such as attention deficit hyperactivity disorder (ADHD) and autism, may present at this age with sleep problems, the majority of children in this age group will not have any neurodevelopmental conditions. Preschool-aged children are generally too young for a formal diagnosis of ADHD or autism to be made and require formal assessment by a paediatrician or child psychiatrist. A careful assessment of the pre-bedtime routine, including timing and duration of access to electronic devices, is particularly important. A 2020 systematic review and meta-analysis found a significant association between increased screen time and poorer sleep outcomes in children aged <5 years.<sup>1</sup>

BEARS is a paediatric screening tool used to obtain sleep-related information. BEARS asks about (B) bed-time issues, (E) excessive daytime sleepiness, (A) night awakenings, (R) regularity and duration of sleep and (S) sleep-disordered breathing/snoring. Example questions are provided in the BEARS tool (<https://cchp.nhs.uk/sites/default/files/Clinical%20Guidelinen%20Sleep%20Managment-%20Appendix%2010%20BEAR%20Sleep%20screen.pdf>).<sup>2,3</sup> A 2005 pilot study of the BEARS instrument found that it increases the amount of sleep information recorded as well as the likelihood of identifying sleep problems in the primary care setting.<sup>2</sup>

**Answer 2**

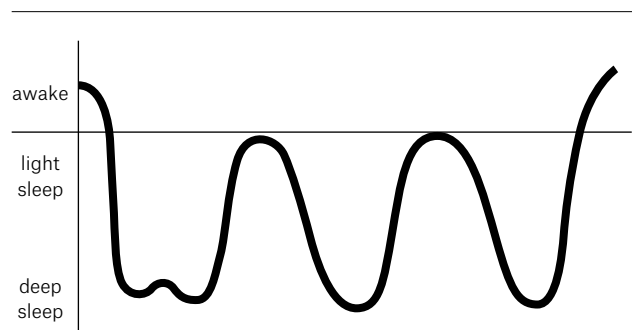
Managing sleep problems can be a challenging time for parents and affect the sleep of the household. It is important to listen to Gemma’s concerns and acknowledge the

challenges of the situation Gemma is facing. Exploring Gemma’s support network will help in planning how best to support Gemma and Daisy during this time.

Australian population-based studies have shown that sleep problems in infants and preschoolers are associated with poor maternal health and wellbeing.<sup>4-6</sup> Therefore, it is important to consider aspects of parental mental health, such as pre-existing vulnerabilities (mental health diagnoses, family violence), protective factors and impact on function. Risk of harm to self or children is important to explore with parents and will guide management. For women in the postpartum period, it may be appropriate to administer a screening tool such as the Kessler Psychological Distress Scale (K10)<sup>7</sup> or Edinburgh Postnatal Depression Scale (EPDS).<sup>7</sup> An EPDS score >12 or a mother indicating thoughts of self-harm should prompt a mental health assessment. A separate appointment may be needed to assess these issues in greater detail, and early follow-up is recommended.

**Answer 3**

A normal sleep pattern consists of non-rapid eye movement (REM; deep sleep) and REM (light sleep) sleep (Figure 2). In children, sleep cycles are shorter and consist of longer periods of REM sleep when compared with adult sleep. This means children wake a lot more often overnight than adults. The average preschooler sleep cycle lasts 40 minutes, gradually increasing to 90 minutes by adulthood. Over time, as the central nervous system matures, the REM phase becomes shorter and there is a transition to longer periods of non-REM (deep) sleep.<sup>8,9</sup> It is normal for children to wake during the light phase of sleep and sometimes call out. However, they may require support from parents to learn how to go back to sleep.



**Figure 2.** Schematic of sleep cycles

*Reproduced with permission of The Royal Australian College of General Practitioners from Hannan KH, Hiscock H, Sleep problems in children, Aust Fam Physician 2015;44(12):880-83.*

There are two main drivers of sleep:

- Homeostatic sleep system whereby a lack of sleep leads to an increased drive to sleep (also known as sleep pressure). Preschool-aged children require 11–12 hours of sleep per 24 hours, which may include a daytime nap.<sup>10-12</sup> Figure 3 shows the wide range of sleep durations in Australian children aged 0–9 years.

- Circadian rhythm ('biological time clock'), which is governed by internal and external factors.<sup>13</sup> Internal factors include medical conditions (neurodevelopmental disorders, obstructive sleep apnoea, genetic abnormalities). External factors include timing of meals, alarm clocks and light/dark – including blue light from screens, which blocks the brain's melatonin secretion – consumption of caffeine-containing foods, and room temperature (a cool room helps sleep initiation).

For parents who cannot provide a detailed sleep history or who report considerable day-to-day or night-to-night variability, it can be useful to recommend completing a daily sleep diary<sup>14</sup> for one or two weeks.<sup>15</sup>

Sleep diaries record bedtime/lights out, how long it takes to fall asleep, number and duration of night-time awakenings, wake up time, and number and duration of daytime naps.<sup>15</sup> Sleep diaries help clinicians to review the information for diagnosis and evaluate treatment efficacy without being misled by recall errors.<sup>15</sup>

**Answer 4**

Daisy has two common sleep problems: limit setting disorder and sleep onset association disorder.

**Limit setting disorder<sup>16</sup>**

Limit setting disorder is when parents/caregivers have difficulty enforcing bedtime limits. This results in bedtime refusal and stalling, leading to later bedtimes. Children come in and out of the bedroom multiple times before falling asleep.

