WASHINGTON STATE UNIVERSITY
Elson S. Floyd
College of Medicine

READING GUIDE

VITAMINS

Objectives

1. Identify the lipid-soluble vitamins and their function
2. Describe deficiencies related to lipid-soluble vitamins
3. Identify the water-soluble vitamins and their function
4. Describe deficiencies related to water-soluble vitamins

Read Chapter 28. These are the things you should know and be able to explain after completing this part of the course.

VITAMINS

Folic acid

- In what kinds of reactions is folate a necessary cofactor?
- What is the common symptom of folate deficiency?
- Under what circumstances is folate supplementation considered very important?

Cobalamin (Vit B_{12})

- In what kinds of reactions is cobalamin a necessary cofactor?
- What is the source of vitamin B_{12}?
- How is B_{12} taken up by the body?
- What is the common presentation of B_{12} deficiency?
- What is the folate trap?

Ascorbic acid (Vit C)

- In what kinds of reactions does vitamin C (ascorbate) participate?
- What else does vitamin C do?
- What disease is caused by vitamin C deficiency?

Pyridoxine (Vit B_6)

- In what kinds of reactions is pyridoxal phosphate (the active form of Vit B_6) a necessary cofactor?
- What is the most common way to develop a pyridoxine deficiency?

Thiamine (Vit B_1)

- In what kinds of reactions is thiamine pyrophosphate (the active form of Vit B_1) a necessary cofactor?
- How is thiamine deficiency diagnosed?
- What diseases are caused by thiamine deficiency? What is the difference between them?

Niacin

- What important cofactor is synthesized from niacin?
- What disease is caused by niacin deficiency?
- What condition is effectively treated by high dose niacin supplementation?

Riboflavin (Vit B_2)

- What important cofactors are synthesized from riboflavin (Vit B_2)?

Biotin

- In what type of reactions is biotin a necessary cofactor?
- What is the factor in egg whites that binds and sequesters biotin? Is this a danger of eating raw eggs?

Pantothenic Acid

- What important cofactor is synthesized from pantothenic acid?

Vitamin A

- What are the three forms of vitamin A?
- In what form is vitamin A transported from the gut and stored in the liver?
- What form of vitamin A is released from the liver to target tissues?
- By what mechanism does vitamin A effect changes in function in most cells?
- What specific function does vitamin A have in the retina?
- What conditions is vitamin A used to treat?

Vitamin D

- Where do we acquire vitamin D, and where in the body is it activated by hydroxylation?
- By what mechanism does vitamin D effect changes in function in most cells?
- What does vitamin D participate in regulating in the body and how?
- How does vitamin D deficiency cause rickets? Does this make sense?

Vitamin K

- In what type of reactions is vitamin K a necessary participant?
- Why is vitamin K deficiency unusual, but more common in newborns than children or adults?

Vitamin E

- What is the primary function of vitamin E?