CARING FOR PATIENTS AFTER MECHANICAL VENTILATION

PART 1: PHYSICAL AND PSYCHOLOGICAL EFFECTS

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The care of patients who are receiving artificial mechanical ventilation is complex and requires skill and experience. This two-part series outlines some of the important aspects of one specific part of this care – the point at which the patient is removed from the ventilator. This article focuses on the various physical and psychological effects that patients may experience. The second article will focus on the practical aspects of nursing care required to prevent complications arising.

Taking a patient off a ventilator is usually a gradual process, often referred to as weaning. There are numerous articles that describe this process in detail, and clear protocols have been developed (MacIntyre, 2002).

While a great deal has been written about how to wean patients off mechanical ventilation, less has been published about the care they should receive once they have been removed. It is important to be aware that there are both physical and psychological factors involved when a patient is taken off a ventilator (Mårtensson and Fridlund, 2002).

Nurses play an important role in ensuring that a holistic approach is taken to the care of patients in this situation.

PHYSICAL EFFECTS

When patients are receiving mechanical ventilation all of their body systems will experience physiological changes that will be reversed once the ventilation has been discontinued. These changes mainly affect the cardiac and respiratory systems but it is important to consider how other parts of the body are altered.

Respiratory problems

The respiratory effects of discontinuing ventilation will depend partly on the initial reason for patients being ventilated and the length of time that they have been receiving ventilation.

The main reason for initiating ventilation is that a patient is unable to breathe adequately without receiving artificial assistance. The period of ventilation is kept to a minimum, as the intervention itself can result in the patient experiencing a number of problems.

Decisions to remove patients from mechanical ventilation are taken when it has been decided that their condition has improved and they appear able to breathe adequately without artificial assistance.

These are difficult decisions to make, and one of the main adverse consequences of removing patients from mechanical ventilation is that they are unable to breathe independently. This may be due to the recurrence of the original medical condition or as a consequence of their medical treatment (Adam and Osborne, 2005).

Patients who have been receiving ventilation for a long period will have undergone changes in their respiratory physiology that will be reversed when this therapy is discontinued. While they are on the ventilator the respiratory muscles have to do very little work. Once artificial ventilation is stopped these muscles have to take over the full work of breathing. This extra effort can often make the patients feel weak and exhausted (Mårtensson and Fridlund, 2002).

When on a ventilator the patient is receiving oxygen in a carefully controlled amount that has been humidified and can be easily adjusted depending on the patient’s condition.

Once ventilatory support has been completely discontinued the patient normally receives supplementary oxygen through a mask covering the nose/mouth or tracheotomy. It is less easy to regulate the exact amount of oxygen the patient is receiving and it can be difficult to maintain an adequate level of humidification. For these reasons one of the effects of discontinuing artificial ventilation can be a reduction in blood oxygen levels.

Cardiac effects

The normal physiology of breathing means that negative pressure draws air into the chest cavity and the lungs. This negative pressure also helps in the return of blood to the heart and is important in maintaining normal circulation. During artificial ventilation the air is forced into the lungs creating a positive pressure in the chest cavity. This reduces the amount of blood returning to the heart and for this reason patients who are ventilated can have problems with adequate circulation.

During mechanical ventilation this change in blood circulation is compensated for partly by the body’s own mechanisms and also by drugs that are given to the patient, as well as by careful management.
sufficient oxygen. This may result in confusion and will increase the patient’s anxiety when required to breathe unaided for the first time.

Other organs of the body may not receive sufficient blood or oxygen and this will impair their normal functioning (Adam and Osborne, 2005). For example, the kidneys may not receive sufficient blood and this will result in reduced urine output and may eventually lead to renal failure. If blood flow to the gut is reduced, the patient will become nauseous and may vomit.

**PSYCHOLOGICAL EFFECTS**

This is an area that has often been neglected in critical care research but is important when considering a patient who has recently been removed from a ventilator.

Communication has been identified as a significant problem for patients while on a ventilator (Arslanian-Engoren and Scott, 2003). The endotracheal tube means they are unable to speak, and their medical condition and sedating medication make other forms of communication difficult.

When the ventilation has been discontinued patients are then able to speak and will have a strong desire to talk about their experiences.

The most commonly reported psychological problem that patients experience when taken off the ventilator is the fear that they will not be able to breathe. This results in stress that can mean them needing to be put back on the ventilator.

This is especially important in patients who have been on a ventilator for a long period of time. They may become anxious when removed from the ventilator as they may have become psychologically dependent on it to help them breathe (MacIntyre, 2002).

The most successful way in which patients overcome this problem is by taking some control of their situation and working with nurses to achieve the goals of successful removal from the ventilator (Moody et al, 1997).

Not all patients are able to remember the actual event of being ventilated or intubated. They do seem aware of the life-threatening nature of their condition but this is often remembered as strange dreams, hallucinations and delusions while being ventilated (Löf et al, 2006). The time when they are removed from the ventilator will be their first chance to talk about these experiences.

Patients are likely to see their removal from the ventilator as a sign that their condition is improving. However, they may still be troubled by the experience and find it difficult to discuss.

The second article in this two-part series will discuss the nursing care and monitoring that patients require after they have been removed from mechanical ventilation.