**Sleep onset association disorder<sup>17</sup>**

Sleep onset association disorder is when children become dependent on caregivers or objects to help them settle back to sleep. This can occur during sleep onset and when the child naturally wakes overnight but has difficulty going back to sleep on their own. As sleep cycles are shorter in this age group, children may wake up many times in the lighter phases of sleep and have difficulty going back to sleep without a parent present.

The initial management plan for Daisy will involve discussing good sleep habits with Gemma. Good sleep habits include: a set bedtime, limiting media and screens in the bedroom for at least the hour before bedtime and avoiding caffeinated drinks in the afternoon. Activities that form part of the routine should focus on decreasing stimulation and may include a bath/shower, reading books, quiet music or turning on a night light.<sup>18</sup> Books at bedtime may include social stories<sup>19</sup> that relate to going to sleep.

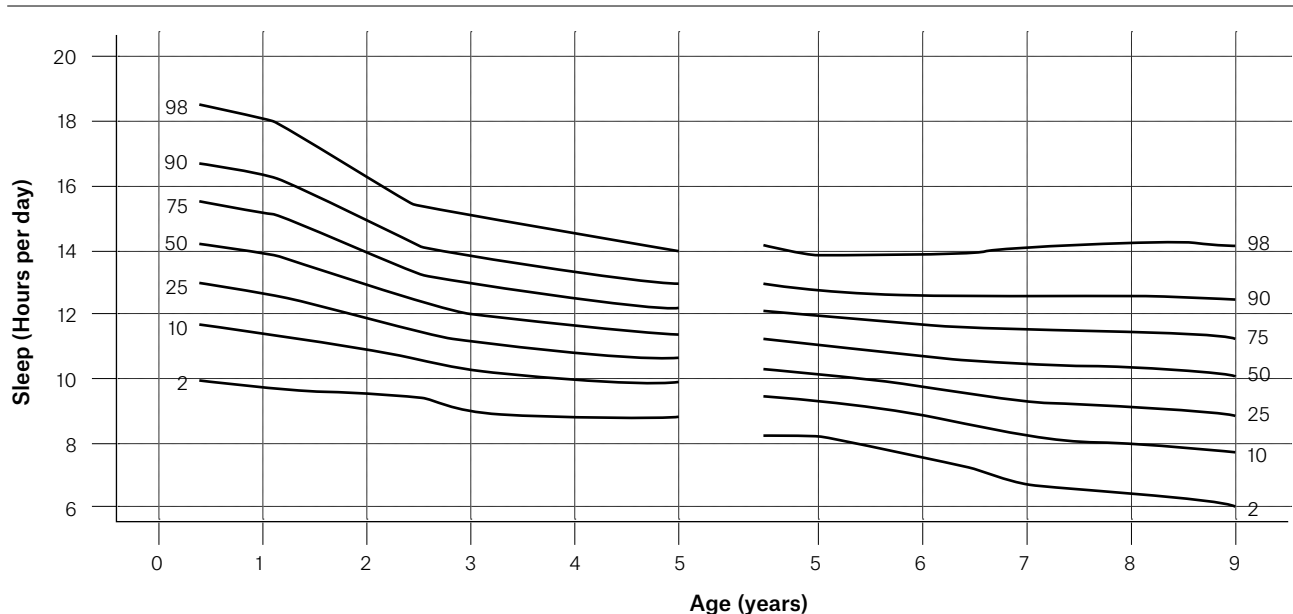
**Answer 5**

The two common evidence-based methods used in children from three years of age to manage limit setting disorder are:<sup>16</sup>

- bedtime pass
- camping out.

The two common evidence-based methods that can be used from six months of age to manage sleep onset association disorder are:<sup>17</sup>

- checking in
- camping out.



**Figure 3.** Sleep durations (per 24 hours) of Australian children<sup>11</sup>

Reproduced with permission of The Royal Australian College of General Practitioners from Hannan KH, Hiscock H, Sleep problems in children, Aust Fam Physician 2015;44(12):880–83.

There is no right or wrong method. Rather, it is best to explain each to Gemma and Daisy and let them choose which method they think is right for them and their family. You should advise families to pause these methods if their child is ill and re-start when they are well again.

### Bedtime pass method<sup>16</sup>

In the bedtime pass method, the child is given one 'pass out' of bed per night to have a drink, get a blanket, go to the toilet and so on. If they can stay in bed after using one pass, they receive a reward/sticker the next morning that may be in the form of a star chart (eg 'Daisy's staying in bed chart'). A small reward/lucky dip can be given after 4–5 stickers/stars are achieved. If the child continues to get out of bed after one pass, they do not receive a reward for that night.

### Camping out method<sup>17</sup>

Camping out aims to teach a child to learn to fall asleep by themselves. It involves the parent sitting in a chair or lying on a camp bed at the child's bedside. At the start of the night, a parent may hold or pat the child until the child falls asleep. If the child stirs, the parent is close to support the child going back to sleep in the form of patting or vocal reassurance. This avoids the child becoming fully awake and potentially requiring more intensive de-escalation. The parent then moves their chair/camp bed slowly away from the child's bed over a period of 7–14 nights. This is best done at a pace the child can tolerate (ie they are falling asleep within 15 minutes with minimal protest). Once the parent is in the doorway of the child's bedroom, then they can come and go using the checking in method described below. Overnight, if the child wakes and cannot re-settle by themselves, the parent should return to their chair/camp bed and settle the child as they have done at the start of the night.

### Checking in method<sup>17</sup>

Checking in involves the child remaining in bed. The parent tells the child they will come back to 'check in' on them. The parent then returns to the door of the room after longer intervals (one minute, two minutes and up to six minutes) until the child has fallen asleep.

