



VENTILATOR ACCESSORIES

By Stephanie Richardson

Like every great prestidigitator, each respiratory therapist has a bag of magic props. Magic, not in the sense that they make flowers appear out of an endotracheal tube, but because they can make a patient's breathing problems easier in a snap.

From speaking valves and tracheostomy tubes to endotracheal tube holders, it's the small things in the respiratory department that often make the biggest difference in patient care. Here are some of the latest devices that respiratory therapists can pull out of their hats.

Speaking Valves

The inability to speak presents a considerable challenge to the health care of ventilator patients. Speaking valves have proven to be an important innovation for adult and pediatric tracheostomized ventilator users. Studies have shown that speaking valves can restore verbal skills, facilitate care and enhance the emotional health of tracheostomized ventilator-dependent patients.

Patients using speaking valves also have been shown to be more motivated to participate in their own care.

One-way speaking valves can be easily placed on the end of any tracheostomy tube. If the tracheostomy tube is cuffed, the cuff must be completely deflated to use the speaking valve. Some speaking valves are interchangeable and can be used on or off acute care and portable ventilators.

Closed, or "no leak," position speaking valves allow patients to create a positive airway pressure and restore the user to a more normal "closed" respiratory system. The closed position valve opens during inhalation with less than normal inspiratory pressure, allowing air to enter the lungs. At the end of inspiration, the valve closes completely without expiratory effort and there is no air leak out through the valve. The closed system design creates a protective column of air in the tracheostomy tube which prevents secretions from moving up the tube and occluding the valve. The patient, instead, can cough secretions up around the tube, where they can be expectorated or suctioned from the mouth.

There are several physiologic benefits attributed to the restoration of positive pressure with a closed position speaking

valve. Exhaled airflow redirected up past the vocal cords promotes improved vocal and speech production, including better vocal quality, increased volume and better phrasing.

In addition, the closed position speaking valve facilitates increased pharyngeal and laryngeal sensation for ventilator users. This restores subglottic air pressure, and, in turn, improves swallow and can reduce aspiration. Restoration of physiologic PEEP as well as utilizing the expiratory muscles during expiration may expedite weaning and decannulation for many patients who meet the criteria for use of the closed position valve.

ET Tube Holders and Fasteners

Even the smallest components of respiratory care have undergone transformations to make them more patient friendly. Some of the newest endotracheal tube holders are both skin friendly and have adhesive that can last up to three days without fail. In addition, they improve oral care, help enhance recovery by assuring the airway is intact, and increase patient confidence and sense of security.

Stabilizing ET tube holders help prevent accidental extubation by providing a secure hold. When in use, an adhesive including a fabric fastener attaches to a cushioned neckband to prevent slipping, and the tubing channel is made of flexible, lightweight material. The adhesive does not irritate the skin, which improves patient comfort during intubation. The adhesive can be adapted for patients with facial hair by removing the rounded ends and applying it to a patient's cheeks.

Quick-locking tube holders are also a new solution for preventing ventilator disconnects in intubated patients. These products protect patients from periods of apnea and desaturation, and they help protect caregivers from being sprayed with ventilator tubing contents during accidental disconnects. For these reasons, quick-locking holders work well for transport, high PEEP and anesthesia applications.

New ET tube tapes have taken the place of conventional cloth tapes for ET tube placement. To use the tapes, respiratory therapists can prepare a patient's skin according to Standard Nursing Procedures. The tape slides around the patient's neck and attaches to the skin. One half of the split tape secures the ET tube to the patient's upper lip, and the other half wraps around the tube to secure it.

An independent study at the Georgia State University concluded the new generation of adhesive tapes can sustain a



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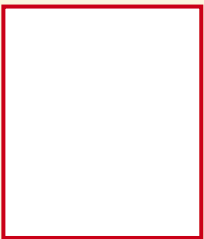
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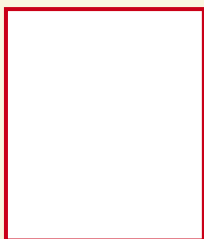
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greater load before ET tube displacement is observed and takes less overall time to apply than conventional tapes. Newer adhesive tapes are very appropriate in emergency situations where time and stability are important.

For intubated patients who can't tolerate adhesives, tight-locking tube holders are ideal. They have been popular with bearded and burn patients, and long-term patients under sedation who are at less risk for self-extubation. These can be used in adult and pediatric patients for critical and long-term care. These holders can be repositioned from side to side and can stabilize ET tubes in less than 10 seconds. Like some other ET tube accessories, tight-locking holders are unaffected by secretions, blood and fluid around the ET tube.

Advanced Endotracheal Tube cuffs

Some of the most innovative endotracheal tubes today feature a thin polyurethane cuff material that seals a patient's airway at half the pressure of conventional cuffed ET tubes. These airway management devices are designed to reduce the leakage of potentially infectious secretions into the lungs. This reduces micro-aspiration and may reduce the risk of ventilator-associated pneumonia — a major clinical concern associated with high incidence rates, mortality rates and increased hospital costs.

Long-term ET tube placement can increase the risk of tracheal trauma in ventilator patients because it potentially subjects them to additional airway tissue damage. Some tube cuffs seal the airway at low pressures, reducing this risk.

Some other important features of new tube cuffs include: a strong seal at low cuff pressures that decreases the risk of mucosal damage; thin cuff material that allows caregivers to better visualize the vocal cords for proper ET tube placement; high puncture strength and burst pressure that is almost double that of conventional cuffs.

Advanced Tracheostomy Tube cuffs

For patients requiring tracheotomies, new series of tubes have arrived for adults and pediatrics that are customizable for patients. These tracheostomy tubes work well for both surgical and percutaneous procedures.

Adjustable neck flange tubes can be adjusted for horizontal and vertical shaft drop in order to fit unusual anatomy or pathology. For trauma patients and obese patients with thick or bull necks, these tubes can secure the airway in the presence of tracheal stoma. Often made with flexible, wire-reinforced silicone shafts, these tubes provide improved patient comfort and resist tubing kinks.

Another line of tracheostomy tubes is made of a thermosensitive material that promotes patient comfort by allowing the tube to conform to his or her anatomy. Some of them also include a cuff that supports a low-pressure seal to reduce patient trauma. With the right amount of humidification, secretions are less likely to adhere to these tubes, making them easier to clean than more traditional devices.

So, as you can see, respiratory therapists have a whole new bag of tricks when it comes to providing comfort and outstanding care to intubated and tracheostomized ventilator patients. Be on the lookout for these devices at your nearest respiratory show ... before they disappear.

Stephanie Richardson is a freelance medical writer in Philadelphia.