Adverse outcomes related to tracheal occlusion and peritracheal skin breakdown stimulated a review of tracheostomy care. An evidence-based practice approach was taken to evaluate the problem. Organizational tracheostomy care policies were reviewed. Subcategories related to tracheostomy care were queried including securing devices, sutures and their removal, type and choice of dressings, prevention of skin breakdown, frequency of care and role delineation, and suctioning. A literature review was done. National experts were surveyed. A geographical survey was taken and vendors of tracheostomy products were interviewed. Collected evidence was scored along a continuum. Costs of supplies were evaluated. Physicians, staff, and patients were interviewed. Skin maceration on the neck was found on multiple audits. The type of tie was identified as a problem. Nurses and respiratory therapists reported difficulty providing tracheostomy care due to suturing technique and securing methods. The stocked dressing was too large to fit under sutures. Several conflicting policies existed regarding tracheostomy care, none of which identified responsibility for performing care: respiratory versus nursing or time standards for care. New supplies were trialed. A list of practice changes were agreed upon by respiratory, nursing, and medical staff. Primary responsibility for tracheostomy care was shifted to the registered nurse.

Key words: evidence-based practice, intensive care, nursing, ostomy care, patient safety, risk management, tracheostomy

A TRACHEOSTOMY is an opening created in the anterior wall of the trachea inferior to the cricoid cartilage.1 This procedure is primarily done on patients who have airway obstruction, difficulty with airway clearance, or those who will be intubated for a long period. It is performed either in the operating room or at the bedside. The bedside procedure is referred to as percutaneous insertion.2 Tracheostomy care refers to the process of cleaning the site, cleaning or changing the inner cannula, changing the dressing and tracheostomy tube holder, and suctioning if needed.1,3 The literature states that it is vital that nurses know how to properly care for patients with a tracheostomy because inappropriate or inadequate care is associated with increased morbidity and mortality.2,4

BACKGROUND

Both surgically and percutaneously inserted tracheostomies are performed at the 2 campuses of a level 1 trauma center. Complications related to tracheostomy care had occurred. During a California nursing outcomes coalition pressure ulcer audit, a patient was identified with skin maceration both around the stoma site and under the twill tape on the neck. That 1 occurrence stimulated closer monitoring of tracheostomy patients. This practice change project was started because several reported incidences of neck
maceration due to twill tape and skin breakdown near the stoma were found from the surveillance. The practice by several surgeons was to apply the very thin twill tape supplied in the box of the tracheostomy appliance and tightly suture on 4 corners of the tracheostomy during insertion. The tight tracheostomy ties made it challenging for the nurses to provide tracheostomy care. In addition, hospital policy stated that the tracheostomy ties would not be changed for 3 days. It was thought that this time interval was chosen to allow for the tract to fully form before risking accidental appliance dislodgment. Interviews with the nurses and the wound care nurse revealed a conception that skin breakdown occurred more than has actually been reported.

Another important reason for this tracheostomy care evaluation stemmed from a tracheal occlusion by secretions. A review of the organizational tracheostomy care policies exposed no clear responsibility for who performs tracheostomy care and how often. Without direct appointed accountability for who is supposed to perform tracheostomy care, it would have been possible for the respiratory therapist (RT) and the registered nurse (RN) to assume that the other had performed care, resulting in an error of omission.

Taking an evidence-based approach to this current problem, a concrete question was formed. According to the PICO (population, intervention, comparison, outcome) method, the question can be formulated as follows:

- **Population**: hospitalized patients requiring tracheostomy
- **Intervention**: tracheostomy care according to evidence-based standards
- **Comparison**: usual care
- **Outcome**: prevention of complications such as skin breakdown and tracheal occlusion

Putting it all together, the question to be evaluated states, “In hospitalized patients who require a tracheostomy, what evidence drives nursing interventions aimed at prevention of complications?” Once the question was developed, subcategories of issues leading up to both events were queried in the review to include securing devices, sutures and their removal, type and choice of dressings, prevention of skin breakdown, frequency of care and role delineation, and suctioning. Evidence was gathered and evaluated. The literature was reviewed, which revealed that there was a lack of high-level research to support one practice versus another (Fig 1). National and local experts were surveyed. A geographical survey was taken to show current practice at local hospitals (Table 1). Data were collected from local vendors of tracheostomy dressings and foam sponges. Physicians, staff, and patients were interviewed to establish trends and values.

