

pregnancy can reduce the risk of neural tube defects such as spina bifida by as much as 79% ([Czeizel, Dudas, Paput, et al, 2011](#)). Drugs such as oral contraceptives and antidepressants may decrease folic acid absorption; thus, adolescent girls taking such medications should consider supplementation (see Spina Bifida, [Chapter 30](#)).

Mineral Imbalances

A number of minerals are essential nutrients. The **macrominerals** refer to those with daily requirements greater than 100 mg and include calcium, phosphorus, magnesium, sodium, potassium, chloride, and sulfur. **Microminerals**, or **trace elements**, have daily requirements of less than 100 mg and include several essential minerals and those whose exact role in nutrition is still unclear. The greatest concern with minerals is deficiency, especially iron-deficiency anemia (see [Chapter 24](#)). However, other minerals that may be inadequate in children's diets, even with supplementation, include calcium, phosphorus, magnesium, and zinc. Low levels of zinc can cause nutritional failure to thrive (FTT). Some of the macrominerals may be inadvertently overlooked when a child with intestinal failure or recent surgery is making the transition from total parenteral intake to enteral intake.

An imbalance in the intake of calcium and phosphorus may occur in infants who are given whole cow's milk instead of infant formula; neonatal tetany may be observed in such cases (see [Chapter 8](#)). Whole cow's milk is also a poor source of iron, and inadequate intake of iron from other food sources (such as iron-fortified cereal) may cause iron-deficiency anemia.

The regulation of mineral balance in the body is a complex process. Dietary extremes of mineral intake can cause a number of mineral–mineral interactions that could result in unexpected deficiencies or excesses. For example, excessive amounts of one mineral, such as zinc, can result in a deficiency of another mineral, such as copper, even if sufficient amounts of copper are ingested. Thus, megadose intake of one mineral may cause an inadvertent deficiency of another essential mineral by blocking its absorption in the blood or intestinal wall or by competing with binding sites on protein carriers needed for metabolism.

Deficiencies can also occur when various substances in the diet