### Answer 6

When a parent is at the stage of camping out where they are in the doorway, the checking in method combined with a reward chart can be helpful. In this version of the checking in method, Gemma leaves the chair in the doorway for the set amount of time then returns to the chair.

### Rewards<sup>16</sup>

Discuss with Gemma using a reward chart for Daisy and place the chart where Daisy can see it.

Keep the rewards short and the reward small/inexpensive (eg five stickers = small reward/lucky dip).

Reward Daisy with a sticker on the chart for staying in her room when Gemma leaves the doorway.

### Answer 7

Melatonin is a hormone secreted by the brain in response to diurnal rhythms. It is more commonly used in children with neurodevelopmental disorders that result in impairment of normal circadian rhythms.<sup>20</sup> Melatonin can be prescribed to children aged >2 years to assist with sleep onset; however, there is limited evidence to support the use of melatonin in developmentally normal children.<sup>21</sup> It is recommended that behaviour management strategies such as those described previously are trialled first and melatonin only used if these are not effective.<sup>22</sup> Short-term use of melatonin has been shown to improve sleep onset time and total sleep time in children and adolescents.<sup>23</sup> For autistic children, long-term (two years) use of melatonin has been shown to be safe and effective.<sup>24</sup>

### Conclusion

You review Gemma and Daisy after another two weeks. Daisy is now consistently in bed at 9.00 pm. Most nights she only requires one bedtime pass out and falls asleep when Gemma leaves the doorway after four minutes.

### Resources for doctors

- BEARS Tool, <https://cchp.nhs.uk/sites/default/files/Clinical%20Guidelinen%20Sleep%20Managment-%20Appendix%2010%20BEAR%20Sleep%20screen.pdf>
- Black Dog Institute – Kessler Psychological Distress Scale (K10), [www.blackdoginstitute.org.au/wp-content/uploads/2020/04/k10.pdf](http://www.blackdoginstitute.org.au/wp-content/uploads/2020/04/k10.pdf)
- Black Dog Institute – Edinburgh Postnatal Depression Scale (EPDS), [www.blackdoginstitute.org.au/wp-content/uploads/2020/04/edinburgh-postnatal-depression-scale.pdf](http://www.blackdoginstitute.org.au/wp-content/uploads/2020/04/edinburgh-postnatal-depression-scale.pdf)
- Royal Children's Hospital Melbourne – Sleep diary, [www.rch.org.au/uploadedFiles/Main/Content/clinicalguide/infantdiary.pdf](http://www.rch.org.au/uploadedFiles/Main/Content/clinicalguide/infantdiary.pdf)

### Resources for parents

- Sleep with Kip – A website containing evidence-based books, podcasts and behavioural sleep strategies for use by parents and clinicians, <https://sleepwithkip.com>
- Royal Children's Hospital Melbourne – Sleep diary, [www.rch.org.au/uploadedFiles/Main/Content/clinicalguide/infantdiary.pdf](http://www.rch.org.au/uploadedFiles/Main/Content/clinicalguide/infantdiary.pdf)
- Sleep Health Foundation – Melatonin and children, [www.sleephealthfoundation.org.au/melatonin-and-children.html](http://www.sleephealthfoundation.org.au/melatonin-and-children.html)
- Royal Children's Hospital Melbourne – Bedtime problems – children, [www.rch.org.au/kidsinfo/fact\\_sheets/Bedtime\\_problems\\_Preschool](http://www.rch.org.au/kidsinfo/fact_sheets/Bedtime_problems_Preschool)

### References

1. Janssen X, Martin A, Hughes AR, Hill CM, Kotronoulas G, Hesketh KR. Associations of screen time, sedentary time and physical activity with sleep in under 5s: A systematic review and meta-analysis. *Sleep Med Rev* 2020;49:101226. doi: 10.1016/j.smrv.2019.101226.

