VENTILATOR AWARENESS

An Educational Resource for School Teachers
SPECIAL NEEDS IN THE PUBLIC SCHOOLS

Because of the increase in medical technology over the last several decades, many children, who otherwise would have been in the hospital, are able to live at home. Many of these children are technology dependent requiring devices such as mechanical ventilators (Inselman, 2004).

Children dependent on mechanical ventilators as well as other special needs children may have the opportunity to attend school. Several laws make it possible for these children to attend public school. The Rehabilitation Act of 1973 states: “No qualified individual with disabilities, shall, solely by reason of her or his disability be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance” (Davis County School District, 2002). Public school would be included under this act. Also, the Individuals with Disabilities Act ensures that disabled children receive an education as well as individually modified instructions and assignments (Davis County School District, 2002).

Many children attending public school have complex medical needs. Some of these children will be placed in a special education classroom, while others may be mainstreamed with other children in their grade.

This pamphlet provides teachers and other school personnel with information specifically about mechanical ventilators. Teachers may have a child with a ventilator in their classroom and not know anything about a ventilator. This may cause the teacher to feel nervous or even scared. Hopefully, this pamphlet will convey enough information about ventilators that it will allow the teacher to feel comfortable having a child with a ventilator in their classroom.

It is important to note that this information will be solely educational and will not replace the nurse or competent caregiver that should care for the medical needs of the child on a ventilator while at school.

The need for providing adequate knowledge to teachers regarding ventilators is important. In the 1999 to 2000 school year there was one child on a ventilator in the state of Utah. In the 2000 to 2001 school year there were five children on ventilators (Green, 2004). In the 2004 to 2005 school year there were five children on ventilators in Weber and Davis counties alone.

Throughout the years, more children with complex medical needs, such as ventilator dependency, will be attending public school. It is important for school teachers to have an understanding of the medical needs of these children in their classroom. Teachers should also understand that the nurse or caregiver is responsible for the medical needs of the child and the teacher is responsible for the educational needs of the child.
COMMON QUESTIONS

What is a Ventilator?

A ventilator is a machine that moves air into and out of the lungs for people who have a hard time breathing on their own. Ventilators are connected to the child through soft plastic tubing. The tubing connects the ventilator to a tracheostomy. Ventilators function using batteries as well as AC power from an outlet in the wall.

PLV-102 Ventilator

Picture by Jami McDonald. Used with permission.

T-Bird Ventilator

Picture by Jami McDonald. Used with permission.

What is a Tracheostomy?

A tracheostomy is a surgical opening in the trachea. The trachea is commonly referred to as the windpipe. A tracheostomy tube, often referred to as a trach, is placed in the opening allowing air to bypass the nose and mouth to enter the lungs (Newman, 2003).

Diagram of Tracheostomy Placement

What Does it Mean When I Hear the Ventilator Alarm Sound?

Ventilators have many alarms that sound for various reasons. The ventilator will alarm to let the caregiver know there is a problem. Most of the time the problem is easily solved and an emergency is prevented. Some of the most common alarms are high pressure, low pressure, and battery.

High Pressure

When the high pressure alarm sounds it usually means air is having a hard time getting into the lungs. Usually, it means the child needs to be suctioned to get extra secretions out of the airway. The caregiver will suction the child if they need it. The high pressure alarm can also sound when the child coughs or sneezes.

Low Pressure:

The low pressure alarm sounds if there is low pressure detected by the ventilator. Low pressure may be caused by air leaks, disconnected tubing, or even yawning. If there is an air leak or disconnected tube the caregiver will assess the child and the ventilator to fix the problem. Sometimes the caregiver will disconnect the tubing in order to do a treatment. Sometimes this will make a high-pitched squealing sound. You should not be afraid of this sound. Once the tubing is reconnected the sound will stop.

Battery

Ventilators run off internal and external batteries. When the batteries are dead the ventilator will alarm alerting the caregiver to find an alternative source of power. The ventilator will also alarm if it is unplugged from the wall outlet (AC power) because it is going to a lower power source: AC power to external battery power.

What Do I Have to Do?

NOTHING! As a teacher you do not have to do anything with the ventilator. You are not responsible for it. You are also not responsible for the medical care of the child. A child on a ventilator will always have a nurse or qualified caregiver with them. Your responsibility is to educate the child and ensure that they receive the best quality of education possible.

