

Vitamins

Subcommittee

Matta, Jaimé (Chair) jmatta@psm.edu

James O'Donnell, jim@pharmaconsultantinc.com

Lawrence I. Rothblum, Lawrence-Rothblum@ouhsc.edu

Recommended Curriculum Equivalent: 2.0 hr		
Vitamin Classes and Vitamins to consider		
Lipid soluble vitamins	Water soluble vitamins	
Vitamins A, D, E, K	cyanocobalamin nicotinamide pyridoxine thiamine vitamin C	folic acid nicotinic acid
Learning Objectives		
Physiology and pathophysiology Distinguish between vitamins and antioxidants.(definitions and sources). Define what antioxidants are and provide examples of at least five types of endogenous antioxidant compounds present in the human body. Be familiar with regularly updated scientific information on antioxidants (e.g. http://www.nlm.nih.gov/medlineplus/antioxidants.html). Identify what are some of the populations (e.g. elderly, alcoholics, pregnant women INH. treated TB patients) that have the highest risk of having some form of vitamin deficiency. Understand the vitamin deficiency related problems that are commonly associated with: ethanol abuse, genetic polymorphisms, drug use, dietary deficiencies.		
Mechanism of action Summarize the mechanism of action of the water-soluble and lipid-soluble vitamins in a healthy human body (fairly extensively covered in biochemistry).		
Actions on organ systems Describe the pharmacological and non-pharmacological effects of the deficiency of each of these water and lipid-soluble vitamin types as they relate to disease processes. Describe the role of Vitamin K as an antidote in warfarin overdose; effects of diets deficient in vitamin K in patients on warfarin.		
Adverse effects and toxicities Describe the principal adverse effects and toxicities for overdose and toxic levels of both water-soluble and lipid-soluble vitamins (hypervitaminosis).		

Therapeutic uses

Know how vitamins are regulated (The Dietary Supplement Health and Education Act of 1994). Recognize that vitamins packaged and marketed and administered in certain dosage forms are regulated as prescription drugs (DSHEA only covers oral medications that are swallowed)

Know key concepts of the 2005 Dietary guidelines recommended by the FDA for using vitamin supplements. Very broad

Know what are the recommended 2005 Dietary guidelines for achieving optimal vitamin supplementation strategies in sensitive populations.

Define what is mean by Recommended Dietary Allowances (RDA) in relation to vitamin use. Is the RDA a currently used term? *

Describe the use of thiamine in the emergency treatment of alcoholism.

Notes

Identify at least three reliable sources sources (internet databases, CD-ROM) that provide information on vitamins and antioxidants. These include

www.health.gov/dietaryguidelines/dga2005/,

<http://www.fda.gov/consumer/updates/vitamins111907.html#regulated>

Serious adverse events associated with vitamins and any dietary supplement manufacturer although very rare must be reported to FDA within 15 days of the manufacturer receiving the adverse event report. These can be reported directly to FDA through its MedWatch program at 1-800-FDA-1088 or online at www.fda.gov/medwatch.

*The Reference Daily Intake or Recommended Daily Intake (RDI) is the daily intake level of a nutrient that is considered to be sufficient to meet the requirements of 97–98% of healthy individuals in every demographic in the United States (where it was developed, but has since been used in other places).

The RDI is used to determine the Daily Value (DV) of foods, which is printed on nutrition facts labels in the United States and Canada, which is regulated by the Food and Drug Administration (FDA), and Health Canada.

The RDI is based on the older Recommended Dietary Allowance (RDA) from 1968;[1] newer RDAs have since been introduced in the Dietary Reference Intake system, but the RDI is still used for nutrition labeling.

Clinical Pharmacology**Relevance****USMLE topic**

Multisystem processes: nutrition—vitamin deficiencies and/or toxicities, mineral deficiencies and/or toxicities

Principles of therapeutics

Other therapeutic modalities

AAMC Medical School Objectives Project Report X Patient Safety – Table 1**Topic C**

Drug treatment of common conditions and diseases