2. Owens JA, Dalzell V. Use of the 'BEARS' sleep screening tool in a pediatric residents' continuity clinic: A pilot study. *Sleep Med* 2005;6:63–69. doi: 10.1016/j.sleep.2004.07.015.
3. Tapia IE, Wise MS. Assessment of sleep disorders in children. Waltham, MA: UpToDate, 2022. Available at [www.uptodate.com/contents/assessment-of-sleep-disorders-in-children](http://www.uptodate.com/contents/assessment-of-sleep-disorders-in-children) [Accessed 14 June 2022].
4. Bayer JK, Hiscock H, Hampton A, Wake M. Sleep problems in young infants and maternal mental and physical health. *J Paediatr Child Health* 2007;43(1–2):66–73. doi: 10.1111/j.1440-1754.2007.01005.x.
5. Lam P, Hiscock H, Wake M. Outcomes of infant sleep problems: A longitudinal study of sleep, behavior, and maternal well-being. *Pediatrics* 2003;111(3):e203–7. doi: 10.1542/peds.111.3.e203.
6. Martin J, Hiscock H, Hardy P, Davey B, Wake M. Adverse associations of infant and child sleep problems and parent health: An Australian population study. *Pediatrics* 2007;119(5):947–55. doi: 10.1542/peds.2006-2569.
7. Black Dog Institute. Psychological toolkit. Randwick, NSW: Black Dog Institute, 2022. Available at [www.blackdoginstitute.org.au/education-services/health-professionals/psychological-toolkit](http://www.blackdoginstitute.org.au/education-services/health-professionals/psychological-toolkit) [Accessed 23 May 2022].
8. Tapia IE, Wise MS. Sleep physiology in children. Waltham, MA: UpToDate, 2022. Available at [www.uptodate.com/contents/sleep-physiology-in-children](http://www.uptodate.com/contents/sleep-physiology-in-children) [Accessed 14 June 2022].
9. Hannan KH, Hiscock H. Sleep problems in children. *Aust Fam Physician* 2015;44(12):880–83.
10. Iglowstein I, Jenni OG, Molinari L, Largo RH. Sleep duration from infancy to adolescence: Reference values and generational trends. *Pediatrics* 2003;111(2):302–07. doi: 10.1542/peds.111.2.302.
11. Price AM, Brown JE, Bittman M, Wake M, Quach J, Hiscock H. Children's sleep patterns from 0 to 9 years: Australian population longitudinal study. *Arch Dis Child* 2014;99:119–25. doi: 10.1136/archdischild-2013-304150.
12. Goodlin-Jones BL, Burnham MM, Gaylor EE, Anders TF. Night waking, sleep-wake organization, and self-soothing in the first year of life. *J Dev Behav Pediatr* 2001;22(4):226–33. doi: 10.1097/00004703-200108000-00003.
13. Nassan M, Videnovic A. Circadian rhythms in neurodegenerative disorders. *Nat Rev Neurol* 2022;18(1):7–24. doi: 10.1038/s41582-021-00577-7.
14. The Royal Children's Hospital Melbourne. Sleep diary. Parkville, Vic: RCH, [date unknown]. Available at [www.rch.org.au/uploadedFiles/Main/Content/clinicalguide/infantdiary.pdf](http://www.rch.org.au/uploadedFiles/Main/Content/clinicalguide/infantdiary.pdf) [Accessed 14 June 2022].
15. Bonnet MH, Benca R, Eichler AF. Evaluation and diagnosis of insomnia in adults. Waltham, MA: UpToDate, 2021. Available at [www.uptodate.com/contents/evaluation-and-diagnosis-of-insomnia-in-adults?search=sleep%20diary&source=search\\_result&selectedTitle=1-37&usage\\_type=default&display\\_rank=1](http://www.uptodate.com/contents/evaluation-and-diagnosis-of-insomnia-in-adults?search=sleep%20diary&source=search_result&selectedTitle=1-37&usage_type=default&display_rank=1) [Accessed 13 July 2022].
16. Sleep with Kip. Strategies bedtime pass. Parkville, Vic: MCRI, 2022. Available at <https://sleepwithkip.com/strategy-2> [Accessed 12 May 2022].
17. Sleep with Kip. Sleep association/strategies. Parkville, Vic: MCRI, 2022. Available at <https://sleepwithkip.com/strategy-3> [Accessed 12 May 2022].
18. Sleep with Kip. Strategies: Good sleep habits. Parkville, Vic: MCRI, 2022. Available at <https://sleepwithkip.com/strategies> [Accessed 12 May 2022].
19. NSW Government. Social stories. Sydney, NSW: NSW Government, 2020. Available at <https://education.nsw.gov.au/teaching-and-learning/learning-from-home/teaching-at-home/early-learning-resources/a-strong-start-to-school/social-stories> [Accessed 19 May 2022].
20. Appleton RE, Jones AP, Gamble C, et al. The use of Melatonin in children with Neurodevelopmental Disorders and impaired Sleep: A randomised, double-blind, placebo-controlled, parallel study (MENDS). *Health Technol Assess* 2012;16(40):i–239. doi: 10.3310/hta16400.
21. Janjua I, Goldman RD. Sleep-related melatonin use in healthy children. *Can Fam Physician* 2016;62(4):315–17.
22. Sleep Health Foundation. Melatonin and children. East Melbourne, Vic: Sleep Health Foundation 2021. Available at [www.sleephealthfoundation.org.au/melatonin-and-children.html](http://www.sleephealthfoundation.org.au/melatonin-and-children.html) [Accessed 7 July 2022].
23. Wei S, Smits MG, Tang X, et al. Efficacy and safety of melatonin for sleep onset insomnia in children and adolescents: A meta-analysis of randomized controlled trials. *Sleep Med* 2020;68:1–8. doi: 10.1016/j.sleep.2019.02.017.
24. Malow BA, Findling RL, Schroder CM, et al. Sleep, growth, and puberty after 2 years of prolonged-release melatonin in children with autism spectrum disorder. *J Am Acad Child Adolesc Psychiatry* 2021;60(2):252–61.e3. doi: 10.1016/j.jaac.2019.12.007.





**Question 6** 

If Kayla had developed a rash, what is the role of antihistamines in treating anaphylaxis?

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**Further information**

You immediately administer an appropriate dose of adrenaline and give Kayla high-flow oxygen while the practice manager phones for an ambulance. Kayla responds to your management, and the ambulance takes her to the hospital for further assessment and observation.

You consider the necessary steps to report this event, and if there could have been a problem with the vaccine Kayla received.

**Question 7** 

How do you report an Adverse Event Following Immunisation (AEFI)?

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**Question 8** 

What are the general principles involved in managing a cold chain breach?

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**Further information**

Seamus calls the practice several days later and thanks you for your help in managing Kayla's AEFI. She has fully recovered. You ensure Kayla's AEFI is documented in her medical record.

You consider how you might manage a young patient if physical immunisation records were not available, or if a child had missed recommended vaccine doses.

**Question 9** 

When there are no physical records to hand, how can immunisation records be accessed electronically?

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**Question 10** 

How would you calculate a vaccination catch-up schedule for a non-Indigenous child aged four years without any significant medical conditions who has only received up to and including the six-month vaccines?

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**Question 11** 

For children in foster or other out-of-home care, what are the relevant legal considerations for giving immunisations?

