Concord Injury Lawyer Report by Dr. Greg Vigna

/EINPresswire.com/ Acute Spinal Cord Injured Patients On A Ventilator Need A Center Of Excellence

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Acute spinal cord injuries to the cervical and thoracic spine have the potential to cause acute respiratory failure requiring a ventilator to maintain the patient's life. This occurs because of the acute paralysis to the muscles of of the ribs (intercostal muscles) that are supplied from the thoracic levels T1 to T11. The intercostal muscles expand the chest wall helping with inspiration. Any injury at these levels or above will effect inspiration and higher the injury the greater the paralysis of the rib cage which will increase the risk of respiratory failure. The most important muscle of inspiration is the diaphragm which is supplied by the right and left phrenic nerve that comes from the C3,4,5 nerve roots. Patients with complete spinal cord injuries at C1 or C2 will be ventilator dependent because the diaphragm will be paralyzed. Complete spinal cord injuries at C3 and C4 are potentially weanable from the ventilator and require train physicians with experience in spinal cord injury and a team of trained professionals including nurses, respiratory therapy, speech therapy, and physical and occupation therapist to most quickly and efficiently wean these patients from the ventilator.

Following a spinal cord injury at C5 and below a patient is at risk for acute respiratory failure and potentially will require acute ventilator support in the field by first responding emergency medical technicians or early during their acute hospitalization. This occurs because the diaphragm becomes less efficient because of the paralyzed rib cage which will make it more difficult to effectively expand for the lungs during inspiration. This excess work will cause the diaphragm to fatigue, becoming less efficient, and cause worsening inspiration (hypoventilation) and will result in respiratory failure. With injuries below C3 there are a group of muscles called 'the accessory muscles of respiration' that include the trapezius that provide some inspiratory effort that in chronic spinal cord patients may be enough to support a patient off the ventilator, but with acute injuries these muscles will fatigue quickly like the diaphragm leading to respiratory failure.

In addition to this hypoventilation, a spinal cord injured patient may have difficulty with expiration. Expiration is largely controlled by the abdominal muscles that are supplied by nerves coming from T6 to L1. Paralysis at or above these levels will impair expiration and may cause an

ineffective cough which will prevent a spinal cord patient from clearing normal secretions and secretions from the lung that are produced in response to infection. The resulting hypoventilation and ineffective clearing of secretions will lead to collapse of part of the lung (atelectasis) which will further reduce air exchange increasing the need for mechanical ventilator support.

From my experience and training it is necessary for a spinal cord injured patient who has been medically stabilized on the ventilator to transfer to a rehabilitation facility that has significant experience in the management of respiratory failure in the spinal cord patient. The ventilator weaning protocols comparing spinal cord patients to other patient populations is significantly different. Spinal cord patients respond best when they are taken off the ventilator for progressively increasing time periods starting at just a few minutes gradually increasing the duration off the ventilator. This is called progressive ventilator-free breathing (PVFB). Other patient populations are generally weaned off the vent by providing continuous ventilation but decreasing the amount of support the machine gives the patient to breath by decreasing the amount of air that is pushed into the lungs or decreasing the frequency of 'breaths' the ventilator gives to the patient. The reason why PVFB works significantly better is easy to understand when to think of why a spinal cord injured patient goes into respiratory failure despite a diaphragm that continues to work. The diaphragm is simply not used to working so hard since normally prior to injury the intercostal muscles are helping inspiration. The diaphragm fatigues and cannot continue to work for 24 hours maintaining inspiration. When one trains for a marathon you don't run 24 hours a day. You, slowly increase the time and distance of running. The same goes to training the diaphragm. By progressively increasing the period the patient is off the ventilator the strength and endurance of the diaphragm is increased. In addition, 'the accessory muscles of respiration' are capable of sustaining inspiration in a chronic spinal cord patient but is incapable in an acute spinal cord injured person because again these muscles fatigue and can't handle the excess work of breathing. These muscles are also trained during progressive ventilator-free periods.

The benefits of care at a center with significant experience in the ventilator management in a spinal cord patient goes beyond the ventilator. There is significant anxiety in a newly diagnosed spinal cord patient who is receiving ventilator support and the thought of progressive periods off the ventilator may lead to significant anxiety. Severe anxiety will increase the work of breathing and lead to a difficult or more protracted period of weaning. A patient who understands that the professionals involved in their care are experienced with spinal cord injury should help reassure that he is in capable hands and should decrease his anxiety. The approach will be multidisciplinary with respiratory therapist, physical therapist, nurses, speech therapy, and psychologist all working together to facilitate the weaning process to allow for more effective and successful wean from the ventilator. The entire staff will be trained in positioning, assisted cough techniques, and other interventions that will facilitate early weaning.

The complexity regarding ventilator weaning is beyond the scope of this article. From my experience of providing ventilator care at a Model Spinal Cord System Center and providing

ventilator care at a community based hospital the protocols are different and if these differences are not understood by all of the treating physicians and supporting staff there will be an increased period on the ventilator that will lead to increased morbidity, mortality, and psychosocial distress on the part of patient and family.

Life Care Planner Perspective:

The earlier a life care planner is involved in a spinal cord patient the better. One of the life care planner's primary roles is to be an educator or the public and that role requires him to be objective in the evaluation of the needs of the patient, not looking at insurance issues, and provide a guide that is medically necessary and appropriate for the patient. From my training and experience of taking care of acutely injured spinal cord patients on a ventilator, it is my opinion that they should have the opportunity to obtain the benefit of a center that has sufficient experience and scope of services to meet all the patient's medical, functional, and psychosocial needs. A life care planner should recommend an appropriate facility.

In addition to current needs, all future needs related to the spinal cord injury should be provided by the life care plan to decrease complications, improve function, and improve the patients psychosocial welfare. Recommendations will include routine medical follow up, yearly flu vaccines, education regarding life style choices such as smoking cessation, nutritional support, and early physician intervention for upper respiratory infections. It is my opinion from taking care of a spinal cord patient who acutely required ventilator support has the potential to have a similar life expectancy compared to the general population if they are compliant with nutrition, life style choices, and medically managed appropriately.

Attorney's Perspective:

Future damages regarding routine medical treatment, physical and occupational therapy, equipment needs, wheel chair replacement, transportation cost, medications, and aid and attendant care will need to be proved by evidence provided by a life care planner and supported by the medical providers. The sum of damages will be added up yearly up to the expected death of the patient. This will be a point of contention between the client's attorney and the defense attorney. The defense will argue that the life expectancy of a quadriplegic with a history of ventilator dependence during the acute rehabilitation stage of recovery will be significantly decreased. He will do this because that would decrease the amount of care the injured party will need and therefore a decrease the future damage amount. He will argue that pneumonia is the leading cause of death in the quadriplegic population. The client's attorney will argue that with proper medical care, modern medicine, and proper lifestyle choices the patient's life expectance will approximate that of the non injured population. The strength of the attorney's position will clearly rely on the experience and credibility of the witnesses. In order to plan accordingly, it is clear, that a competent attorney will know the answer that the physicians witnesses will give regarding this important question prior to trial.

Contact:
Life Care Solutions Group for free case review with spinal cord injury lawyer.
