

# DIET AND THE IMMUNE SYSTEM

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2010

## Questions

### Part 1

1. What are the two key factors which affect the immune system?
2. Name one of the two forms of barrier in which the immune system is presented?
3. What is the benefit of mucus in the immune system?
4. How does the immune system protect the body?
5. The cells of the immune system are everywhere in your body but where are they particularly concentrated?

### Part 2

6. Four characteristic features of an immune response are mentioned. How does specificity work?
7. How many different bacteria and viruses is it estimated that our immune system can recognise?
8. The lecturer mentions the importance of memory in the immune system; what role does this play.

9. Self-regulation is an important feature of our immune system. Why is that?

10. In people with HIV or AIDS where are the CD4 T cells and why are they so important?

### Part 3

11. Why is diet important in helping your immune system to be activated?

12. What is the “vicious cycle” referred to?

13. What are “micro-nutrients” and why are they important?

14. What are the vulnerable groups in the developed world?

### Part 4

15. A deficiency in vitamins and minerals can impair the immune system but this is affected by a few factors; what are they?

16. What foods contain vitamin A and why is it important for our immune system?

17. How should Vitamin A be given to those who have a deficiency?

18. Why is it important for people who are deficient in Vitamin A to regenerate damaged gut tissue?

19. Why should giving supplements of Vitamin A to children who are not malnourished cause more problems with respiratory infections?

### Part 5

20. Can Vitamin C stop most people getting colds or flu?

21. In what circumstances can vitamin C cause a lower incidence of colds or flu?

22. Why is Zinc important and what happens if there is a deficiency?

23. Where is the thymus in the body and, during the trial on malnourished children, what happened to it when children were given Zinc?

24. What can happen if you take too much Zinc?

#### Part 6

25. Which foods are important sources of selenium?

26. During research, what effect did selenium supplements have on the immune system?

27. Why is there a problem with some of the research into vitamin and minerals?

#### Part 7

28. Why does the lecturer believe that the flu vaccination for people over 65 is a waste of money?

29. What causes inflammation in the body and what happens as you increase in age?

30. What does TNF cause in older people?

#### Part 8

31. What is the definition of an auto-immune disease?

32. What is the difference between ordinary arthritis and rheumatoid arthritis?

**33. What else can help patients with rheumatoid arthritis?**

**34. What do some rheumatologists think should happen, based on the evidence from the 17 clinical trials on rheumatoid arthritis?**

## **Part 9**

**35. What are probiotics?**

**36. What do lactobacilli and bifidobacteria do in the gut?**

**37. What is the link between probiotics and vaccinations, and how could this be useful?**

## **Key**

1. Diet and the way we live
2. One barrier is the skin and another is our gastro-intestinal and respiratory tracts.
3. Mucus washes away bacteria and viruses and stops them sticking and getting into the blood, where they can cause an infection.
4. By coating the foreign bodies with proteins which are released into the blood and this then enables them to be recognised by our immune system.
5. The cells of the immune system are particularly concentrated in your throat, the thymus in your chest, the spleen, the gut , the lymph nodes and the bone marrow.
6. It recognises exactly what is affecting you and so can repond in the right way.
7. About a billion.
8. That the immune system has memory and will recognise the same infection a second time and mount a bigger response. Therefore, if you are vaccinated against an infection your immune system will remember it if you are subsequently infected and be better prepared to fight it.

9. Self-regulation is important because the immune system needs to know that it must stop when it has destroyed each foreign body and not continue otherwise it can cause damage to our own bodies.
10. The CD4 T cells are found in the blood and are important because they stop the HIV virus particles from growing too fast and dividing. This helps control the virus so that people can live with the disease for a number of years.
11. It is important because when your immune system fights infection, it needs energy to be activated, which is provided by food.
12. You need more nutrients to fight an infection but infection can cause loss of appetite and poor absorption of nutrients. Therefore, when you need more nutrients you are actually losing them.
13. Micro-nutrients are vitamins and minerals, which are important for some of the body's organs.
14. The vulnerable groups are the elderly, babies born too early, patients in hospital and patients with cancer.
15. It is affected by how severe the deficiency is, whether the person already has an infection or by their age.
16. Vitamin A is found in dairy foods, eggs and oily fish. Vitamin A helps to keep the gut healthy, and the gut is one of the physical barriers of our immune system, and keeping the skin healthy.
17. It is better to give it in frequent small doses than in infrequent high doses.
18. It is important because this reduces the incidence and duration of diarrhoea which is a major factor in childhood deaths, particularly under the age of 5.
19. Vitamin A encourages the production of mucus which can make a respiratory infection worse because end up with too much mucus.
20. No, it cannot stop you getting them but it can have a small effect on the severity of the symptoms, but only if you have been taking it before you get the infection.
21. It does have an effect on people in poor living conditions or who do a lot of physical activity.
22. Zinc is particularly important for the bone marrow and lymphoid organs, which are part of the immune system. A deficiency makes it harder to fight an infection.

23. The thymus is immune tissue in the chest and during the trial, children who were given Zinc , showed an increase in the size of their thymus.
24. If you take too much Zinc it can result in a loss of copper from the body, which can then impair your immune system.
25. Bread and cereal.
26. It increased the number of CD4 cells (important for fighting bacteria and viruses) and so the immune system reacted more quickly to the polio vaccine.
27. There is a problem because there has been a lack of consistent methodology and study design.
28. More than half the people over 65 who are given the flu vaccine do not respond to it as their immune system is not strong enough.
29. Inflammation in the body is caused by proteins produced in the immune system called cytokines, one of which is Tumor Necrosis Factor (TNF). As get older the level of TNF in the blood increases.
30. It causes inflammation and loss of muscle & bone. It is also associated with dementia and diabetes.
31. An auto-immune disease is where the immune system attacks itself.
32. Ordinary arthritis is caused by cartilage at the end of the bones wearing out so that the bones rub together. Rheumatoid arthritis is caused by the cells of the immune system entering the blood which causes inflammation in the joints and can also cause bone erosion.
33. Fish oil containing Omega-3 fatty acids is thought to have anti-inflammatory effects.
34. The rheumatologists believe that dietary fish oil should be regarded as part of the standard therapy for rheumatoid arthritis.
35. Probiotics are live bacteria found in fermented foods.
36. They help with digestion and absorption by growing in the gut and balancing out the bad bacteria.
37. It is believed that probiotics improve the response to vaccinations in particular to flu and polio. This is useful in older people who don't have a strong immune system but need the flu vaccine.

