interdependent factors that influence patient care in the ICU. Standard analytical tools employed for quality assessment such as root cause analysis are simply inadequate. Probabilistic risk assessment (PRA) is a systematic and comprehensive methodology widely applied in other industries to evaluate undesirable outcomes such as risk, and PRA may be a promising tool for assessment of adverse events in the ICU.2–5 PRA entails constructing the chronology of a scenario and a “fault tree” of occurrences that could lead to a specific adverse outcome. By analysis of the likelihood of each contributor to the adverse event, one could quantify the likelihood of that outcome occurring and focus efforts on modifying each of these events. Results from PRA would also provide a quantitative basis for specific event rates and for overall system performance over time.

The need for serious discussions of ICU performance metrics is overdue. We gauge the “health” of financial or business entities by measurements like price-to-earnings ratio, equity, debt load, or cash on hand. Similarly, we monitor the integrity of engineering systems by their failure rates, reliability, recovery rate, and level of redundancy. The performance measures described by Dr. Garland are good first steps toward arriving at community consensus; others may propose alternatives. The ultimate test would depend on the usefulness of these measurements in improving care in the ICU.

Kelvin K. Shiu, DO, PhD
Mark J. Rosen, MD, FCCP
Beth Israel Medical Center
New York, NY

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Is the Method of Modified Percutaneous Tracheostomy Without Bronchoscopic Guidance Really Simple and Safe?

To the Editor:

Since Ciaglia1 introduced the first time the percutaneous dilatational tracheostomy (PDT) method using various stoma dilators, other newly developed related methods have been accepted for airway management in patients receiving long-term mechanical ventilation. Nevertheless, the techniques do not always include bronchoscopic control, and the advantages and disadvantages of the simultaneous use of bronchoscopy have been extensively discussed.2,3 An important contribution to that discussion has been a recent article in CHEST (September 2004)4 about modified PDT without bronchoscopic guidance, which we read with great interest. The authors concluded that “modified percutaneous tracheostomy,” a technique that does not use bronchoscopic control, is a simple and safe method if performed by a trained physician who has had some practice in neck surgery. However, we only partially share the authors’ optimism.

During the last 9 years, we have performed > 800 percutaneous tracheotomies using various commercial sets, all with the use of a bronchoscope. We are convinced that a constant visual survey of the inside of the trachea during the entire duration of the PDT procedure offers important advantages.2 A malplacement of the tube is thereby practically excluded, and a tracheal wall injury can either be entirely avoided or recognized early and treated. We think that the originally described techniques of

To the Editor:

In a recent article in CHEST (February 2005),1 Tonelli illustrated the ethical issues surrounding the participation of critically ill patients in decisions about ICU withdrawal, arguing that the focus on conflicting ethical principles of autonomy and beneficence is inadequate, and suggesting instead the usefulness of examining the unique clinical circumstances compared to paradigm cases. This offers little moral guidance. Our experience with children ventilated and given high dose steroids during an acute deterioration in their severe end-stage lung disease, for which they were listed for lung transplant, is that recovery is rare and ICU withdrawal often occurs. Usually, these patients are adolescents, who, as English Law deems them competent to consent to medical decisions yet not to decline them, cannot actively participate in end-of-life discussions. Ethical questions about waking these patients to tell them death is imminent, allowing them opportunities to say goodbye, invariably occur. Currently, the views of the ICU team, the ethics committee, and the families concur. Waking is inappropriate due to the factors mentioned by Tonelli, especially because of the potential emotional and physical distress. Such paternalism, a term that was invented for children, conflicts with increasing calls for adolescent participation in complex health areas.2 A more robust ethical basis for our view must be developed.

Joe Brierley, MA
Great Ormond Street Hospital NHS Trust
London, UK

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PDT owe their success largely to the later introduction and use of bronchoscopy at different stages of the procedure; as much as the technique permits. Those problems with the described method mentioned below, which may be linked to the absence of bronchoscopic control, could all be causally interconnected.

