

drying of mucosa. The child is encouraged to turn and deep breathe at least hourly. Incentive spirometer used should be encouraged. Measures are used to enhance ventilation and decrease pain, such as splinting of the operative site and use of analgesics. Chest tubes are inserted into the pleural or mediastinal space during surgery or in the immediate postoperative period to remove secretions and air to allow reexpansion of the lung. Drainage is checked hourly for color and quantity. Immediately after surgery the drainage may be bright red, but afterward, it should be serous. The largest volume of drainage occurs in the first 12 to 24 hours and is greater in extensive heart surgery.

Nursing Alert

Chest tube drainage greater than 3 ml/kg/hr for more than 3 consecutive hours or 5 to 10 ml/kg in any 1 hour is excessive and may indicate postoperative hemorrhage. The surgeon should be notified immediately because cardiac tamponade can develop rapidly and is life threatening.

Chest tubes are usually removed on the first to third postoperative day. Removal of chest tubes is a painful, frightening experience. Analgesics such as morphine sulfate, often combined with midazolam (Versed), should be given before the procedure. Older children are forewarned that they will feel a sharp, momentary pain. After the suture is cut, the tubes are quickly pulled out at the end of full inspiration in the extubated patient to prevent intake of air into the pleural cavity. (In the intubated patient, the tubes are pulled out on inspiration because the lungs are stented open with the positive pressure ventilation.) A purse-string suture (placed when the tubes were inserted) is pulled tight to close the opening. A petrolatum-covered gauze dressing is immediately applied over the wound and securely taped on all four sides to the skin so that an airtight seal is formed. It is left on for 1 or 2 days. Breath sounds are checked to assess for a pneumothorax, a possible complication of chest tube removal. A chest radiograph is usually obtained after removal to evaluate for possible pneumothorax or pleural effusion.