Chest Drainage
Competency Manual

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This manual is designed to assist you as you plan your competency assessment program for nurses caring for patients requiring chest drainage. No guarantees are made that the information contained within is the only information required for accreditation purposes, or that this information will meet all accreditation requirements. You may copy checklists from this manual only for the purposes of using them in practice in your institution with Atrium products. No representation is made for the applicability of the checklists for other manufacturers' chest drains. The manual is

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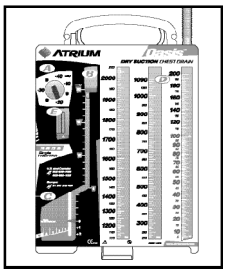

Our goal with this manual is to help you develop methods for assessing the competence of your nursing staff to care for patients with chest tubes who require chest drainage.

Ever since JCAHO developed the competency standard, nurse managers, educators and clinical specialists have felt the burden of assessing staff competence. Through this manual, we'll give you some perspectives from the literature and provide a variety of approaches to assessing competence so that you can choose strategies that fit best in your practice situation and your organization.

We have included an extensive list of references on both competency assessment and chest drainage so you can review the literature as you wish. Some of these articles are available from your Atrium representative; don't hesitate to ask him or her for assistance.

While checklists aren't the complete answer to the competency assessment dilemma, we have included psychomotor checklists for each Atrium drain as well as for implementing autotransfusion. Feel free to photocopy these checklists and use them in your orientation program, critical care course or assessment of new hires.

Competency assessment includes evaluating the nurse's ability to perform at the bedside in the clinical setting; it is difficult to help you do that with a manual. However, for simulation purposes, we include sample case study situations that will allow you to assess clinical decision-making skills before the nurses go to the bedside to apply their learning. You may use these as an individual written exam, or you can use them to lead a group discussion to ask nurses how they would handle specific situations. Since nurses won't be practicing all alone and will have colleagues to call on, a group discussion is a closer simulation of a true bedside experience.

We appreciate your feedback. Please don't hesitate to let us know how we can improve this manual or develop other tools about chest drainage to make your job easier. Just call Atrium Medical Corporation at (800)528-7486. Or visit us on the web at www.atriummed.com.

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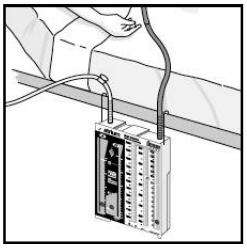


Part One: As Simple as A-B-C

Atrium
Basic
Competencies

Our goal is to help you develop methods for assessing the competence of your nursing staff to care for patients with chest tubes who require chest drainage.

When the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) made assessing workers' competence to do their jobs a requirement of accreditation, nurse managers and educators across the country felt the new requirement's weight. Each institution seemed to have its own interpretation of "competent practice", and its own approach to evaluating whether nurses are competent to provide care. In many organizations, "assessing competency" led to a panicky sea of paper predominated by checklists. Many managers and educators believed that if an organization could "check off" its employees, it had met the JCAHO standards.

Before we analyze whether or not that's an ideal approach, we first need to look at what organizations can do, and what competence and competent practice really mean.

What Can Organizations Do?

An institution's response to JCAHO requirements is like a Rorschach test: The approach chosen typically reflects the organization's dominant vision and philosophy. Organizations can choose one of two paths — either create task-oriented checklists *or* examine how hiring, developing and maintaining competent staff can be woven like a thread through the entire organization.

Organizations in the latter group seize the opportunity to become competent organizations in which the notion of competence drives:

- the way people are hired, evaluated and promoted;
- the way a quality assurance or continuous quality improvement program is designed; and
- how the organization as a whole responds to the needs of the customers in the community it serves.

However, as Ann Kobs of the JCAHO noted, "It is a rare organization that focuses beyond the psychomotor" (Kobs, 1997a) — and that means checklists.

If you're in a checklist-driven organization right now, we're not suggesting you're necessarily doing anything wrong. Congratulations on the work you did to develop the checklists and get through your JCAHO surveys! Now that you have a basic framework in place, you can explore other options available to shift to a philosophy that helps establish a competent organization and makes competency assessment an *ongoing* process instead of a once-a-year event. This change can make the requirement of assessing your staff's competency much, much easier than the labor-intensive work and bedside staff time required to complete annual checklists.

What is Competent Practice?

Perhaps no term other than "critical thinking" has been used and abused the way the terms *competence* and *competency* have been. It seems that almost every author who writes about the topic has a slightly different take on the concept. While the Joint Commission requires that all staff in the organization are competent (Kobs, 1997a), it provides little concrete guidance about what competence is and how to measure it. That determination is left to the organization; as long as a plan and rationale are in place (see Box 1), organizations today have many options.

Box 1. JCAHO Standard LD 3.70

The leaders define the required qualifications and competence of those staff who provide care, treatment, and services, and recommend a sufficient number of qualified and competent staff to provide care, treatment, and services.

