

Vitamin C Deficiency: Text

Text A

Scurvy is a life-threatening condition due to dietary vitamin C deficiency. Those affected are mostly refugees or victims of famine, alcoholics, older people, fad dieters, or children with autism or idiosyncratic behavioural abnormalities. Diagnosis is often delayed due to incomplete review of dietary history.

Vitamin C deficiency may result from a diet deficient in fresh fruits and vegetables. Also, cooking can destroy some of the vitamin C in food.

The following conditions can significantly increase the body's requirements for vitamin C and the risk of vitamin C deficiency:

- Pregnancy
- Breastfeeding
- Disorders that cause a high fever or inflammation
- Diarrhoea that lasts a long time
- Surgery
- Burns
- Smoking, which increases the vitamin C requirement by 30%

Text B

The recommended daily intake of Vitamin C varies by age, gender, pregnancy, lactation, and smoking status.

Patient group	Adequate intake or AL (milligrams/day)*		Tolerable upper intake level*** (milligram/day)
0-6 months	40		Not determined
7-12 months	50		Not determined
	Recommended Daily Allowance (RDA)** (Milligram/day)		
1-3 years	15		400
4-8 Years	25		650
	Men	Women	
9-13 years	45	45	1200
14-18 years	75 Smoker: add 35	Not pregnant:65 Pregnant: 80 Lactating:115 Smoker: add 35	1800
19 years and older	90 Smoker: add 35	Not pregnant:75 Pregnant: 80 Lactating:120 Smoker: add 35	2000

*Adequate intake is the mean intake of healthy breastfed children.

**RDA meets the needs of 97% to 98% of individuals.

*** Tolerable upper intake level is the maximum daily dose thought to pose no adverse risk.

Text C

Symptoms

The symptoms of scurvy develop only after a few months of deficiency.

Adults feel tired, weak, and irritable. They may lose weight and have vague muscle and joint aches.

Bleeding may occur under the skin (particularly around hair follicles or as bruises), around the gums, and into the joints. The gums become swollen, purple, and spongy. The teeth eventually loosen. The hair becomes dry and brittle, and the skin becomes dry, rough, and scaly. Fluid may accumulate in the legs. Anemia may develop. Infections may develop, and wounds do not heal.

Infants may be irritable, have pain when they move, and lose their appetite.

Infants do not gain weight as they normally do. In infants and children, bone growth is impaired, and bleeding and anemia may occur.

Normal examination has also been reported, presumably when symptoms have developed in the setting of very low but not critical body stores.

Examination

Although no consistent order of presenting signs is established, the earliest signs of scurvy are often gingival abnormalities, and a comprehensive examination of the mouth when scurvy is recommended in patients presenting relatively early.

If the test is available, measuring the vitamin C level in blood can help establish diagnosis.

Blood tests to check for anemia.

In children, x-rays to check for impaired bone growth.

Treatment

For scurvy in adults, ascorbic acid 100 to 500 mg orally twice daily must be given for 1 to 2 weeks, until signs disappear, followed by a nutritious diet supplying 1 to 2 times the daily recommended intake of fresh fruits and vegetables.

In scurvy, therapeutic doses of ascorbic acid restore the functions of vitamin C in a few days. The symptoms and signs usually disappear over 1 to 2 weeks. Chronic gingivitis with extensive subcutaneous haemorrhage persists longer.

Text D

VITAMIN C EXCESS AND TOXICITY

High doses of vitamin C are usually not toxic to healthy adults. Occasionally, higher doses cause nausea or diarrhoea and interfere with the interpretation of some blood test results.

Some people take high doses of vitamin C because it is an antioxidant, which protects cells against damage by free radicals. Free radicals are thought to contribute to many disorders, such as atherosclerosis, cancer, lung disorders, the common cold, eye cataracts, and memory loss. Whether taking high doses of vitamin C protects against or has any beneficial effect on these disorders is unclear. Evidence of a protective effect against cataracts is strongest.

