March 2002

Clinical Update

Atrium Medical Corporation 5 Wentworth Drive, Hudson, New Hampshire 03051 Phone (603)880-1433 Fax (603)880-6718 www.atriummed.com

New Innovations in Chest Drainage — A Mobile Chest Drain

In 1967, the first disposable, one-piece, hard plastic chest drain was introduced. This design has been modified and features have been added through the years, but it wasn't until late 2001 that a brand-new concept in chest drainage was introduced—the mobile drain.

Express™ 1500 Chest Drain Bag

The Atrium Express 1500 Chest Drain Bag is designed to allow for both air evacuation and fluid drainage in patients with chest tubes. It consists of a soft, disposable, latex-free, plastic bag that can hold up to 1500cc of drainage; a strap that can be put over the shoulder or around the waist to hold the bag in a gravity-dependent position; and an air vent that allows air to escape from the drainage system. The device also has an anti-reflux valve to prevent drainage or air from re-entering the chest. The device's tubing attaches to a conventional chest tube with a standard connector.

Indications for Mobile Chest Drainage

Fast-track programs have become popular in both cardiac surgery and general thoracic (pulmonary) surgery. Two major factors contribute to these fast-track approaches: advances in surgical techniques and changes in how hospitals are reimbursed for the care provided.

Advances in Surgical Techniques

A key advance is less invasive chest surgery. Video-assisted thoracoscopic surgery allows the surgeon to view the surgical field on a video monitor by using a fiberoptic thoracoscope. The surgeon makes small incisions in the chest wall through which the scope and instruments are inserted. This approach has been used for small lung resections, lung biopsies and coronary artery bypass grafting.

Since the incisions are smaller and less tissue is disrupted with this approach compared with a traditional thoracotomy incision or median sternotomy, patients should be able to get up and walk around soon after surgery. The Express 1500 Chest Drain Bag can be used to step-down a patient from a traditional chest drain to a portable device that will allow the patient to get up and walk around any time without nursing assistance.

Patients have commented that after they were stepped down to the Express 1500, there was much less pulling on the tube, and less chest tube discomfort. Nurses are well aware of the complications of immobility and how early ambulation helps speed patients' recovery. Now that patients can be switched to a portable chest drain that simply attaches to the same chest tube as soon as suction is no longer needed, ambulation can be even easier.

Reimbursement for Care

Once upon a time, all hospitals were paid on a fee-for-service basis. The hospital could simply bill for all the supplies, equipment, and services provided to the patient, and the hospital was paid. Today, most hospitals are reimbursed by prospective payment. That means the payer establishes a fixed sum of money for a given diagnosis. If the hospital is efficient and spends less money caring for the patient than it receives, the hospital makes a profit. If the hospital is inefficient and it costs more money to care for patients than the hospital receives in payment, the hospital loses money.

Since it costs about $1000 per day to keep a patient in the hospital, it is easy to see why so many hospitals target length-of-stay (LOS) as a significant way to reduce costs. Nursing research has shown that CABG patients who had the shortest ICU LOS began walking sooner than other patients. Stepping patients down from a traditional chest drain to an Express 1500 postoperatively can allow them to get up and walk around on their own much easier than if they remain attached to a traditional chest drain. No longer is the surgeon faced with the dilemma of removing the chest tube early; the tube can stay in, and the patient can still have full mobility.

Using the Express 1500 Chest Drain Bag

The Express 1500 is easy to use. To set it up, simply prime the anti-reflux valve by injecting about 20ml of sterile water, using the pre-packaged water provided with the device. Once the anti-reflux valve is primed, the Express 1500 can replace the traditional chest drain at the patient connector.

Take these nursing actions while the Express 1500 is in use:

- Check the connection between the chest tube and the device; you may tape it for added security.
- Assess fluid drainage. Monitor the rate and characteristics of the drainage: color, consistency and viscosity.
- Check to see that the patient is not uncomfortable with the weight of the bag hanging from the shoulder strap or around the waist. Replace the bag with a new one, or drain the fluid if the bag becomes too heavy.
- Keep the bag in an upright, gravity-dependent position.

To learn more about the Express 1500 Chest Drain Bag and see it in person, contact your local Atrium representative or call 1-800-5-ATRIUM (528-7486).

Check Your Knowledge...

Q. Should chest tubes be stripped routinely to clear clots and assure tube patency?

Answer on other side

Clinical Update is an educational newsletter provided by Atrium Medical Corporation and is edited by Patricia Carroll, RN,C, CEN, RRT, MS.

In The Literature

Using Non-Credentialed Personnel Appropriately

Most nurses have seen an increase in the use of assistive personnel in the nursing department. While many authors use the term "unlicensed assistive personnel," I prefer to use the term "non-credentialed assistive personnel" (NCAP) because we have colleagues who have a professional degree and a national credential, but may not have a state license. That said, a recent article by Valerie Kido in *Nursing Management* provides guidance on how to use assistive personnel properly and strive for high quality patient care. The key to proper use of NCAP is understanding that the registered nurse has the responsibility and accountability to delegate or not to delegate patient care activities. The nurse cannot delegate simply according to task; rather, the delegation must be individualized to the patient. Let's say, for example, two men share a room. Both require feeding. Patient one needs to be fed because he burned his hands in an accident and is unable to use his hands to feed himself. Patient two needs to be fed because he had a stroke and has hemiparesis. Are these feedings equivalent? RNs should not delegate "all feedings," but should individualize the delegation based on the complexity of the task, the potential for harm, the abilities of the worker, and the necessary problem-solving skills. This article provides a quick overview of the key aspects of using assistive personnel appropriately.