First, it is important to develop a consensus in your organization about what competence and competency really mean. Without being too esoteric, we will use the terms interchangeably to mean possessing the requisite knowledge, skills, self-awareness of one's own limitations and capabilities, and attitudes to perform in a given setting — *and performing successfully*. While some authors make a clear distinction between the ability and the performance (Alspach, 1992; Gurvis & Grey, 1995; Hadaway, 1997), for this discussion we will not because, in clinical practice, performance is the critical element.

A key concept is that competence requires integration of psychomotor, cognitive and affective attributes (Alspach, 1992; Kobs, 1997a), including clinical applications and problem-solving skills (Stahl & Richards, 2002). Based on this concept of competence, a simple skills-based checklist or multiple choice test is not adequate to assess staff competence. In other words, it is not enough to be able to demonstrate a knowledge base; the staff member must be able to *apply* that knowledge in the clinical setting. Think about the Advanced Cardiac Life Support curriculum. A written exam is not sufficient for successful completion of the course; participants need to apply their knowledge in a clinical simulation mega-code situation to demonstrate the ability to act on their knowledge in the clinical setting (performance).

Another critical concept about competent practice is that competence is setting-specific. An experienced critical care nurse who has cared for hundreds of patients requiring mechanical ventilation, for example, may be highly competent in their care. However, that same nurse is *not automatically competent* to care for a patient receiving mechanical ventilation at home where the environment, equipment, and interpersonal interactions are very different from those in the hospital (Blevins, 2001). While this nurse may have the "book knowledge," that knowledge base may or may not be transferrable to a new practice setting. Remember, competence is not just knowing the right thing to do -- it is successfully performing in a particular practice setting.

Aren't Competency and Knowledge the Same Thing?

Those of us with more years of experience than we might care to admit have worked with nurses who were "book smart" but who couldn't apply that knowledge to bedside care. Those nurses may be knowledgeable, but they aren't necessarily competent. Conversely, a nurse may not have specific knowledge, but may still be competent.

Here's an example. A medical-surgical nurse may not often take care of patients with chest tubes. But the nurse has had successful past experience with chest drains and can perform an appropriate assessment of a patient's respiratory status and identify assessment findings outside the normal range. He or she may not be able to set up a drain quickly or instantly describe how to interpret bubbling in the water seal chamber. The nurse may lack that technical knowledge. But the nurse is competent if he or she knows how to fill that knowledge gap at the time the patient needs care.

If the nurse can quickly identify resources that will help him or her care for the patient safely — such as wall charts, training aids, or a policy and procedure manual — or if the nurse knows whom to call for help, such as a clinical nurse specialist, educator, designated colleague, or Atrium's on-call clinical specialist, then that nurse may be considered competent by an institution's competency standards. This is one reason Atrium lists its 24-hour, toll-free clinical support telephone number on the front of each drain. Atrium wants nurses who are unsure about caring for patients with a chest drain to call. An expert can then provide support and answer questions so that nurses can provide competent bedside care of patients with chest tubes who require chest drainage.

It's unrealistic to expect all nurses to be up-to-date on every clinical situation, especially those that may come up only a couple of times each year. A skills fair during which nurses can practice with equipment is one approach because the hands-on experience enhances psychomotor skills. However, if nurses do not regularly use equipment, they won't remember what to do with it (Adams, et al., 2002).

In many practice settings, it is more practical to teach nurses how to fill a knowledge gap with readily available resources and whom to consult or call, which can be considered competent practice. Why? It shows problem-solving skills that allow the nurse to function effectively and safely at the bedside. Because the definition of competence can vary so much, it is essential for the institution to define competent practice for the care of patients with chest tubes, evaluate nurses' competency and be able to justify or back up those decisions during a site visit. With JCAHO's implementation of patient safety goals in 2004 (JCAHO, 2004), it is even more important to establish a system that can answer nurses' questions and provide ready access to instruction and experts when a low-frequency, high-risk situation arises.

If Not Checklists, Then What?

The first step is to define competent practice. When caring for patients requiring chest drainage, for example, there may be different statements of competency for patients with mediastinal tubes compared with patients having pleural tubes. Don't forget to include age-specific competency statements for those nurses who regularly care for patients of various ages, such as in the ER, OR, or PACU. Since the competencies are institution-specific and will be based on institutional philosophies and models of practice, we will not provide a list here. However, in part 2 we provide examples of ways to combine competence assessment with practice models.

To establish your standards for competent practice, consider these steps:

- **Set Up the Team**

First, assemble a team representing a variety of stake holders. Resist the urge to include only nurse managers, clinical nurse specialists, educators and APRNs. Be sure also to include nurses who perform the job daily at the bedside. They will provide a reality check that will validate your competency statements.

- **Establish Criteria**

The team should work together to formulate competency statements. These are generally broad statements, such as "The nurse provides safe and skilled care to the patient with mediastinal chest tubes." Then, the nurses on the team who care for those patients on a daily basis can help fill out what constitutes "safe and skilled care." Box 2 provides sample statements for competency documents relating to patient assessment.