Part A

TIME: 15 minutes

- Look at the four texts, **A_D**, in the separate **Text Booklet**.
- For each question, **1-20**, look through the texts **A-D**, to find the relevant information.
- Write your answers on the spaces provided in this **Question paper**.
- Answer all the questions in the 15- minute time limit.
- Your answers should be correctly spelled.

Vitamin C deficiency: Questions

Questions 1 - 7

For each of the questions, 1 - 7, decide which text (A, B, C, or D) the information comes from. You may use any letter more than once.

In which text can you find information about

1. In which text can you find information about the types of people usually affected by scurvy?

2. In which text can you find information about the physical effects of scurvy?

3. In which text can you find information about tests that can be conducted to check for scurvy?

4. In which text can you find information about adequate intake totals for vitamin C each day?

5. In which text can you find information about the effects of taking high doses of vitamin C?

6. In which text can you find information about conditions that increase a person's need for vitamin C?

7. In which text can you find information about recovery time for a patient suffering from scurvy?

Questions 8 – 13

Complete each of the sentences, 8 - 13, with a word or short phrase from one of the texts. Each answer may include words, numbers, or both.

8. Scurvy takes only a _____ of deficiency to develop.
9. In infants and children, _____ and anemia may be present.
10. Incomplete review of dietary history frequently results in diagnosis being _____.

11. RDA sufficiently meets the vitamin C requirements in _____ of patients.

12. 75mg of vitamin C daily is recommended for women who are _____

13. It takes only a few days' worth of _____ for the normal functions of vitamin C to return.

Questions 14 - 20

Answer each of the questions, 14 - 20, with a word or short phrase from one of the texts. Each answer may include words, numbers or both.

14. What is frequently seen as an early indication of scurvy?

15. What can occur in the gums, joints and under the skin of a patient with scurvy?

16. How many extra milligrams each day of vitamin C does a smoker require?

17. What increases the need for vitamin C by 30%?

18. What is the maximum amount of vitamin C per day that should be given to infants?

19. What do high levels of vitamin C protect cells from?

20. Which condition is most likely to benefit from higher levels of vitamin C?

Part B

In this part of the test, there are six short extracts relating to the work of health professionals. For questions 1 to 6, choose the answer (A, B or C) which you think fits best according to the text.

1. The guidelines on paediatric procedural sedation suggest that

- A)** Patients who are sick should not receive sedation.
- B)** Sedation is likely to be more difficult in elderly patients.
- C)** The approach to sedation changes depending on the patient.

Extract from Guidelines: Paediatric Procedural Sedation

Clinicians who administer procedural sedation to patients must have a thorough understanding of the actions of the medication being administered, including modifications for age, concurrent drug therapy and disease processes. Knowledge of the correct procedures is also required to safely administer sedation.

Patient selection is a major factor in achieving safe and successful procedural sedation. The approaches described in this Guide are intended for use with patients who are generally healthy or have only mild systemic disease.

More severely ill patients, those with complex medical problems and infants under 12 months of age or less than 10 kilograms, should not be sedated outside of the operating theatre. Children who are very anxious prior to the procedure, need special consideration and may be more suitable for general anaesthesia in an operating theatre.

2. Under what circumstances should a doctor pass on confidential information given by a patient?

- A)** When the patient's treatment might otherwise suffer.
- B)** When not disclosing information could cause further harm.
- C)** When it could be considered breaking the law if they didn't.

Confidentiality - reporting gunshot and knife wounds

Trust is an essential part of the doctor patient relationship and confidentiality is central to this. Patients may avoid seeking medical help, or may under-report symptoms, if they think that their personal information will be disclosed by doctors without consent, or without the chance to have some control over the timing or amount of information shared.

Doctors owe a duty of confidentiality to their patients, but they also have a wider duty to protect and promote the health of patients and the public. If you consider that failure to disclose information would leave individuals or society exposed to a risk so serious that it outweighs the patient's and the public interest in maintaining confidentiality, you should disclose relevant information promptly to an appropriate person or authority.