Are There Any Special Considerations I Should Know About?

There are some special considerations teachers should know about. First of all, most batteries will not last the entire school day; therefore, it is important that the child have a desk that is close to an outlet so the ventilator can be plugged into AC power. Also, a child with a ventilator will have a nurse or caregiver with them. The area in which the child is placed should be big enough to accommodate the nurse or caregiver as well as the child.
Children with ventilators are at risk for respiratory infections. As a teacher you can help prevent the spread of infection in the classroom by educating the class about the importance of hand washing, covering their mouth when coughing or sneezing, and using tissue to blow their nose.

**EQUIPMENT & SUPPLIES**

**Tracheostomy (Trach)**

A tracheostomy tube (Trach) is a small plastic tube that is placed in a child’s trachea. Air bypasses the nose and mouth and goes through the trach into the lungs. A trach can be replaced if needed. The child should always have a spare trach with them at school. Again, tracheostomy care is the responsibility of the nurse or caregiver, not the teacher.

Pictures of Different Tracheostomy Tubes

**Oxygen**

Sometimes a child may require additional oxygen. Oxygen is usually stored in special containers that keep it from leaking. If a child is on oxygen the container should always be kept upright and secure. Also, special considerations should be considered since oxygen is flammable. Oxygen should be kept away from open flame, aerosols, and other flammable substances (“Respiratory,” 2002). Also, signs should be posted throughout the school warning others that oxygen precautions should be followed. The signs can simply state, “Warning. Oxygen in Use.”

Pictures of Different Oxygen Delivery Systems


Picture by Jami McDonald. Used with permission.
Oximeter

An oximeter is a device that reads the heart rate and oxygen saturations of the child. Usually the machine will have a small probe that can be placed on the child’s finger that reads and inputs the data on a screen. Oximeters are used to assess the condition of the child and whether or not the child is getting enough oxygen.

Examples of Oximeter Screens

Suction Machine

A suction machine is a machine that, when turned on, has a strong suction force. Plastic tubing is connected to both the suction machine and a suction catheter. The suction catheter enters the trach and the suction force from the suction machine sucks out any secretions found in the trach. Some children may need to be suctioned more than others. The purpose of suctioning is to remove secretions found in the airway, which would normally be removed through coughing mechanisms. Suctioning is the responsibility of the nurse or caregiver of the child.

Suction Catheter

A suction catheter is a long thin catheter or tube that can be placed down the child’s trach to extract secretions. The suction catheter can be directly connected to the child’s trach and ventilator tubing or it can be unattached.
Wheelchair

A child may use a wheelchair for mobility. Wheelchairs can be electric or manual. Wheelchair access to classrooms and through doorways should be available for the child, as well as access to get around the classroom.

Go Bag

A Go Bag is specific to a child with a trach or a ventilator. A Go Bag is usually just a backpack that contains equipment and supplies the child may need throughout the day as well as in an emergency. Supplies may include a spare trach, spare suction catheter, and an ambu bag. The Go Bag should be with the child at all times. The nurse is responsible for making sure the Go Bag contains the needed supplies for the child as well as making sure the bag is with the child at all times.

Ambu Bag

The ambu bag can be life saving. When needed, the ambu bag can be attached to the child’s trach and breaths can be given manually to the child in an emergency situation.

Gastrointestinal Tube (G-Tube)

A Gastrointestinal Tube, sometimes called a G-Tube, is a tube that is placed directly into the child’s stomach. The tube has an opening on the outside where feeding equipment can be attached and food, usually a type of formula or water, can be given. Children who have a trach often have a G-Tube. This is because having a trach sometimes makes it difficult for the child to eat orally. Some children with a trach can eat and drink orally, however, it depends on the child. Food can be given through a feeding pump or poured into a syringe in a process called a gravity feed. It is usually not painful for the child to receive food through the G-Tube. Having a G-Tube provides another way to give food and nourishment to the child who cannot eat orally.
Small Volume Nebulizer (SVN)

A small volume nebulizer (SVN) is a small contraption that essentially forces liquid through a small opening, changing it from a liquid to a gas. A SVN can be connected to the ventilator tubing directly. Sometimes the SVN contains medication and other times it just contains normal saline. The purpose of a SVN is to get medication into the lungs, help loosen secretions, and to help increase pulmonary function. The nurse or caregiver is responsible for the connecting and monitoring the SVN.

REFERENCES


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