

encouraged in infants with hypothyroidism ([Lawrence and Lawrence, 2011](#)). Parents also need to be aware of signs indicating overdose, such as a rapid pulse, dyspnea, irritability, insomnia, fever, sweating, and weight loss. Ideally, they should know how to count the pulse and be instructed to withhold a dose and consult their practitioner if the pulse rate is above a certain value. Signs of inadequate treatment are fatigue, sleepiness, decreased appetite, and constipation.

If the diagnosis was delayed past early infancy, the chance of permanent cognitive impairment is great. Parents need the same guidance in caring for their child as others who have an offspring with cognitive impairment (see [Chapter 18](#)). They need an opportunity to discuss their feelings regarding late recognition of the disorder. Although treatment will not reverse the intellectual deficit, it may prevent further damage. Genetic counseling is important for the rare families in which the etiology of CH is thyroid dysmorphogenesis, which is inherited in an autosomal recessive manner (see [Genetic Evaluation and Counseling](#) later in this chapter).

Phenylketonuria

Phenylketonuria, an inborn error of metabolism inherited as an autosomal recessive trait (the *PAH* gene is located on chromosome 12q24), is caused by a deficiency or absence of the enzyme needed to metabolize the essential amino acid phenylalanine. Classic PKU is at one end of a spectrum of conditions known as **hyperphenylalaninemia**. Within the spectrum of hyperphenylalaninemia are conditions with varying degrees of severity depending on the degree of enzyme deficiency. Because rarer forms are a result of a deficiency in other enzymes and are diagnosed and treated differently, the following discussion of PKU is limited to the severe, classic form.

In PKU, the hepatic enzyme phenylalanine hydroxylase, which normally controls the conversion of phenylalanine to tyrosine, is deficient. This results in the accumulation of phenylalanine in the bloodstream and urinary excretion of abnormal amounts of its metabolites, the phenyl acids ([Fig. 8-23](#)). One of these phenylketones, phenylacetic acid, gives urine the characteristic