3. This memo is providing information about

- A) Who should wear PPE.
- B) When to wear PPE.
- C) Why to wear PPE.

Memo: Decision-making about personal protective equipment (PPE)

PPE is designed and issued for a particular purpose in a protected environment and should not be worn outside that area. Protective clothing provided for staff in areas where there is high risk of contamination (e.g. operating suite/room) must be removed before leaving the area. Even where there is a lower risk of contamination, clothing that has been in contact with patients should not be worn outside the patient-care area. Inappropriate wearing of PPE (e.g. wearing operating suite/room attire in the public areas of a hospital or wearing such attire outside the facility) may also lead to a public perception of poor practice within the facility

4. The Aboriginal and Torres Strait Islander Liaison Service assists by

- A) Establishing stronger connections between people.
- B) Ensuring improved healthcare for everyone.
- C) Educating patients about their rights.

Hospital Liaison Officers

The Aboriginal and Torres Strait Islander Liaison Service acts as a cultural link between health professionals, identified Aboriginal and Torres Strait Islander patients, and patient's families.

The Service, and liaison officers, assist in breaking down any perceived barriers of communication so that Aboriginal and Torres Strait Islander patients and/or their families have a better understanding of their hospitalisation and treatment.

Patients and their families are supported by:

- Providing information, emotional and cultural support for Aboriginal and Torres Strait Islander patients and their families to assist in delivering services.
 - Coordination of patient travel and accommodation
 - Mediation and advocacy for referrals to social workers and support services when required.
 - Consultation with hospital staff seeking further information on patient/family history or discussing any special needs of Aboriginal and Torres Strait Islander people.
 - Facilitating referrals to other facilities and community-based services.
- Providing support and practical assistance to significant others and/or family members.

5. The purpose of the safety notice about sharps injuries is to

- A) Praise staff who have been following sharps protocols.
- B) Reduce the frequency of future sharps harm to staff.
- C) Remind staff about the risks of working with sharps.

Hospital Bulletin Board Safety Alert Communication

Situation

- Last week, there were 4 reported sharps injuries at the Medical Centre in a 6 day period.
- In comparison, there were 18 sharps injuries in the previous calendar year, about 1-2 per month.

Background

- Although we have gone many weeks without an employee lost time injury, sharps injuries can be potentially serious events.

Assessment

- A thorough cause analysis investigation completed with staff involved, their managers and the occupational health and safety team, revealed that each of these injuries was preventable.

Recommendation

- **Verify and Validate:** Verify that safety features available on sharps have fully engaged before transporting or discarding a needle. Complete a visual check and listen for the 'click'.
- **STAR:** Make sure your fingers are not in the path of a needle when holding soft tissue for injection.
- **Seek Help:** If required, obtain assistance from a co-worker before injecting a patient.

6. This email to staff indicates that older patients

- A)** Are being prescribed too many potentially dangerous drugs.
- B)** Are being unfairly targeted by pharmaceutical companies.
- C)** Are being burdened by the cost of expensive medication.

To: All staff

Subject: Medication use in older persons

Frequently prescribed medicines in older people include those with anticholinergic and sedative effects. These medicines are used in adults to treat medical conditions that often occur later in life, such as urinary incontinence, sleep and pain disorders, dementia and mental illness.

In many instances the benefits of these medicines do not justify the risk of harm for older adults. The use of these medicines is associated with adverse effects including (but not limited to): impairment of physical and cognitive function, sedation, falls and fractures, and an increased risk of mortality. Their use in older people is also associated with economic costs such as an increased risk of hospitalisation.

Part C

Text: Water Consumption

For questions 1 to 8, choose the answer (A, B, C or D) which you think fits best according to the text.

Information text

Paragraph 1

How much fluid should you drink each day for good health? Eight glasses a day has been the widely circulated advice. But recently, two large studies have suggested that's probably overkill. It turns out that under normal circumstances, you get most of the liquid you need each day from what you routinely eat and drink, including coffee, tea, soft drinks, and even some alcoholic drinks.

