



PATIENT SAFETY: Findings in Action

Problems and Prevention: Chest Tube Insertion

Key Messages

Chest tube insertion is a life-saving procedure used to relieve tension pneumothorax or hemothorax, the accumulation of air or blood (fluid) under pressure in the pleural space, seen most often in trauma patients. If performed incorrectly, patients can suffer adverse outcomes and even fatal complications, and clinicians can be exposed to injury or infection.

This 11-minute DVD, developed with funding from the U.S. Agency for Healthcare Research and Quality (AHRQ) by Dr. Colin F. Mackenzie and colleagues at the University of Maryland in Baltimore, uses video excerpts of 50 actual chest tube insertion procedures to illustrate the problems that can occur. Major sources of adverse outcomes include breaks in sterile technique, inadequate anesthesia, incorrect insertion techniques, and inadequate self-protection by clinicians. The DVD includes a demonstration of a series of preventive measures for each type of problem, using an easy-to-remember mnemonic, UWET, which stands for Universal Precautions (achieved by using sterile cap, mask, gown, and gloves); Wider skin prep; Extensive draping; and Tray positioning.

The purpose of this DVD is to create a tutorial program for physicians in hospitals, including surgical and emergency department residents, on the correct technique for inserting chest tube and the common pitfalls (shown in live video clips) that are seen in clinical practice.

Findings

- Trying to perform multiple procedures concurrently is a major source of error.
- Equipment trays should be positioned near the surgeon's dominant hand.
- A patient's discomfort can make it hard to do a sterile procedure. While adequate anesthesia is important, the patient may also need verbal and physical comforting. If a patient's movements cannot be controlled, the anesthesiology team should be called.
- Correct techniques can prevent damage to the lung and surrounding tissue, contamination of the wound, and leakage of fluid. The video demonstrates optimum techniques for entering the pleural cavity, inserting the tube, providing for drainage, and suturing the opening.
- Universal precautions against blood-borne infections are crucial to protect clinicians and their patients. In U.S. urban trauma centers, HIV rates among trauma patients are as high as 10 percent, and hepatitis C rates are as high as 15 percent, so Universal Precautions should be practiced for all chest tube insertions.

Additional Information

This DVD is designed to play in a Windows PC [or Mac®] with a CD-ROM/DVD drive as well as in set-top DVD players. The video is captioned for the hearing impaired. It can be ordered from the AHRQ Publications Clearinghouse by calling 800-358-9295 or sending an e-mail to AHRQPubs@ahrq.hhs.gov. Ask for AHRQ Pub. No. 06-0069-DVD.



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