### EVIDENCE

#### Literature

Once the problem was identified and the PICO question was formulated, the literature was reviewed. Current policies and procedures were evaluated. The nursing texts that have been adopted on the hospital’s medical/surgical floors and in the intensive care units (ICUs) were reviewed.6–8 The textbooks used as standard reference and practice guidance did not provide evidence for or against any particular method of securing tracheostomy. All the information on skin care referred to cleaning practice and replacing the gauze sponge. One of the textbooks did, however, address the importance of not cutting the gauze because of the risk of fragments getting into the stoma or tracheostomy and causing irritation or infection.7

A review of the literature showed little research-based evidence related to tracheostomy care. An electronic search was conducted in the National Institutes of Health guidelines and the Cochrane clearinghouse, Up To Date, Nursing Consult, Cinahl, and Ovid. To make sure that the search was complete, a secondary review for relevant literature was conducted by a medical librarian. There was no evidence for or against the practice of suturing the tracheostomy flange and then securing with twill tape at point of insertion. There was nothing to support
Figure 1. Levels of evidence. Each green triangle represents one source. The level of evidence is presented from left to right with left being lowest. Expert external opinion includes personal communication from experts, published opinion pieces, and published opinions in textbooks. Quasi-experimental refers to research that included an intervention without randomization into groups. The 1 systematic review of the research disclosed no research pertinent to the exact questions being evaluated.

...how long sutures should remain in place or who should remove them. An opinion piece was found to support the practice of using a Velcro tracheostomy tube holder versus twill tape. There was no evidence to show the best schedule for doing tracheostomy care. Nothing was found that addressed who should be primarily responsible for tracheostomy care.

Dixon reported an exhaustive search of the literature looking for evidence to support best practice for securing tracheostomy tubes yielding nothing published outside of textbooks. Dixon went on to perform a quasi-experimental study (not randomized) that compared the time required to change a tracheostomy tube holder using 2 methods, the use of a Velcro tracheostomy tube holder versus twill tape. The authors found that significantly less time was required to change the tracheostomy ties when the Velcro...

Table 1. Responses of clinical experts (geographical survey) about tracheostomy care

<table>
<thead>
<tr>
<th>Question</th>
<th>Frequency of tracheostomy care</th>
<th>Primary responsibility</th>
<th>When sutures are removed</th>
<th>Who removes the sutures</th>
<th>Type of dressing used under new tracheostomy</th>
<th>Type of tracheostomy tube holder used with new tracheostomy</th>
<th>When initial dressing is changed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q shift (2)</td>
<td>RN (5)</td>
<td>RT (0)</td>
<td>7 days (4)</td>
<td>RN with order (2)</td>
<td>Gauze (unknown size) (3)</td>
<td>Twill (3)</td>
<td>After 24 h (2)</td>
</tr>
<tr>
<td>Q8 (2)</td>
<td>RT (0)</td>
<td>Not standardized (1)</td>
<td>2 weeks (1)</td>
<td>MD (2)</td>
<td>Gauze 4 × 4 (6)</td>
<td>Velcro (6)</td>
<td>After 48 h (1)</td>
</tr>
<tr>
<td>Q12 (5)</td>
<td>Not standardized (1)</td>
<td>Varies—no clear policy (6)</td>
<td></td>
<td>RT (1)</td>
<td>None (1)</td>
<td>Varies (1)</td>
<td>Whenever RN wants (3)</td>
</tr>
</tbody>
</table>

*Not every respondent answered every question, so the numbers may vary. Numbers in parentheses represent the number of responses. Geographical survey demonstrates no standard of practice.*
Tracheostomy Care

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The tracheostomy tube holder was used in comparison with the use of twill tape. Their single center study also showed that the participants found the Velcro tracheostomy tube holder easier to use. Another article noted that the use of a Velcro tracheostomy holder, together with a nonadherent dressing, provides patient comfort and is easy to apply. The American Thoracic Society Web site (http://www.thoracic.org/sections/education/care-of-the-child-with-a-chronic-tracheostomy/ components-of-tracheostomy-care/tracheostomy-tube-care.html) states that twill tape has a tendency to cut into the neck. It also reported that Velcro ties are more comfortable for patients and have fewer tendencies to abrade the skin than twill tape.

If the tracheostomy is stitched to the skin, sterile cotton or gauze might be needed to clean the area. Gauze is recommended as a dressing after cleaning the tracheostomy site. It is not recommended that anything with loose fibers be used around the stoma or tracheostomy site as they can cause irritation. A 4 × 4 gauze pad should not be cut because the edges will fray and provide a potential source for infection.