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**CASE 5** Answers**Answer 1**

It is good practice to review the Australian Immunisation Register (AIR) prior to administering vaccinations. According to the National Immunisation Program Schedule, Kayla is eligible for several vaccines.<sup>1</sup> The first is diphtheria, tetanus, acellular pertussis and inactivated poliovirus (DTPa-IPV). Aboriginal and Torres Strait Islander children living in Western Australia, Northern Territory, South Australia and Queensland are eligible for pneumococcal vaccine and a second dose of hepatitis A vaccine.

All children with medical risk factors, regardless of whether they are of Aboriginal or Torres Strait Islander descent, are also eligible for pneumococcal vaccine. These risk factors include previous invasive pneumococcal disease; functional or anatomical asplenia; immunocompromising conditions; proven or presumptive cerebrospinal fluid leaks; chronic disease in the lungs, kidneys, liver and heart; diabetes and trisomy 21. The *Australian immunisation handbook* provides further information.<sup>2</sup>

The influenza vaccine is recommended and nationally funded for children aged six months to five years, all Aboriginal and Torres Strait Islander people aged >6 months, people aged >6 months with certain medical conditions and, though not relevant in Kayla's case, people >65 years and pregnant women.<sup>1</sup>

**Answer 2**

The DTPa-IPV, pneumococcal, hepatitis A and influenza vaccines all require intramuscular injections. To administer the vaccine, a practitioner should use a 22–25-gauge needle of 25 mm length and insert at a 90° angle to the skin into the muscle bulk. Children aged ≥1 year can receive their vaccines in the deltoid muscle. Two vaccines may be administered on the same side where injection sites can be separated by 2.5 cm. If there is not enough muscle bulk for this, the anterolateral thigh may be used.<sup>2</sup>

Swabbing of skin is not required before vaccination if the skin is visibly clean. If it is dirty, the skin should be cleaned with an alcohol wash or alcohol swab and should dry completely prior to injecting. Aspiration prior to injection of a vaccine is not required; however, if it is done and flashback of blood appears, the needle should be withdrawn and a new site selected.<sup>2</sup>

It is important to always check you have the correct patient and correct vaccines. Confusion between the two pneumococcal vaccines is a particular source of vaccine administration errors.

**Answer 3**

Although not relevant for these vaccines for Kayla, subcutaneous injections are administered at a 45° angle to the skin with a 25–27-gauge needle of 16 mm in length.<sup>2</sup> Subcutaneous injection sites include over the deltoid muscle, over the anterolateral thigh or the upper outer triceps area.<sup>2,3</sup>

**Answer 4**

After vaccination it is important to monitor the patient for clinical features of immediate hypersensitivity reaction – most importantly, anaphylaxis. The clinical features can be grouped by system: cardiovascular, respiratory, gastrointestinal and dermatological. Clinical features include: dizziness, feeling faint or lightheaded, pallor, mottled appearance, floppiness, tachycardia, hypotension, new cough, wheeze, increased work of breathing, stridor, lip and tongue swelling or angioedema, tingling mouth, voice change, severe abdominal pain, nausea, vomiting, urticaria or welts.<sup>2,4</sup>

Though not relevant for Kayla's age group, in infants, particularly ex-premature infants, apnoea or bradycardia can occur.<sup>2</sup> Rarely, in early childhood (<2 years), a hypotonic-hyporesponsive episode can occur where the child is hypotonic, non-responsive and pale or cyanotic within 48 hours of vaccination. It resolves spontaneously, usually within 30 minutes, and there are no known long-term sequelae.<sup>5</sup>

**Answer 5**

Kayla is showing signs of anaphylaxis. The first step is to call for help from other practice staff, particularly clinical staff, to facilitate immediate management and ultimately phone an ambulance; do not delay the administration of intramuscular adrenaline. Seamus should be asked to lie Kayla on the bed to improve the venous return to the heart. If lying flat restricts her breathing, she may be propped up to a reclined or seated position. Kayla should not be allowed to sit up suddenly, to stand or to be held upright.

Intramuscular 1:1000 adrenaline should be given immediately in the anterolateral mid-thigh. The dosing is weight- or age-based as per the Australian Society of Clinical Immunology and Allergy (ASCIA) guidelines.<sup>4</sup> A dose of 0.2 mg (= 0.2 mL) of 1:1000 (1 mg/mL) adrenaline is appropriate for a child aged four years who weighs approximately 20 kg. Patients experiencing anaphylaxis should be given high-flow oxygen. Ensure an ambulance has been phoned. Further doses of adrenaline can be given every five minutes until improvement or until the ambulance arrives. Further and more detailed management is described in the *ASCIA guidelines: Acute management of anaphylaxis*.<sup>4</sup>

It is vital that adrenaline and oxygen is available on-site where vaccines are administered, and that posters or quick reference guides are visible. Practitioners should ensure that they know where the emergency medications are kept and that they are easily accessible.

**Answer 6**

There is no role for antihistamines in treating anaphylaxis, regardless of the presence of any rash.<sup>4</sup> In fact, using these medications can be actively harmful: it can distract from giving adrenaline or enacting other more appropriate management. In settings with limited resources and staff members, this effect of distraction is magnified. The sedating effect of antihistamines can mimic signs of anaphylaxis.<sup>4</sup>

Antihistamines are only used to treat itchiness. If a patient goes into cardiac arrest from anaphylaxis, this will also stop the sensation of itchiness.

