

The high-level oxygen environment makes any source of sparks (e.g., mechanical or electrical toys) a potential fire hazard.

Oxygen-induced carbon dioxide narcosis is a physiologic hazard of oxygen therapy that may occur in persons with chronic pulmonary disease, such as cystic fibrosis. In these patients, the respiratory center has adapted to the continuously higher arterial carbon dioxide (PaCO_2) tension levels, and therefore hypoxia becomes the more powerful stimulus for respiration. When the arterial oxygen (PaO_2) tension level is elevated during oxygen administration, the hypoxic drive is removed, causing progressive hypoventilation and increased PaCO_2 levels, and the child rapidly becomes unconscious. Carbon dioxide narcosis can also be induced by the administration of sedation in these patients.

Monitoring Oxygen Therapy

Pulse oximetry is a continuous, noninvasive method of determining arterial oxygen saturation (SaO_2) to guide oxygen therapy. A sensor composed of a light-emitting diode (LED) and a photodetector is placed in opposition around a foot, hand, finger, toe, or earlobe, with the LED placed on top of the nail when digits are used (Fig. 20-24). The diode emits red and infrared lights that pass through the skin to the photodetector. The photodetector measures the amount of each type of light absorbed by functional hemoglobins. Hemoglobin saturated with oxygen (oxyhemoglobin) absorbs more infrared light than does hemoglobin not saturated with oxygen (deoxyhemoglobin). Pulsatile blood flow is the primary physiologic factor that influences accuracy of the pulse oximeter. In infants, reposition the probe at least every 4 to 8 hours to prevent pressure necrosis; poor perfusion and very sensitive skin may necessitate more frequent repositioning.