Source: Kido V: The UAP dilemma. *Nursing Management* 2001;32(11):27-29.

Ethical Issues and the Nursing Shortage

This article, written by Dr. Judith Erlen, a nurse who is also acting co-director of research at the Center for Bioethics and Health Law at the University of Pittsburgh, examines ethical issues many nurses are struggling with during the current nursing shortage. She notes that nurses are trying to reconcile how to fulfill their duties as patient advocates and to warn patients about conditions that may be detrimental to their well-being.

Dr. Erlen focuses on two aspects of nursing that present pressing ethical issues for practicing nurses: a lack of control over their practice and the potential of harming patients. The lack of control stems from an administrative shift resulting in a structure in which decisions that were once nursing decisions about self-determination are now made for us — without our input in many cases. In addition, nurses are not being treated with respect as the professionals we are. The potential for harm comes from unreasonable nurse:patient ratios, inappropriate use of assistive personnel, and the feeling that the nurse just can't keep up and may miss a key patient assessment due to overwork.

After identifying the problems, Dr. Erlen provides a number of strategies nurses may wish to try to help resolve ethical issues presented by the current nursing shortage. This thought-provoking article is worth a look to understand the ethical dilemmas that nurses at the bedside may not even be able to articulate, but that result in a constant level of stress in nursing practice today.

Source: Erlen JA: The nursing shortage, patient care and ethics. *Orthopaedic Nursing* 2001;20(6):61-65.

References: New Innovations In Chest Drainage - A Mobile Chest Drain

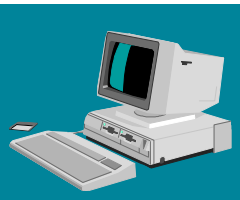
Anderson B, Higgins L, Rozmus C: Critical pathways: application to selected patient outcomes following coronary artery bypass graft. *Applied Nursing Research* 1999;12(4):168-174.

Cerfolio RJ, Pickens A, et al. Fast-tracking pulmonary resections. *Journal of Thoracic and Cardiovascular Surgery* 2001;122(2):318-324.

Schwago T: Thoracoscopic surgery: a new approach to pulmonary disease. *Critical Care Nurse* 1996;16(2):76-82.

US Census Bureau, Statistical Abstract of the United States: 2000. (120th edition) Washington, DC. Table 195. Average Cost to Community Hospitals Per Patient.

On the World Wide Web...



A tip of the hat to a new nursing recruitment Web site, **http://www.discovernursing.com**. Many of us were astonished to see advertisements for this site during the opening ceremonies of the Winter Olympics — most of us can't remember when a positive message about nursing got such high profile exposure. The site is well-designed, easily navigated, and effectively communicates that a nursing career can be as varied as the people who are nurses.

The eMedicine site is handy when you want quick access to a reliable review of an emergency medicine topic. I have used it as a resource for many projects, and for my clinical practice. The entries are fully searchable and are regularly reviewed for accuracy. In addition, the eMedicine folks have made a number of downloads available for PDA.
Visit them at **http://www.emedicine.com**

Are you looking for that acetaminophen toxicity nomogram? Need that body mass index calculator? Need to compute an APACHE II score? Then the National Center for Emergency Medicine Informatics Web site is for you. This site is chock-full of useful tips, formulas, calculators, and a wealth of links to the medical literature and e- textbooks. And if you have a PDA, downloads are available for you, too. Visit them at **http://www.ncemi.org**

Check Your Knowledge...

A. Chest tube stripping should not be performed routinely. Nursing research has demonstrated that stripping can generate intrapleural pressures as high as -400cmH_2O (the amount of vacuum typically set on the drain is -20cmH_2O). In addition, nursing research that compared stripping to straight gravity drainage found no advantage to chest tube stripping.

References: Chest Tube Stripping

Duncan C, Erickson R: Pressures associated with chest tube stripping. *Heart & Lung* 1992;11(2):166-171.

Duncan CR, RS Erickson, RM Weigel: Effect of chest tube management on drainage after cardiac surgery. *Heart & Lung* 1987;16(1):1-9.

Gordon P, Norton JM: Managing chest tubes: what is based on research and what is not? *Dimensions of Critical Care Nursing* 1995;14(1):14-16.

Gordon P, Norton JM, Merrel R: Refining chest tube management: analysis of the state of practice. *Dimensions of Critical Care Nursing* 1995;14(1):6- 13.

Gross, SB: Current challenges, concepts and controversies in chest tube management. *AACN Clinical Issues in Critical Care* 1993;4(2):260-275.

Isaacson JJ, LT George, MJ Brewer: The effect of chest tube manipulation on mediastinal drainage. *Heart & Lung* 1986;15(6):601-605.

Lim-Levy F, SA Babler, J DeGroot-Kosolcharoen et al: Is milking and stripping chest tubes really necessary? *Annals of Thoracic Surgery* 1986;42(1):77-80.

Oakes LL, Hinds P, Rao B et al: Chest tube stripping in pediatric oncology patients: an experimental study. *American Journal of Critical Care* 1993;2(4):293-301.

Pierce JD, Naftel DC: Effects of two chest tube clearance protocols on drainage in patients after myocardial revascularization surgery. *Heart & Lung* 1991;20(2):125-130.

Teplitz L: Update: Are milking and stripping chest tubes really necessary? *Focus on Critical Care* 1991;18(6):506-511.