

Consequences of Anemia

The basic physiologic defect caused by anemia is a decrease in the oxygen-carrying capacity of blood and consequently a reduction in the amount of oxygen available to the cells. When the anemia has developed slowly, the child usually adapts to the declining Hgb level.

The effects of anemia on the circulatory system can be profound. Because the viscosity of blood depends almost entirely on the concentration of RBCs, the resulting hemodilution of severe anemia decreases peripheral resistance, causing greater quantities of blood to return to the heart. The increased circulation and turbulence within the heart may produce a murmur. Because the cardiac workload is greatly increased, especially during exercise, infection, or emotional stress, cardiac failure may ensue.

Children seem to have a remarkable ability to function well despite low levels of Hgb. **Cyanosis**, which results from an increased quantity of deoxygenated Hgb in arterial blood, is typically not evident. Growth retardation, resulting from decreased cellular metabolism, and coexisting anorexia is a common finding in chronic severe anemia. It is frequently accompanied by delayed sexual maturation in the older child.

Diagnostic Evaluation

In general, anemia may be suspected based on findings on the history and physical examination, such as a lack of energy, easy fatigability, and pallor. Unless the anemia is severe, one of the first clues to the disorder may be alterations in the CBC, such as decreased RBCs, and decreased Hgb and hematocrit (Hct) levels (see [Fig. 24-1](#)). Although anemia is sometimes defined as an Hgb level below 10 or 11 g/dl, this arbitrary cutoff is inappropriate for all children, since Hgb levels normally vary with age (see [Table 24-1](#)).

Other tests specific to a particular type of anemia are used to determine the underlying cause of anemia. These are discussed in relation to the particular disorder.

Therapeutic Management

The objective of medical management is to reverse the anemia by treating the underlying cause. In nutritional anemias, the specific