Pressure ulcers and skin breakdown usually develop on skin over bony prominences but they can develop in any tissue where there is sustained pressure. For this reason, it is important to apply a gauze dressing under the tracheostomy flanges to prevent pressure. It is also important to do a good assessment around the tracheostomy to make sure that there is not any skin breakdown related to pressure from the tracheostomy device, the tube ties, or mucous and secretions. The skin should be inspected for any sign of irritation or infection, such as redness, hardness, tenderness, drainage, or a foul smell.

It is recommended that the site be cleaned twice a day because secretions can cause infection. Moisture causes maceration and skin breakdown at the stoma and tracheal opening. When pressure or fluid accumulates around the stoma site, skin damage can occur. Assessment during every cleaning and dressing change is essential to monitor for and prevent skin breakdown. The literature recommended changing the dressing anywhere from every shift to once per day. The once per shift recommendations were not specific about whether the shift was 8 hours or 12 hours. The neck incision site should be cleaned twice per day to reduce the risk of infection from tracheal secretions.

According to an industry-sponsored Web site, a foam dressing may be helpful if the patient has large amounts of mucous and secretions. The benefits of using a foam dressing are reported as absorptive, moisture retentive, and insulating, keeping the area dry while allowing oxygen to reach the area.

Maintaining healthy intact skin is a challenge when skin is exposed to moisture. Film forming barriers are frequently used to treat or prevent skin breakdown. Provides information recommending the use of their Cavilon No Sting Barrier Film around tracheostomy sites when there is the expectation of secretions. It was found that there was significant skin protection for 4 days postapplication and it did not cause any pain to the patients.

A medical surgical nursing textbook recommends suctioning when respirations are noisy and pulse and respiratory rates are increased. Noisy breathing or bubbling sounds might indicate that airway secretions need to be cleared with suction.

It has been recommended that further research is needed to find better ways to improve nurses' knowledge and expertise in recognizing and preventing displaced tracheostomy tubes and obstructed airways. Methods for safely caring for patients requiring tracheostomy are needed. It should be noted that the references cited in this section, with the exception of Dixon, are opinion pieces that did not cite primary source documents (Fig 1).

National experts

Several articles by Durbin provided information related to tracheostomy issues. By the nature of his work to formulate a literature
review related to the topic of tracheostomy care, he is a leading authority in this field. Although none of the articles addressed the specific issues in question, he was contacted to see whether he would be able to help answer the PICO question or whether he could provide another reference. He e-mailed back information related to his practice and provided contact information about other experts in the field. He stated that to his knowledge there are no studies to answer the PICO question. Most institutions have developed formal and informal policies to address tracheostomy care. He recommended that further research was necessary (personal communication, March 21, 2007).

Kathleen Stacy, MS, RN, CNS, CCRN, PCCN, CCNS, a known expert related to tracheostomy care, who has authored the book chapter related to pulmonary nursing and tracheostomy care in a well-known text, was also consulted (personal communication, March 23, 2007). Her opinion was that a soft wick drain sponge works the best because gauze frays when you cut it and foam can be too occlusive. The drain sponge wicks the secretions away from the stoma. She prefers the Velcro tube holder because the twill tape can cause such damage to the skin around the neck. Her preference is for dressing change once per shift and prn. She recommends suture removal 10 to 14 days posttracheostomy insertion with an MD order, which is quite different from what others have recommended, with the general consensus being 7 days, once the tract is established. It has been her experience that patients may suffer from delayed healing thus necessitating the need to leave them in longer. Both RN and RT should be equally responsible for suctioning.

E-mails were sent to American Association of Critical-Care Nurses (AACN), Emergency Nurses Association (ENA), and American Academy of Respiratory Care, to inquire about practice guidelines related to tracheostomy care. Responses were received from ENA and AACN. American Academy of Respiratory Care did not respond. Emergency Nurses Association did not have any guidelines related to tracheostomy care. A nurse from AACN (personal communication, March 16, 2007) responded to say that the AACN manual should be used as a guide for tracheostomy care. She was able to answer some of my questions based on her personal work history and from the recommendations from the above-mentioned manual but admitted that there is no research to support the recommendations.

