



Is Thoracic Surgery Evidence-Based?

Nurses are increasingly basing bedside practice on interventions that have been shown, through research, to be effective. Research is the foundation of the science of nursing practice. Are surgeons using research to guide their practice?

Examining Research

The “gold standard” of double-blind, placebo-controlled, randomized, controlled trials (RCT) doesn’t apply to caring for patients with chest tubes. Patients can be randomized and intervention groups compared with control groups, but blinding therapy is very challenging, and there is no placebo for chest drainage. Another challenge is defining which is better of two alternatives: is it more fluid drainage, less fluid drainage, length of time the patient has the chest tube, length of hospital stay or something else? [Cochrane Reviews](#) seek to answer the question, “How do you know if one healthcare intervention works better than another, or if it will do more harm than good?” through systematic reviews of primary research in humans. Of 4750 reviews published, only one addresses postoperative chest drainage care.¹ Researchers identified only 3 studies on tube manipulation to prevent cardiac tamponade with 471 participants that were of sufficient quality to analyze. There were no common outcomes or interventions and thus, researchers make no recommendations. They do not consider research on pressures associated with chest tube stripping or other factors we commonly include in a more global assessment of evidence-based care – they only look at clinical trials.

Another problem exists with applying evidence rating scales to surgery; poor quality RCTs are more influential than high quality nonrandomized or nonexperimental studies.² Surgeon skill and experience with a given procedure affect outcomes – a variable not present when comparing, for example, one medication to another.

Thus, while Cochrane Reviews are considered to be at the top of the evidence pyramid, they cannot be the only support in areas in which RCTs are not done or quality is poor. That’s where clinical practice guidelines come in. Experts synthesize all of the research in context and make recommendations for practice.

Research vs. Real World

Four studies have examined whether actual thoracic surgery practice reflects research. The first, a survey of indications, insertion techniques, postprocedure care, indications for removal and removal techniques, discovered important variations in every aspect of care.³ Of note, surgeons were more likely to order suction

than medical or emergency physicians and those suction levels were higher. Surgeons were less likely to require a chest x-ray to determine if the tube could be removed.

The next study surveyed hospital and emergency physicians to assess whether reported care matched British Thoracic Society Guidelines for treating spontaneous pneumothorax.⁴ Actual care correlated poorly with guidelines; it was not known if physicians were not aware of the guidelines or simply decided not to follow them.

A third study reviewed the practice of one surgeon who performed 50 different procedures in one year.² Seven procedures were supported by evidence from RCTs (3 for cancer), 32 were supported by nonexperimental evidence, and 11 had no supportive evidence or RCT favored alternative treatment (7 cancer-related).

The most recent study surveyed surgeons and nurses about tube management.⁵ Regarding stripping after cardiac surgery, 74% of surgeons “allowed it,” 23% “discouraged it,” and 4% “forbid it.” Yet, 72% of nurses said they were not permitted to strip chest tubes. This disconnect is familiar to most nurses and highlights the challenges in developing evidence-based practices for nursing care of surgical patients.

Resources Coming Soon

In the coming year, we are planning to add an evidence center to the Atrium University Web site. By summarizing research and developing evidence tables, we hope to make it easier for you to develop evidence-based practice guidelines for chest drainage patients and to open the discussion with your surgeon colleagues. In the meantime, feel free to use the Ask the Expert feature at [AtriumU.com](#) if you have a specific question about caring for your patients.

Sources

1. Wallen M, Morrison AL, Gillies D, O’Riordan E, Bridge C, Stoddart F. Mediastinal chest drain clearance for cardiac surgery. *Cochrane Database Syst Rev*. 2009(2):CD003042. [PubMed Citation](#)
2. Lee JS, Urschel DM, Urschel JD. Is general thoracic surgical practice evidence based? *Annals of Thoracic Surgery*. 2000;70:429-431. [PubMed Citation](#)
3. Tang A, Hooper T, Hasan R. A regional survey of chest drains: evidence-based practice? *Postgraduate Medical Journal*. 1999;75:471-474. [PubMed Citation](#)
4. Yeoh J, Ansari S, Campbell I. Management of spontaneous pneumothorax -- a Welsh survey. *Postgraduate Medical Journal*. 2000;76:496-500. [PubMed Citation](#)
5. Shalli S, Saeed D, Fukamachi K, et al. Chest tube selection in cardiac and thoracic surgery: a survey of chest tube-related complications and their management. *Journal of Cardiac Surgery*. 2009;24:503-509. [PubMed Citation](#)

