Cardiovascular Nursing

Care of Patients in Respirator

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A NORMAL person has adequate supply of oxygen and adequate removal of carbondioxide, when his respiratory system is functioning effectively. If the respiratory mechanism of a person fails, this function can be substituted by mechanical aids. In the past, iron lung machines were used for this purpose, but now they are replaced by the more effective ventilators. Respirator is an apparatus designed to maintain respiratory activity by changing the pressure within an air-tight chamber by means of mechanical suction, thereby causing the thorax alternatively to expand and relax, when voluntary respiratory movements are impaired or absent. Its function is to do the work of breathing. It forces air into the lungs in an attempt to give the patient adequate tidal volume and adequate-sized breaths. Respirators function as pressure-cycled or volume-cycled devices. The pressure-cycled devices (Bird and Bennette) are used more commonly. These are triggered by the patient's respiratory efforts or are automatically set to control the respiratory rate. The valve is the heart of the machine. It is flow-sensitive and opens in response to the patient's respiratory effort.

By using the mechanical ventilator, an adequate exchange of O_2 and CO_2 can be reached. It relieves anoxamemia by improving the distribution of O_2. It restores alveolar ventilation, prevents respiratory acidosis, gives rest to the weakened muscles and supports inadequate respiratory activity in debilitated or elderly patients. Respirator is used usually in emergencies. In acute respiratory failure, if the clearance of the airway and the provision of O_2 are not sufficient to relieve the respiratory emergency, ventilator is indicated. It is required, when the air entry into the lungs is impaired due to abnormality in the chest bellows. It is effectively used in chronic obstructive lung diseases in the presence of low vital capacity and intracranial or nervous lesions, where respiratory failure may rise due to depression of the centre. Also it relieves the respiratory embarassment that occurs in the spinal type of poliomyelitis, with involvement of the diaphragm or the intercostal muscles.

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The availability of better external ventilators has greatly improved medical and nursing care. Patients using these machineries are usually desperately ill. Team spirit among those who care for them and close communication and clear understanding between nurses and physicians are of great importance in their care. The emotional trauma of the patient in respirator is great. Verbal communication is thwarted and therefore he cannot express his fears or needs freely. The use of the machineries, the monotonous tone of the machines, and strangeness of the atmosphere and alienation from the loved ones contribute to the anxiety in these patients. They are uncertain about their future. The nurse needs to be sensitive to their emotional needs. She must try to observe and understand the patient's expressions and talk to him. Although he is unable to talk, he appreciats being talked to. The patient needs a nurse who can help him emotionally as well as physically, a nurse who understands the multitude of feelings buffeting him, a nurse who possesses confidence which calms him. Holding the hand while talking gives a lot of reassurance to the patient. If the nurse is negligent in the above aspects of care, it can add to the bewilderment of the patient.

The main principle in the care of the patient in respirator is to keep the tracheo-bronchial tree patent. Suctioning should be done frequently. It can be done periodically and when there is noisy breathing suctioning should be aseptic and atraumatic. The diameter of the catheter should be less than that of the endotracheal catheter and it should be done only while the catheter is being drawn out. It is a good practice to hold one's breath while suctioning is started and to stop it when you feel breathless. To ensure proper suctioning, the catheter should be turned in different directions. Patient's position has to be changed every hour in order to prevent collapse of any part of the lungs. Deep breathing and caughing exercises also are encouraged for the same reason.

Observation of the patient is very important. The signs and symptoms of respiratory failure have to be watched. These are not very specific, but must be suspected from clinical observations, and confirmed by laboratory determinations such as partial pressure of oxygen below 80 mm of Hg, Partial pressure of carbon dioxide above 50 mm of Hg and a PH below 7.3.

Observations regarding the adequate functioning of the respiratory apparatus are of immense importance. The movement of the pneumatic bellows on top, should be watched. The pressure reached in the patient is indicated by the systemic pressure gauge. Failure to reach the pressure set by the control pressure gauge, indicates some leak and should be detected immediately.

The patient should be observed as a whole, as the observation of the adequacy of apparatus alone can be misleading at times. The movement of the chest should be watched carefully. If the chest fails to expand with inspiratory flow, loose connections and air leak may be suspected. The adequacy of tissue oxygenation should be watched. Local symptoms of hypoxia are coldness, pallor of skin, cyanosis and tingling sensation. Hypoxia of the brain is manifested by mental cloudiness and syncope. There may

(*Contd. on page* 343)