1. Drinking eight glasses of water a day is described as 'overkill' because

- A)** Staying hydrated isn't as important as we used to believe.
- B)** It is now considered unnecessary to drink so much.
- C)** The benefits have been known for many years.
- D)** There are better ways to stay hydrated.

Paragraph 2

So where did this notion of 'eight glasses a day' come from? In 1945, the Food and Nutrition Board of the United States National Research Council wrote: 'A suitable allowance of water for adults is 2.5 litres daily in most instances. Most of this quantity is in prepared foods.' But in the 1990's Dr Heinz Valtin undertook a comprehensive investigation into the myths surrounding water consumption in humans. He found healthy people who drank more water didn't have a higher 'output of stool', and that there was no scientific evidence high fluid intake could relieve constipation.

2. What do we learn about water consumption in the second paragraph?

- A)** There was no scientific evidence to support past ideas about water.
- B)** Healthy people don't need to drink as much water as unhealthy people.
- C)** Not everything we previously believed about drinking water was correct
- D)** No one knows the origins of how we came to drink the amount we do.

Paragraph 3

And what of the belief that thirst is not a good indicator of a need to drink? Valtin states that while 'a rise in plasma osmolality' (which is an internal chemical change) of less than two per cent can elicit thirst, dehydration is defined as a rise of at least five per cent. This is a complicated way of saying you get thirsty before your body starts to dehydrate, so thirst is a good guide.

3. In the third paragraph, the word 'this' refers to

- A)** The chemical changes that occur within a person's body.
- B)** The lack of rules about how much water to drink.
- C)** The idea that thirst has no connection to dehydration.
- D)** The reasons why a person gets thirsty

Paragraph 4

Australia's current dietary guidelines don't recommend a specific amount of water, but simply recommend we 'drink plenty of water'. "How much water each one of us needs depends on a range of factors," said CSIRO dietitian Pennie Taylor. "This can include our gender, bodyweight and how much physical activity we do." The guidelines also encourage drinking water over juices, soft drinks, cordials or the like. Also, pregnant or breastfeeding women (who require more fluid), people who live or work in extremely hot climates, and people with high protein diets (the kidneys may need more fluid to help process the increased amount of protein) are encouraged to drink more water. It's on hot days that most of us notice we're thirstier than normal. This is because we're sweating more, and we lose fluid through sweat. "We can lose between 1 to 3 per cent of our fluid quite easily," Ms Taylor said.

4. Why don't Australia's dietary guidelines state a specific amount of water to drink?

- A)** Because everyone differs physically.
- B)** Because there are too many factors to consider.
- C)** Because drinking any amount of water has benefits.
- D)** Because there is no current agreement among dieticians.

Paragraph 5

Associate Professor Ben Desbrow from Griffith University agrees. "Those who work or exercise in hot climates lose the most fluid — up to 2.5 litres of sweat in an hour in extreme circumstances. You need to replace those fluids pretty quickly, otherwise it's going to fairly rapidly have an effect on your subsequent performance." Your body will give you some pretty clear signs that you're not getting dehydrated. So keep an eye out for symptoms such as a dry mouth, headache and feeling dizzy. Also pay attention to your toilet habits, the colour of your urine and how frequently you go to the toilet. It is true that 'copious and clear' is a good indicator of healthy wee. But 'clear' does not mean colourless. The depth of colour in urine will vary, what you need to look out for is cloudiness – that's the indicator of a problem. "Your kidneys do a great job in fluid regulation, so frequency of urination and colour of urination are your two best guides," Associate Professor Desbrow said.

5. In the fifth paragraph, Associate Professor Ben Desbrow says he believes fluid loss

- A)** Happens at a very fast rate.
- B)** Is a sign of hydration issues.
- C)** Can result in physical decline.
- D)** Doesn't occur in cool climates.

6. When commenting on urine professor Desbrow suggests

- A)** Variations in colour are uncommon.
- B)** It should always be clear or colourless.
- C)** Frequency is a good indication of a problem.
- D)** If it isn't clear, there may be something wrong.