### Answer 7

Reporting an AEFI is an important way to monitor the safety profile of therapeutics, and AEFI is a notifiable condition. Each state and territory has its own pathway to report AEFIs. For practitioners who may be unfamiliar with their state or territory's reporting pathway, the *Australian immunisation handbook* contains a table with the relevant contact information.<sup>2</sup> AEFIs are ultimately reported to the Therapeutic Goods Administration (TGA) as part of their safety monitoring program. The TGA, in turn, provides the adverse event data to, and monitors safety signals from, the World Health Organization database (VigiBase).<sup>6</sup>

Vaccine administration errors (VAE) are distinct from AEFIs. VAEs are incorrect administration, whereas AEFIs are adverse events or reactions after a vaccine has been given. Generally the management of non-COVID-19 VAEs to date has been either through an internal process by the vaccine provider as for other medication administration errors, or in consultation with the local public health unit (PHU) if the vaccine providers require further advice. Since the advent of COVID-19, there has been a greater emphasis placed on surveillance of VAEs, especially as they pertain to the paediatric population receiving a COVID-19 vaccine. In addition to COVID-19 vaccine AEFIs, COVID-19 VAEs have had a specific reporting structure during the pandemic. At the time of publication, the long-term COVID-19 vaccine AEFI and VAE reporting and surveillance structure is being transitioned to alternative pathways and remains under development in many jurisdictions.

### Answer 8

In the event of a cold chain breach, it is important to secure the vaccines, incorporating the following steps:

1. Isolate the affected vaccines in an appropriate fridge (or portable cooler in the interim) at a temperature between +2°C and +8°C with the correct monitoring. The vaccines may stay in the original vaccine fridge unless it has a malfunction.
2. Put a label on the fridge or affected vaccines indicating that they cannot be used.
3. Review the monitoring log to review the minimum and maximum temperatures, as well as lengths of time the vaccines were exposed to inappropriate temperatures.

Each vaccine has different thermostability, so the vaccines should not be discarded until the breach has been discussed with the relevant PHU as some vaccines may be able to be salvaged.

Each vaccination provider is required to have a vaccine management protocol (VMP). It contains the contact details to whom to report the cold chain breach, and the practicalities to enact the above principles at the specific practice or clinic. A technician or electrician should review the equipment used to store the vaccines where appropriate. Ordering vaccines may

be suspended while investigation occurs. The chain of causation of the breach should be reviewed to ensure that breaches do not recur. It is advised to update the VMP accordingly. More detailed information is available in the *National vaccine storage guidelines*.<sup>7</sup>

### Answer 9

In addition to contacting previous vaccine providers, immunisation records can be accessed electronically. As at 1 July 2021, all National Immunisation Program immunisations are required to be uploaded to the AIR, as are influenza and COVID-19 immunisations.<sup>8</sup> Patient immunisation histories can be accessed by patients via their Medicare online account through MyGov, or through the Express Plus Medicare mobile app. It is possible for people ineligible for Medicare to access their immunisation history via MyGov, but they will need an Individual Health Identifier to set up a profile. Patients can also telephone the AIR to request a mailed copy of the immunisation history statement.<sup>9</sup> An immunisation history is also available via My Health Record.<sup>10</sup>

Healthcare providers can access vaccination records without needing to contact the local PHU. The AIR can be accessed via a Health Professional Online Services account on Provider Digital Access.<sup>11</sup>

### Answer 10

You can calculate the catch-up schedule using the online calculator or manually using tables, both available via the *Australian immunisation handbook*. If calculating manually, an important concept is the minimum interval between doses of a vaccine. This is not the same as the routinely recommended interval.<sup>2</sup> Some types or doses of vaccines may not be required in catch-up schedules if children pass certain ages.

Including the four-year-old vaccines, this child aged four years missed the following vaccines: meningococcal ACWY (dose 1); measles, mumps, rubella (MMR; doses 1 and 2); varicella (dose 1); pneumococcal (dose 3); *Haemophilus influenzae* type b (Hib; dose 4); DTPa (doses 4 and 5); IPV (dose 4).

An appropriate catch-up schedule would be:

- due now – meningococcal ACWY (dose 1), MMR (dose 1), varicella (dose 1), pneumococcal (dose 3), DTPa (dose 4), IPV (dose 4), Hib (dose 3)
- due in one month – MMR (dose 2).

Note that if DTPa dose 4 is given when the child is >3.5 years of age, dose 5 is not needed.<sup>2</sup>

### Answer 11

Clinicians are advised to consult their relevant state and territory guidance according to Department of Child Safety equivalents.

For example, in Queensland, Child Safety considers childhood immunisation an essential part of a child's healthcare.<sup>12</sup> The relevant legislation is the *Child Protection Act 1999*.<sup>12</sup> If a child is under an Assessment Care Agreement or a Child Protection

Care Agreement, parental consent is required for routine vaccination.<sup>13</sup> If emergent vaccination is required, for example tetanus or post-exposure hepatitis B vaccine, parental consent will be actively sought, but if it is unable to be obtained, doctors can administer the vaccine using the authority under the *Child Protection Act 1999*, section 97.<sup>12,13</sup>

If a child is under the guardianship of the chief executive, parental consent is not required as Child Safety can provide the carer with the necessary consent.<sup>13</sup> The same applies to a child in the custody of the chief executive whose parents cannot be located. If the parents of the child in custody of the chief executive refuse vaccination, they are given an opportunity to explain the reasons for not consenting, including any relevant medical information. The health practitioner considers the information provided via Child Safety and may exercise the authority to vaccinate the child under the Act.<sup>12</sup> If there is uncertainty, advice can be sought from Child Safety or your medical indemnity insurance provider.