Bronchoscopy application permits the precise positioning of the initial needle puncture between the second and third tracheal rings. If a bronchoscope were used, the level of puncture with a needle could be identified without skin incision by simultaneous observation through the bronchoscope and the application of a slight pressure to the skin over the trachea. Without bronchoscopy, the level of the puncture is uncertain, and, as a result, too high a puncture could lead to complications that have been described accompanying high placement of the cannula. Too low a puncture may impose a risk of bleeding. If a large thyroid gland is present, there would be a danger of accidentally cutting across some blood vessels that are positioned beneath, such as the thyroid arteries, the left brachiocephalic vein, or even the brachiocephalic trunk itself.

With bronchoscopy, not only is the initial placement of the needle fully controlled, but also all steps of the PDT. The permanent observation of the skin surface and, at the same time, the visualization of the inside of the trachea and control of the progress of the tip of the inserted devices (ie, needle, guidewire, and cannula) help to prevent injury, particularly of the membranous tracheal wall. Freedom of movement of those devices introduced into the tracheal lumen is extremely small, and without the use of a bronchoscope the procedure remains largely “blind” and the risk for injury during all stages is high.

In the article under discussion, the initial puncture level may have been incorrect; this could have been avoided if bronchoscopy had been used. The authors stated that they performed a midline, 2-cm-long, incision just above the suprasternal notch. Certainly, it is not clear how a palpation by the finger at such a low level (ie, at the sternal notch) could permit identification of the second and third tracheal rings? Such an extremely low point of incision would seldom allow the performance of a tracheal puncture, as described in the article, between the second and third tracheal ring. In Figure 3 of that article, one can even see that the needle is introduced between the fourth and fifth tracheal rings. However, at that level the normal anatomy looks slightly different than the way it is depicted in Figure 3 of the article. The trachea does not follow the frontal plane of the neck; diverging dorsally, so that to approach for dissection of the trachea at that low level has to be deeper, compared to the one that would be performed at the level of the second tracheal ring. We can only speculate that the increased distance between the skin plane and the tracheal lumen at that low level could have been the cause of the finding that one tracheal cannula was too low a puncture could lead to complications that have been described accompanying high placement of the cannula. Too low a puncture may impose a risk of bleeding. If a large thyroid gland is present, there would be a danger of accidentally cutting across some blood vessels that are positioned beneath, such as the thyroid arteries, the left brachiocephalic vein, or even the brachiocephalic trunk itself.

In addition, such a low approach may impose a need for extensive surgical dissection accompanied by the above-mentioned complications. This may have disastrous consequences. Bleeding and local infection may by themselves create conditions, in the latter case, for the occurrence of tracheal stenosis. A generous surgical approach, as required in the absence of any bronchoscopic control, may, in addition, be responsible for a loose or badly secured tracheal cannula. This might be one of the reasons for the displacement of the cannula in the first 48 h that was observed in the three patients in the study. When such a deep surgical dissection of the trachea is performed, one should probably not use a commercial and expensive tracheostomy set to perform a “percutaneous” tracheostomy, and should instead complete the operation using a routine surgical procedure.

It may be of lesser importance, but it should be mentioned that the enthusiastic conclusion of the authors that the modified percutaneous tracheostomy without bronchoscopic guidance is the simplest and safest method, may be applied to the Ciaglia “Blue Rhino” method only hypothetically since this method was used in only eight patients in the study.

Some drawbacks in the use of bronchoscopy, like carbon dioxide retention, certainly exist, and the use of a bronchoscope would therefore be contraindicated in patients who would not support high CO2 levels, like those with brain injuries. There are, of course, other circumstances in which the use of modified percutaneous tracheostomy without bronchoscopic guidance would probably be the best choice if the bronchoscope were not at hand. In those circumstances, this technique would be much more suitable than the customary PDT without a bronchoscope. There are however important limits of the method described by Paran et al, and a general dismissal of the usefulness of bronchoscopy would certainly not be warranted.

Matthias Grundling, MD
Dragan Pavlovic, MD
Sven-Olaf Kahn, MD
Frank Feyherder, MD
University of Greifswald
Greifswald, Germany

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Prevention of Venous Thromboembolism

To the Editor:

We thank Dr. Lotke (June 2005) for raising a number of important issues about the development of guideline recommendations for thromboprophylaxis. While Dr. Lotke contends that internists undervalue postoperative bleeding related to anticoagulant prophylaxis, we are not aware of any evidence that supports this statement. In contrast, the American College of Chest Physicians (ACCP) thromboprophylaxis guideline process placed...