Local experts

E-mails were sent to 94 critical care nurses all over San Diego for information related to local practice. This was a geographical survey to establish local care practices. They were assured that their names and hospital names would not be used in relation to the information they provided. E-mail responses were received from 11 nurses. Table 1 shows a compilation of these responses demonstrating a wide variation in practices.

Values and perceptions of key stakeholders

After performing staff interviews and investigating the issues further, the following practices were identified. The practice for 1 group of physicians was to surgically insert the tracheostomy, secure it tightly with sutures, and then apply very thin twill tape. The current procedures state that the twill tape will not be replaced for 3 days.

Two of the surgeons who insert tracheostomy tubes (personal communication, April 13, 2007) stated that they did not want the securing device (currently twill tape) or dressing changed for 3 days due to a concern over accidental dislodgment during the process before there is a fully formed tract. They approved of the concept of having nurses remove the sutures at 5 days. They were willing to try the Velcro tracheostomy tube holder from the point of insertion. They do not want gauze or a dressing of any kind placed under the tracheostomy flange, again fearing dislodgment when the appliance was manipulated to apply the dressing. They were willing to consider the use of the skin barrier
film. These surgeons exposed another concern. They felt that the downward drag on the tracheal appliance was a greater factor in peristomal skin breakdown and suggested a reeducation of the nurses regarding offloading the pressure with proper use of the ventilator arm and a rolled towel when indicated. After their concern was validated during bedside rounds, an educational flyer was prepared and posted, and 1:1 review with the RTs and RNs was done (Appendix A).

The operating room educator (personal communication, March 8, 2007) stated that most tracheostomy tubes were placed percutaneously at the bedside in the ICU. The ICU nurses already have the Velcro tracheostomy tube holders in stock and report that they hand them to the physician during insertion. One nurse reported that some physicians still use twill tape and she sees more skin irritation on patients who have a twill tape holder in place versus the softer Velcro tracheostomy tube holder.

Nurses and RTs expressed difficulty cleaning around the tracheostomy because of how tightly it was sutured in place and the manner in which the sutures were placed. They also reported trouble placing a gauze dressing underneath the tracheostomy flanges and frequently used forceps or hemostats to pull it underneath. This was reported back to the surgeons because it was found that this was more of a problem with one method of suturing versus another. The nurses reported that they sometimes cut the gauze to make it fit better. As mentioned earlier in the article, this practice is not recommended because of the risk of irritation or infection.

On the basis of interviews with 5 nurses, the physicians' practice is to use sutures and then the nurse hands them the Velcro tracheostomy tube holder to secure it in place. Some physicians were willing to apply the Velcro tube holder when it was handed to them. When asked how long the sutures stay in place, and who removes them, one nurse stated that she thought the sutures just fall out on their own. No policy statement was found to state when they are removed or by whom. Two ICU RNs reported that they were not sure when sutures were supposed to be removed. Several nurses reported asking the physician to write an order when they think the sutures look ready to come out or when the skin around the suture site was red.

Both operating rooms and ICUs agreed to stock the Velcro straps and the nurses agreed to hand them to the MD on insertion so that they can be used immediately from time of insertion. The physician representative to the pressure ulcer prevention committee, also a plastic surgeon who inserts tracheostomy tubes, stated he would be willing to start using the Velcro ties immediately after inserting the tracheostomy (personal communication, March 29, 2007). He stated that sutures should remain in place for a minimum of 7 days to ensure tract formation. Another trauma surgeon was interviewed and stated that he preferred to use the Velcro tracheostomy tube holder at the point of insertion but disclosed that they are frequently not available. He agreed that the RNs could request an order to remove sutures at 7 days.

It is believed that the Velcro ties will be softer and less irritating to the skin, and the risk for stoma breakdown would be less if the tracheostomy sutures were removed sooner. It was theorized that earlier suture removal would allow the nurse to easily change the gauze sponge to prevent moisture and risk for infection. However, though intuitive, the risk of accidental dislodgment versus maceration and infection and ease of maintenance has no evidence from which to base practice. Therefore, there is still a discrepancy between the perception of some physicians and the nurses regarding this practice.