Paragraph 6

What about the idea that a person may be drinking too much water. There is a thirst control centre in our brain that controls water intake, says Dr Michael McKinley, Senior Fellow at Florey Neuroscience Institute. When we drink water, this part of our brain stops us feeling thirsty long before the water has been fully absorbed into the bloodstream. "Usually if we take in too much water, it'll suddenly feel like hard work to drink," he said. However, in some circumstances when people drink a large volume of water, they can over-ride the thirst control centre in the brain. When this happens, their sodium levels can drop too low. This can lead to a condition known as hyponatremia, where the body also starts to retain the excess water. "Normally if we drink too much water, our kidneys would excrete it [as urine]," Dr McKinley said. But sometimes, factors like heat, physical stress or certain drugs can switch off the hormonal signal that causes the kidneys to excrete excess water. Then there is a double whammy effect. Not only have you drunk a lot of water, but you start to hang onto all the water in your body. Drinking more just makes things worse. "This is when things can get dangerous," Dr McKinley said.

7. What idea does Dr McKinley express in the final paragraph?

- A) There is a connection between low sodium levels and thirst
- B) Our brain stops the over-absorption of water into our bloodstream.
- C) It's impossible to drink too much water because it feels like hard work.
- D) Drinking too much water can affect our ability to know when we're thirsty.

8. Dr McKinley is concerned about

- A) Hormonal problems affecting a person's kidneys.
- B) People who fail to recognise the danger signs.
- C) People who suffer from high urination levels.
- D) Issues like heat stress and drug use.

Text: Migraines

For questions 1 to 8, choose the answer (A, B, C or D) which you think fits best according to the text.

Paragraph 1

Migraines are often misunderstood, or dismissed as “just a headache.” Yet they have the capacity to disrupt a person’s life, relationships, and sense of well-being. A study from Thomas Jefferson University in Philadelphia found that chronic migraine sufferers experience as much social stigma as people with epilepsy—a disease that produces far more obvious and dramatic symptoms. Some of that stigma is external—for example, getting treated differently by friends or colleagues. “Migraines are the unseen and undocumented pain that takes them away from work,” says Dr. R. Joshua Wootton, of pain psychology at the Arnold Pain Management Center, and assistant professor of anesthesia at Harvard Medical School. “There’s no empirical test for migraine yet. That’s why people who report these problems with chronic pain are often not believed or are thought to be exaggerating in the work environment.”

1. The writer makes the comparison between migraines and epilepsy to show

- A) How the sufferers of both conditions feel a lot of shame.
- B) How people suffering from these conditions have social problems.
- C) How both conditions affect the amount of work a person is able to do.
- D) How friends and colleagues find it hard to trust people with these conditions.

Paragraph 2

Effective migraine treatments are available—but many migraine sufferers don’t take advantage of them, either because they don’t seek help or they mistakenly believe they’re just suffering from regular headaches. “I think 80% of all migraine sufferers can be effectively helped, but only about a quarter of them are effectively helped at the present time,” says Dr. Egilius Spierings, associate clinical professor of neurology at Harvard Medical School. The gold standard for migraine relief is a class of drugs called triptans. When taken at the first twinge of a migraine, triptans can relieve pain, nausea, and light sensitivity. “These medications have been on the market for about 20 years now,” Dr. Spierings says. “They are generally very safe and well tolerated, and also very effective.”

2. In the second paragraph, Dr Egilius Spierings says he believes

- A)** There aren't enough migraine medications, but those that do exist work well.
- B)** At least 80% of people with migraines are helped by medication.
- C)** Only 25% of migraine sufferers currently take medication.
- D)** Not enough migraine sufferers take medication.