## References

1. Australian Government Department of Health. National immunisation program schedule. Canberra, ACT: DoH, 2022. Available at [www.health.gov.au/health-topics/immunisation/when-to-get-vaccinated/national-immunisation-program-schedule](http://www.health.gov.au/health-topics/immunisation/when-to-get-vaccinated/national-immunisation-program-schedule) [Accessed 1 May 2022].
2. Australian Technical Advisory Group on Immunisation (ATAGI). Australian immunisation handbook. Canberra, ACT: DoH, 2018. Available at <https://immunisationhandbook.health.gov.au> [Accessed 15 June 2022].
3. Centers for Disease Control and Prevention. Vaccine administration – General best practice guidelines for immunization: Best practice guidance of the Advisory Committee on Immunization Practices (ACIP). Atlanta, GA: CDC, 2011. Available at [www.cdc.gov/vaccines/hcp/acip-recs/general-recs/administration.html](http://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/administration.html) [Accessed 30 April 2022].
4. Australasian Society of Clinical Immunology and Allergy (ASCIA). ASCIA guidelines: Acute management of anaphylaxis. Brookvale, NSW: ASCIA, 2021. Available at [www.allergy.org.au/hp/papers/acute-management-of-anaphylaxis-guidelines](http://www.allergy.org.au/hp/papers/acute-management-of-anaphylaxis-guidelines) [Accessed 30 April 2022].
5. Say D, Lazzaro T. Hypotonic-hyporesponsive episode (HHE). Parkville, Vic: Melbourne Vaccine Education Centre, 2020. Available at <https://mvec.mcri.edu.au/references/hypotonic-hyporesponsive-episode-hhe> [Accessed 23 May 2022].
6. Australian Government Department of Health. TGA safety monitoring of medicines. Therapeutic Goods Administration. Canberra, ACT: DoH, 2018. Available at [www.tga.gov.au/tga-safety-monitoring-medicines](http://www.tga.gov.au/tga-safety-monitoring-medicines) [Accessed 5 May 2022].
7. Australian Government Department of Health. National vaccine storage guidelines – Strive for 5. 3rd edn. Canberra, ACT: National Immunisation Program, 2019. Available at [chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.health.gov.au/sites/default/files/national-vaccine-storage-guidelines-strive-for-5\\_0.pdf](chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.health.gov.au/sites/default/files/national-vaccine-storage-guidelines-strive-for-5_0.pdf) [Accessed 10 May 2022].
8. Australian Government Department of Health. Mandatory reporting of National Immunisation Program vaccines to the Australian Immunisation Register began on 1 July 2021. Canberra, ACT: DoH, 2021. Available at [www.health.gov.au/news/mandatory-reporting-of-national-immunisation-program-vaccines-to-the-australian-immunisation-register-began-on-1-july-2021](http://www.health.gov.au/news/mandatory-reporting-of-national-immunisation-program-vaccines-to-the-australian-immunisation-register-began-on-1-july-2021) [Accessed 16 May 2022].
9. Australian Government Department of Health. Check immunisation history. Canberra, ACT: DoH, 2021. Available at [www.health.gov.au/health-topics/immunisation/getting-vaccinated/check-immunisation-history](http://www.health.gov.au/health-topics/immunisation/getting-vaccinated/check-immunisation-history) [Accessed 10 May 2022].
10. Australian Government Australian Digital Health Agency. Immunisation view. Canberra, ACT: ADHA, [date unknown]. Available at [www.myhealthrecord.gov.au/for-healthcare-professionals/howtos/immunisation-view](http://www.myhealthrecord.gov.au/for-healthcare-professionals/howtos/immunisation-view) [Accessed 17 May 2022].
11. Australian Government. Australian Immunisation Register for health professionals. Canberra, ACT: Services Australia, 2021. Available at [www.servicesaustralia.gov.au/australian-immunisation-register-for-health-professionals](http://www.servicesaustralia.gov.au/australian-immunisation-register-for-health-professionals) [Accessed 10 May 2022].
12. Queensland Government. Child safety policy: Immunisation of children in care. Policy number 638-5. Brisbane, Qld: Department of Children, Youth Justice and Multicultural Affairs, 2021. Available at [www.cyjma.qld.gov.au/resources/dcsyw/foster-kinship-care/immunisation-children-in-care-638.pdf](http://www.cyjma.qld.gov.au/resources/dcsyw/foster-kinship-care/immunisation-children-in-care-638.pdf) [Accessed 21 May 2022].
13. Queensland Government. Legislation changes: Vaccinations for children and young people in foster and kinship care July 2018. Brisbane, Qld: Department of Child Safety, Youth and Women, 2018. Available at [www.cyjma.qld.gov.au/resources/dcsyw/about-us/publications/legislation/vaccinations-fact-sheet.pdf](http://www.cyjma.qld.gov.au/resources/dcsyw/about-us/publications/legislation/vaccinations-fact-sheet.pdf) [Accessed 30 April 2022].

**ACTIVITY ID 392439****Preschooler health**

This unit of *check* is approved for two CPD hours per case study in the RACGP CPD Program; this comprises one hour of educational activity and one hour of reviewing performance. The expected time to complete this activity is two hours per case study and consists of:

- reading and completing the questions for each case study
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- answering the following multiple choice questions (MCQs) by logging on to the RACGP website ([www.racgp.org.au](http://www.racgp.org.au)), clicking on the My Account button and selecting the *gplearning* link from the drop-down
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**Case 1 – Mikkel**

Mikkel, aged four years, is a non-Indigenous boy who is due for his four-year-old vaccinations. He had a previous episode of invasive pneumococcal disease. He receives diphtheria, tetanus, acellular pertussis and inactivated poliovirus (DTPa-IPV) vaccine and the 23-valent pneumococcal polysaccharide vaccine (23vPPV). Within 15 minutes of receiving these vaccines, Mikkel develops stridor, pallor, rash and wheeze.

