Title: Vitamins, Trace Minerals, and Other Micronutrients

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Interpretive Summary: This book chapter reviews our present knowledge about essential micronutrients, which include vitamins, trace minerals as well as some newly recognized essential nutrients such as choline. Information regarding the biochemical and physiological functions of each of the nutrients, their dietary requirements, potential toxicities, and signs and symptoms of deficiency states are included. There is also a description of how our understanding of what constitutes optimal intake has evolved over the past few decades.

Technical Abstract: This book chapter reviews present knowledge that is relevant for clinicians regarding the micronutrients, including vitamins, trace minerals as well as some newly recognized essential nutrients such as choline. Information regarding the biochemical and physiological functions of each of the nutrients, their dietary requirements, potential toxicities, and signs and symptoms of deficiency states are included. There is also a description of how our understanding of what constitutes optimal intake has evolved over the past few decades.
Micronutrients are the vitamins and minerals required by your body. Unlike macronutrients, you only need minuscule amounts of micronutrients to maintain good health. Micronutrients are essential to the production of enzymes, hormones, proteins, and other products created by your body. Some micronutrients have a specialized role, while others fulfill a broad range of functions. Micronutrients are incredibly important for health and wellness. Mineral deficiencies can have lasting, detrimental health consequences in children and adults of all ages. The body requires significantly fewer essential trace minerals (microminerals) than macrominerals. Macrominerals are measured in grams, while trace minerals are measured in milligrams and micrograms.

Micronutrients Vitamins
Vitamins are naturally occurring organic compounds that are essential to metabolic or other functions in the body. Most vitamins cannot be synthesized by the body. They must be supplied in the diet.

Minerals
Trace Minerals
Macrominerals
What the mineral does
Food sources
Sodium
Fluid and electrolyte balance, supports muscle contraction and nerve impulse transmissions
salt, soy sauce, bread, milk, meats
Chloride
Maintains fluid and electrolyte balance
salt, soy sauce, milk, eggs, meats
Potassium
Maintains fluid and electrolyte balance, cell integrity, muscle contractions and nerve impulse transmission
potatoes
Vitamins and minerals are often called micronutrients because your body needs only tiny amounts of them. Yet failing to get even those small quantities virtually guarantees disease. Here are a few examples of diseases that can result from vitamin deficiencies. A deficiency in vitamin D can cause rickets, a condition marked by soft, weak bones that can lead to skeletal deformities such as bowed legs. Partly to combat rickets, the U.S. has fortified milk with vitamin D since the 1930s. Just as a lack of key micronutrients can cause substantial harm to your body, getting sufficient quantities can provide a substantial benefit. Some examples of these benefits:

Strong bones.