The wound and ostomy care nurse (WOCN) was interviewed about incidence of skin breakdown. She identified that people with copious peristomal tracheostomy secretions would benefit from using a topical skin barrier when secretions are present. Nurses were not currently doing this and it was not in their protocol. Industry-sponsored wound care literature describes that film-forming barriers are used to treat and prevent skin
breakdown from insults such as moisture and irritants.\textsuperscript{16}

The case of tracheal occlusion prompted a review of who is responsible for tracheostomy care. The director of respiratory therapy and RT educator (personal communications, March 8, 2007) reported that the RT procedure stated that tracheostomy care will be done every shift but there was a concern that this might not be a consistent practice. They felt that it was a problem that there was no clear statement of who is responsible, the RN or the RT. They confirmed the concern that shared responsibility might cause an error of omission. It was proposed by RT that the policy be amended to say that the RT will assess every shift and suction and change the dressing prn. The nurse would have the ultimate responsibility for tracheostomy care and suctioning a minimum of once every 12 hours.

**Patient values**

A 46-year-old male patient was interviewed 14 days s/p tracheostomy insertion. He did not have any sutures in place. He did not know when they were removed or who did it. No orders for suture removal were found in his chart. The patient had a Velcro tie in place. He did not have any pain or breakdown on his neck or near his stoma. The dressing had not been changed that day, as of 1:30 PM. The dressing was dry and intact. He did not report any discomfort with dressing changes.

Another patient had a tracheostomy that had been placed 7 weeks prior in another facility. He was not interviewable. His sutures were still in place. The area around his sutures was red and irritated. I discussed with the nurse that she should ask the physician about suture removal. His tracheostomy was tied with thin plastic tubing, from Mexico. He did not have any redness or irritation on his neck. The nurse was planning to change his tracheostomy tie to a Velcro strap when she did his tracheostomy care. The patient had copious secretions requiring frequent suctioning. The area under his tracheostomy flange was red and irritated. The nurse was cautioned to be aware of the potential for skin breakdown and to try to keep the area clean and dry. The possibility of using a barrier film to protect the skin was discussed with her (described below).

A third patient was interviewed who had a Velcro tracheostomy tube holder. He said it was comfortable on his neck. His sutures were still in place and he admitted that it was uncomfortable when the nurse had to manipulate the tracheostomy to try to get the gauze dressing underneath the flange. It was unclear how long his tracheostomy and the sutures had been in place.

**Resources**

For purposes of this project, resource use consisted of the evaluation of different types of dressings that could be used for tracheostomy care. See Table 2 for a cost comparison. Meetings were held with employees and product company representatives. Products were evaluated and a cost analysis was done. Gauze $2 \times 2$ fenestrated sponges were already available in the health system but were not being used for tracheostomy care. Several boxes were obtained from supply and were distributed to the ICUs and medical-surgical units for use. They were trialed by RNs and RTs. An evaluation tool was distributed with the new $2 \times 2$ dressings (Appendix B). Product evaluations are often thwarted by the ability to obtain written feedback from the principal users. In this case, no evaluation forms were returned; however, individual follow-up conversations with the RNs and RTs using the questions on the form revealed that the smaller sponges were easier to insert under new tracheostomy appliances that still had sutures in place. It was noted that the $2 \times 2$s were too small to absorb moisture on patients with copious amounts of secretions. For this reason, the WOCN was consulted. The WOCN (personal communication, March 22, 2007) recommended the use of a skin barrier. Information and research were obtained regarding a skin barrier that is available in the hospital but is primarily used for prevention of skin breakdown related to pressure ulcers (3M Cavilon No Sting Barrier Film\textsuperscript{17}).

The ICU and the medical/surgical nurses were
Table 2. Cost comparison of tracheostomy sponges

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gauze sponge 4 × 4</td>
<td>$38.48</td>
<td>Case of 3 000</td>
</tr>
<tr>
<td>Gauze drain sponge—fenestrated (for tracheostomy) 2 × 2</td>
<td>$75.78</td>
<td>Case of 1 400</td>
</tr>
<tr>
<td>Foam sponges—fenestrated (for tracheostomy) 3.5 × 3</td>
<td>$36.18</td>
<td>Case of 50</td>
</tr>
<tr>
<td>Twill tape</td>
<td>&lt;0.50</td>
<td>$8.92/Roll</td>
</tr>
<tr>
<td>Velcro tracheostomy tube holder</td>
<td>$2.32 each</td>
<td></td>
</tr>
</tbody>
</table>

*Cost of products will vary per hospital contracts.

informed of the possible peristomal and under tracheostomy tie use of this product for patients with excessive secretions.

To further address the absorption challenge in patients with excessive secretions, a foam dressing was also investigated. The benefit of the foam dressing is that it is highly absorptive and helps wick moisture away from the skin, which prevents moisture-related irritation and breakdown. The other advantage of this dressing is that it can be cut without risk of any fibers irritating the stoma, as might happen when a gauze dressing is cut.