**Question 1**

Which one of the following is the most appropriate treatment for anaphylaxis?

- A. High-flow oxygen through a Hudson mask
- B. Weight- or age-based dose of intramuscular adrenaline
- C. Weight- or age-based dose of an oral non-sedating antihistamine
- D. Weight-based dose of oral corticosteroids

**Further information**

On reviewing the event, it is revealed that Mikkel received the 13-valent pneumococcal conjugate vaccine (13vPCV) and that it was delivered subcutaneously, rather than intramuscularly.

**Question 2**

Which one of the following pairs are examples of adverse events following immunisation?

- A. Administration of an expired vaccine; anaphylaxis to a vaccine
- B. Rash within 24 hours of a vaccine; administration of 23vPPV instead of 13vPCV
- C. Hepatitis A vaccine administered subcutaneously; needle-syringe interface leaking vaccine during administration resulting in incomplete delivery of the vaccine
- D. Vasovagal episode after vaccination; febrile episode after vaccination

**Case 2 – Mavis**

Mavis, aged three years, is brought in by her mother, Felicity, who reports Mavis has had fever and vomiting for the past 24 hours. She was born at full term and is fully vaccinated, with normal growth and development and no prior medical or surgical history. During your examination of Mavis, you assess her hydration status. You note that Mavis is lethargic and has sunken eyes and dry mucous membranes, with warm peripheries, normal capillary refill and normal skin colour.

**Question 3**

Which one of the following would be the most important element of this consultation after full history and examination?

- A. Detailed instruction for Felicity on oral rehydration
- B. Urinalysis or urine microscopy, culture and sensitivity to exclude urinary tract infection
- C. Instruction to return if Mavis has any further vomiting
- D. Referral for outpatient ultrasonography to exclude intussusception

**Question 4**

Based on the examination features, which one of the following would be your best estimate of Mavis's hydration status?

- A. Not dehydrated
- B. Clinical dehydration (5–10% fluid loss)
- C. Clinical shock (>10% fluid loss)
- D. Unable to be assessed based on the provided information

**Further information**

Mavis subsequently develops diarrhoea and is ultimately diagnosed with a viral gastroenteritis. Two weeks later, Felicity brings Mavis for review because of ongoing loose

stools after feeding. Her vomiting and lethargy have resolved, her abdominal examination is normal and there is no blood in the stool.

### Question 5

Which one of the following is the most likely cause of Mavis's ongoing loose stools?

- A. Inflammatory bowel disease
- B. Coeliac disease
- C. Giardiasis
- D. Post-gastroenteritis syndrome

### Case 3 – Josephine

Josephine is a new patient booked to see you for a four-year-old check-up and immunisations. She lives with her parents, who tell you she has no significant medical conditions. Her immunisations are up to date, and she is not taking any regular medications. Her parents are concerned that she may not be ready for school next year and would like to discuss whether they should delay her entry for another year.

### Question 6

Which one of the following would be your **initial** approach to obtaining further history?

- A. Sensitively enquire about any drug or alcohol exposure in pregnancy
- B. Explore parental concerns against the developmental domains using the Parents' Evaluation of Development Status (PEDS) tool
- C. Discuss advantages and disadvantages of delayed school entry with the family
- D. Enquire about any learning difficulties in the family

### Further information

On further history-taking and examination, you note that Josephine is developing appropriate gross and fine motor skills and can toilet independently during the day and uses a pull-up nappy only at night. Her growth is in the normal range, and she eats a good variety of foods. Both her parents and caregivers at childcare are concerned Josephine has difficulty following simple instructions, is prone to frequent tantrums and likes to play alone alongside other children rather than interactively.

### Question 7

Which one of the following options would you discuss first with Josephine's parents?

- A. Arrange a blood test for iron deficiency
- B. Refer to Early Childhood Early Intervention (ECEI) program
- C. Schedule a review in 12 months to monitor social maturity

- D. Arrange a vision and hearing screen

### Question 8

Which one of the following statements regarding children's sleep physiology is **incorrect**?

- A. Sleep cycles are shorter in children than in adults.
- B. The average sleep cycle in children lasts 40 minutes.
- C. Children have relatively more non-rapid eye movement (REM) sleep, compared with adults.
- D. Children experience both REM and non-REM sleep.

### Case 4 – Filomena

Filomena, aged three years, is brought to see you by her father, Lorenzo. He states that Filomena has started to eat small pieces of paper, and he was worried to see her eating handfuls of dirt last week in their backyard. Lorenzo expresses concern that Filomena has been a fussy eater for the past 12 months and will only eat a very limited range of foods. You are concerned Filomena may have a nutritional deficiency.

### Question 9

Apart from pica, which one of the following can be another feature of iron deficiency in children?

- A. Cognitive impairment
- B. Weight loss
- C. Night terrors
- D. Food refusal

### Further information

Lorenzo is keen to understand the best way to approach this situation with Filomena. You consider your knowledge of the Satter model.

### Question 10

Which one of the following options best describes the Satter 'division of responsibility in feeding' model?

- A. 'Child decides, parent allows'
- B. 'Parent provides, parent decides'
- C. 'Parent provides, child decides'
- D. 'Child copies observed behaviours'

# check

Independent learning program for GPs