In The Literature

How Nurses Redesign Healthcare

Blueprints, recommendations, requirements, standards, criteria...they're enough to make your head spin. National organizations such as the Institute of Medicine – which published the well-known initial report on errors in 2000 and earlier this year, *The Future of Nursing: Leading Change, Advancing Health* – and the Robert Wood Johnson Foundation, which funded *Transforming Care at the Bedside*, provide a variety of instructions and resources nurse leaders are challenged to integrate into high quality care. Fortunately, a feature article in the current issue of *Nursing Management* reviews key reports plus the American Recovery and Reinvestment Act, and the Patient Protection and Affordable Care Act and discusses how these all affect patient care moving forward and nursing practice across the continuum of care. It is an excellent analysis of how nurses can be change agents and see that nursing care is prioritized in any organizational redesign.

Source: Cadmus E: Your role in redesigning healthcare. *Nursing Management* 2011;42(10):32-42. [PubMed Citation](#)

Accomplishments and Priorities for Infection Prevention

The current issue of the *American Journal of Infection Control* provides a thoughtful piece in honor of International Infection Control Week that examines the state of the art from international, national, state and organization perspectives. Internationally, the concern is a basic lack of resources and progress made, starting with handwashing. Nationally, the focus has changed from infection “control” to “prevention” with the U.S. Department of Health and Human Services' *National Action Plan to Prevent Healthcare Associated Infections*; the five-year targets are set to be evaluated in 2014. Locally, the shift has been from one person or department being responsible for preventing infection to an organization-wide responsibility in which each person plays an important role. This article will help you see where you fit in and how you can contribute fully to preventing infections.

Source: Rassian O, Ellingson K, Stricof RL, Grant PS: Infection control: accomplishments and priorities from an individual, state, national and international perspective. *AJIC* 2011;39:624-627. [PubMed Citation](#)

A New Weaning Score

Researchers from Quebec have published their preliminary evaluation of a new score to evaluate patients who are likely to have success with or fail a spontaneous breathing trial. The new score is called the CORE index for compliance, oxygenation, respiration, and effort. It was compared with the CROP index (compliance, rate, oxygenation, pressure), the rapid shallow breathing index, and airway occlusion pressure measures. In a trial of 47 patients, the CORE index was the most effective tool. The greatest challenges for these tools is low specificity, which creates false-positive results, meaning patients' score may indicate readiness, when the patient is not actually ready for spontaneous breathing. The CORE index had 6 times more predictive power than the other tests in patients who tolerated spontaneous breathing. This article is also an excellent review of statistical analysis, with sensitivity, specificity, positive and negative predictive values, area under the curve and likelihood ratio all measured.

Source: Delisle S, Francoeur M, Albert M, et al.: Preliminary evaluation of a new index to predict the outcome of a spontaneous breathing trial. *Respiratory Care* 2011;56(10):1500-1505



Academic Center for Evidence Based Practice

This program was established as a Center for Excellence at the University of Texas Health Science Center in San Antonio in 2000. The Center holds an annual summer institute on EBP and poster summaries are available on the site. They have also created a five-point model for evidence-based practice with correlated competencies. The site provides a wealth of resources.

<http://www.acestar.uthscsa.edu/>

Centre for Evidence Based Medicine

This amazing site is primarily designed for physicians, but the resources apply to anyone providing care or teaching about using evidence in practice. Not only does this Centre provide one of the most comprehensive levels of evidence guide available, but it also provides detailed slides from all of the conferences that help you feel as if you were there. The levels of evidence guide, updated this year, combines evaluating strength of evidence with clinical questions, providing a unique map that helps clinicians quickly answer clinical questions.

<http://www.cebm.net>

McGill Evidence-Based Nursing

This site, from the McGill University Health Centre Department of Nursing, provides a great jumping off point to online EBN guides and tools. From question formulation to literature searching and critical appraisal, that's just the start of this comprehensive gateway.

<http://muhc-ebn.mcgill.ca/>

Incentive Spirometry Guidelines

Also in the current issue of *Respiratory Care* are updated guidelines for incentive spirometry. Of note, incentive spirometry alone is insufficient to prevent postoperative pulmonary complications and routine use after coronary artery bypass surgery is not recommended.

Source: Restrepo RD, Wettstein R, Wittnebel L, Tracy M: Incentive spirometry 2011. *Respiratory Care* 2011;56(10):1600-1604.