

the infant to exist for longer periods in conditions of lowered oxygen tension.

The three primary methods for maintaining a neutral thermal environment are the use of an incubator, a radiant warmer ([Fig. 8-6](#)), and an open bassinet with cotton blankets. A dressed infant under blankets can maintain a certain temperature within a wider range of environmental temperatures; however, the need for closer observation of high-risk infant may require that the infant remain partially unclothed. The incubator should always be pre-warmed before placing an infant in it. The use of **double-walled incubators** significantly improves the infant's ability to maintain a desirable temperature and reduce energy expenditure related to heat regulation. Inside or outside the incubator, head coverings are effective in preventing heat loss. A fabric-insulated or wool cap is more effective than one fashioned from stockinette. The use of a heated gel mattress with radiant heat has been shown to significantly decrease the incidence of radiation heat loss and preserve an adequate neutral thermal environment for the VLBW neonate ([Lewis, Sanders, and Brockopp, 2011](#); [Altimier, 2012](#)). An effective means for maintaining the desired range of temperature in the infant is the use of a **manually adjusted** or **automatically controlled (servo-controlled) incubator**. The latter mechanism, when set at the upper and lower limits of the desired circulating air temperature range, adjusts automatically in response to signals from a thermal sensor attached to the abdominal skin. If the infant's temperature drops, the warming device is triggered to increase heat output. The servo control is usually set to a desired skin temperature between 36° and 36.5° C (96.8° and 97.7° F) ([Brown and Landers, 2011](#)).