Table 12-1.
Classes of Anemia

I. Anemias with low or normal reticulocyte counts
   A. Microcytic (red blood cells are smaller than normal)—iron deficiency, some hereditary disorders
   B. Macrocytic (red blood cells are larger than normal)—vitamin B-12 and folate deficiency, chronic liver disease
   C. Normocytic (red blood cells are normal size)—chronic disease such as cancer

II. Anemias with high reticulocyte counts
   A. Microcytic—hemoglobin abnormalities, intravascular destruction of red blood cells
   B. Macrocytic—removal of spleen
   C. Normocytic—acute blood loss or destruction of blood cells (hemolysis)

Sickle Cell Anemia

Sickle cell anemia is an inherited disease affecting 2% of the African-American population. Victims of this disease carry a genetic defect that produces abnormal hemoglobin molecules in their red blood cells. In the presence of low oxygen levels, the red blood cells deform and become shaped like sickles. This distinctive cell shape gives the disease its name. Because of their abnormal shape, these sickled cells cannot pass through small blood vessels. Consequently, the cells block the vessels, depriving the surrounding tissues of needed oxygen and nutrients. This process causes bouts of pain, or crises, which characterize the disorder. The pain of a crisis can occur anywhere in the body, but is most common in the extremities, chest, and back. Pain is typically very severe and requires large doses of strong pain medicine for relief.

Blockage of blood vessels can also damage organs such as the skin, bone, liver, kidney, heart, and lung. Sickle cell patients have less than adequate immune systems, which increases the frequency and severity of infections. All patients have a chronic anemia due to destruction of red blood cells. There is no cure for sickle cell anemia; the goal of treatment is improving the quality and length of life.

Ocular problems in sickle cell disease are also due to blockage of small arteries by sickled red blood cells. Sickle cell retinopathy results when retinal vessels are blocked. This usually begins in the peripheral retina and can progress to new blood vessel formation, hemorrhage into the vitreous, and retinal detachment. Less frequently seen changes include lid edema and iris atrophy.