Evidence-based practice changes

After all the evidence was collected, a meeting was held, and key stakeholders were apprised of the recommended changes. Suggestions were made and policies and procedures were modified (Appendix C). In conclusion, practice changes were made largely on the basis of consensus of opinion in response to actual patient events. The values of the surgeons (integrity of airway), RTs and RNs (ease of maintenance), and patients (comfort) were all taken into account during the decision-making process. Resources were considered when evaluating tracheostomy dressings. The foam dressing, even though more expensive, appears worth the cost for selected patients with copious secretions. The 2 × 2 sponge was easier to use for those patients whose secretions were minimal to moderate. The Velcro tracheostomy tube holder was more comfortable to patients and may prevent skin tears, despite the higher cost. It was clear that a timeline for suture removal was needed and by consensus settled at 7 days based on the theory that the tract should be stable by that point. Accountability for routine monitoring was delegated to the RN for consistency in care and to prevent errors of omission. Not all issues were resolved, even after careful analysis, because of the lack of evidence to support one practice over another. With the surgeons who continue to use twill tape on insertion, there remains disagreement between the RNs and physicians regarding when the initial ties can safely be changed to a Velcro device. Further research and/or detailed quality improvement monitoring is indicated to determine best practice.

REFERENCES

7. Lynn-McHale DJ, Carlson KK, American Association


Appendix A

Educational Flyer Tracheostomy Care

Appendix B

Fenestrated 2 × 2 Gauze Dressing Evaluation Tool

*Purpose of the evaluation:* Provide a tracheostomy sponge that can fit around stoma when the tracheostomy appliance is sutured, with the ultimate goal of keeping moisture away from the stoma to minimize stomal irritation.

*Department:* ________________

*Product:* 2 × 2 split intravenous dressing to be used as a tracheostomy sponge for patients with sutured tracheostomy appliances.

Please rate each item

1 = bad or not at all  
4 = great or definitely

<table>
<thead>
<tr>
<th>Patient safety feature</th>
<th>1 2 3 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>I was able to apply the sponge without moving the tracheostomy tube and risking decannulation</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>I experienced less movement of the tracheostomy tube when applying the smaller tracheostomy sponge than when using the larger sponge</td>
<td>1 2 3 4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nursing safety and ease of use</th>
<th>1 2 3 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>The smaller sponge is easier to use than the larger sponge for patients with sutured tracheostomies</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>The smaller sponge worked as well to wick moisture (sputum) as the larger sponge</td>
<td>1 2 3 4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Patient comfort</th>
<th>1 2 3 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>If you have a patient who can talk: Is the new sponge as comfortable as the one that was just taken out?</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Is the new sponge more comfortable than the one just taken out?</td>
<td>1 2 3 4</td>
</tr>
</tbody>
</table>

Comments about the use of this 2 × 2 sponge:

1. _________________________________
2. _________________________________

Would you recommend this 2 × 2 sponge for use in your hospital?

*YES NO*
Appendix C

Practice Changes

<table>
<thead>
<tr>
<th>The RT will provide tracheostomy care and suctioning as needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>The RN will be responsible for providing tracheostomy care at a minimum of every 12 h.</td>
</tr>
<tr>
<td>The RN will obtain an order for suture removal 7 days posttracheostomy insertion.</td>
</tr>
<tr>
<td>On mechanically ventilated patients, the ventilator tubing will be maintained in the ventilator arm except when turning.</td>
</tr>
<tr>
<td>A rolled towel will be used on the chest to offload pressure from the drag of the ventilator tubing as needed.</td>
</tr>
<tr>
<td>A barrier film applied by a sponge or applicator (not sprayed) will be considered around the stoma of patients with copious secretions and/or under the tracheostomy tube-securing device (second skin therapy).</td>
</tr>
<tr>
<td>A 2 × 2 fenestrated gauze sponge is now available for use when a 4 × 4 will not fit.</td>
</tr>
<tr>
<td>A foam dressing is now available for use when secretions are copious.</td>
</tr>
<tr>
<td>The physician is informed if sutures are irritating the skin or prevent routine maintenance.</td>
</tr>
<tr>
<td>When used, twill tape is changed to a Velcro-securing device as soon as possible.</td>
</tr>
<tr>
<td>Velcro-securing devices are available for the physician during the insertion.</td>
</tr>
</tbody>
</table>