Paragraph 3

Despite being the seventh leading cause of time spent disabled worldwide, migraine "has received relatively little attention as a major public health issue," Dr. Andrew Charles, a California neurologist, wrote recently in The New England Journal of Medicine. It can begin in childhood, becoming more common in adolescence and peaking in prevalence at ages 35 to 39. While the focus has long been on head pain, migraines are not just pains in the head. They are a body-wide disorder that recent research has shown results from "an abnormal state of the nervous system involving multiple parts of the brain," said Dr. Charles, of the U.C.L.A. Goldberg Migraine Program at the David Geffen School of Medicine in Los Angeles. He hopes the journal article will educate practicing physicians, who learn little about migraines in medical school.

3. What does Dr Andrew Charles hope will change as a result of his journal article?

- A)** More doctors will understand that migraines are more than just head pain.
- B)** More doctors will realise that migraines can be a life-long problem.
- C)** More doctors will learn about migraines in medical school.
- D)** More doctors will read about the issue of migraines.

Paragraph 4

Before it was possible to study brain function through a functional M.R.I. or PET scan, migraines were thought to be caused by swollen, throbbing blood vessels in the scalp, usually affecting one side of the head. This classic migraine symptom prompted the use of medications that narrow blood vessels, drugs that help only some patients and are not safe for people with underlying heart disease. Neurologists who specialise in migraine research and treatment now approach migraine as a brain-based disorder, with symptoms and signs that can start a day or more before the onset of head pain and persist for hours or days after the pain subsides. Based on the new understanding, there are now potent and less disruptive treatments already available or awaiting approval. However, to be most effective, the new therapies may require patients to recognise and respond to the warning signs of a migraine in its so-called prodromal phase – when symptoms like yawning, irritability, fatigue, food cravings and sensitivity to light and sound occur a day or two before the headache.

4. What point does the writer make in the fourth paragraph?

Select one:

- A)** In the past, there was no way to accurately test patients for migraine.
- B)** The triggers for migraine are more complex than was originally believed.
- C)** Medications that narrow blood vessels in migraine patients are no longer useful.
- D)** Enlarged blood vessels in a person's scalp are now seen on both sides of the head.

5. In the fourth paragraph, the writer suggests patients should

- A)** Try a range of improved therapies.
- B)** Seek specialised treatment earlier.
- C)** Start taking new types of medication.
- D)** Become more aware of their triggers.

Paragraph 5

Even with current remedies, people typically wait until they have a **full-blown** headache to start treatment, which limits its effectiveness, Dr. Charles said. His advice to patients: Learn to recognise your early symptoms signalling the onset of an attack and start treatment right away before the pain sets in. Conditions that can trigger a migraine in susceptible people include skipped meals, irregular intake of caffeine, erratic sleep habits and stress. Accordingly, Dr. Charles suggests practicing consistent dietary, sleep, caffeine and exercise habits to limit the frequency of migraines. Keeping a migraine diary that includes your stress level and what you've eaten and drunk can also help identify triggers.

6. The use of the adjective 'full-blown' indicates

- A) The treatment of the headache.
- B) The duration of the headache.
- C) The severity of the headache.
- D) The location of the headache.

Paragraph 6

But they aren't just a physical condition. Living with chronic pain, or the constant worry that **they** may strike at any moment, can take an emotional toll, too. Migraines have been linked to an increased risk of depression. A study presented at the American Academy of Neurology's annual meeting found that women with a history of migraines are 41% more likely to be depressed than those without the condition. "When you can't find effective ways to manage your migraines that frequently results in feeling helpless, hopeless and as if everyone is against you," Dr Wootton says. If you're having these feelings, it can be helpful to see a psychiatrist or psychologist, particularly at a center that specialises in pain management. "If you have considerable anxiety and/or depression, addressing those issues is important because they can negatively affect migraine. They also make it much more difficult to cope with a condition like migraine."

7. What does the word 'they' in the final paragraph refer to?

- A)** Triggers.
- B)** Migraines.
- C)** Pains and worries.
- D)** Physical conditions.

8. According to Dr Wootton, if a person is suffering with migraines

- A)** They can feel quite alone.
- B)** It can be very difficult to recover.
- C)** They may develop pain in other areas.
- D)** They should see a mental health professional.