Box 2. Key Aspects of Competency Statements for Patient Assessment

- Collects assessment data
- Includes information from family and other relevant sources
- Distinguishes between normal and abnormal assessment findings
- Analyzes patient assessment data to direct nursing interventions
- Documents to facilitate communication among members of the healthcare team

(Adapted from Alspach, 1992)

Some institutions have decided to rewrite their policy and procedure manuals to include competency statements that reinforce the concept of competent practice throughout the institution. Others have actually incorporated competency statements into their job descriptions and employee evaluation forms. Sharon LaDuke, of Hepburn Medical Center in Ogdensburg, NY, created a hospital-wide competency assessment system that was reflected in a single document: the nurse's job description. This description is the basis for determining if the nurse demonstrates competent practice and for generating regular performance appraisals. This approach also makes the organization's expectations clear to the bedside nurse at the time of job interviews, so the nurse can carefully consider if the expectations of the practice setting are a good fit with his or her abilities.

Note that these key aspects do not focus on what the nurse needs to *know*, nor on what the nurse needs to *do*. Rather, this is a more holistic approach that integrates the knowledge, skills and attitudes necessary to perform effectively.

How Can We Develop a Different Approach?

According to the literature, putting together a comprehensive competency assessment program requires a timeframe of at least 14 to 19 months.

Baziet, Erickson & Thomas (1989) offer these helpful tips:

- Base performance criteria on the organization's policies and procedures — simply by referencing them. This way, competency statements will not require changes when policies and procedures are updated.
- Do not spell out each step of a procedure or process in the competency statements; this will keep the tool more concise.
- Focus on what people should be able to *do* (performance) in relation to patient outcomes, not what they *know*.
- Use clinical evaluation as the ultimate criterion of performance, not checklists or tests.
- Emphasize evaluation of integrated cognitive, affective and psychomotor skills *in the clinical practice setting*.

Can This Be Easy? You Decide.

It may be a challenge for staff members to make the conceptual leap from traditional means of evaluation based on knowledge (tests) and skills (psychomotor performance) in a simulated setting alone to continuous competency evaluation of bedside practice. It is important to get the message across that competent performance is expected every day of the year — not just once at a hospital-wide competency fair.

If you have relied on checklists, your head may be spinning by now, wondering how you can make this paradigm shift. First, understand from Ann Kobs of JCAHO (1997a), "There is no requirement for checklists, nor has there ever been." She goes on to note that surveyors report seeing an overabundance of paperwork during site visits.

So, what options do you have besides re-writing existing documents? How do you know if nurses really know what they're doing when it comes to chest drainage? There are many options (see Box 3). You're probably already doing some (if not all) of these activities but simply not documenting them as competency assessments.

Box 3. Methods of Assessing Competence

- Observation of workers in their daily work environment
- Clinical simulations
- Concurrent review of patient management through chart reviews
- Patient rounds that discuss the clinical decision-making process by nurses for patients in their care
- Quality improvement data
- Regular employment appraisals

(Kobs, 1997a; Gurvis & Grey, 1995)

Assessing competence can be as simple as reviewing incident reports and working with the risk management team to identify deficiencies. If there are no incident reports, risk management incidents, or sentinel events regarding chest drainage in a reporting period, then you have evidence that nurses are competent in the care of patients with chest tubes.

A similar review can be made of patient charts, to check documentation of the care of patients with chest tubes. If one doesn't already exist, you can set up a quality improvement indicator for chest drainage that is regularly monitored. You may wish to modify your bedside documentation forms to include assessments specific to chest drainage, such as monitoring the level of water in the water seal chamber, whether bubbling or tidalling is visible, and the suction level set on the drain.

If quality assurance audits are positive, patient outcomes are good, and there are no reports of deficiencies, then nurses are competent. The key is that this is an *ongoing, regular assessment* so that deficiencies can be spotted and addressed promptly in a nonpunitive manner.

Competency assessment does not have to be a time-consuming sea of paperwork for your organization. It does not mean completing stacks of checklists every year for each nurse. Instead, every nurse has to work in an environment in which expectations for competent practice are clear and regularly evaluated.

Assessing competence means that your organization has established a system to determine if any problems exist when nurses care for patients requiring chest drainage. If you establish a plan (such as using CQI data integrated with competency statements) and regularly monitor the criteria you've established, you will have met JCAHO requirements. Nurse managers, educators and CNSs do not have to invent new paperwork; they don't need to find new ways to evaluate whether nurses have the requisite knowledge, skills, and attitudes and can apply those qualities at the bedside to care successfully for patients with chest drains. Use data you're already collecting — what could be simpler?

How far do you take competency in your organization? That's up to you.

Part Two: More Building Blocks….D,E,F

Designing
Effective Evaluation
Feedback

In recent years, the nursing literature has featured a number of creative approaches to competency assessment. You might think of it as "assessing competence in the new millennium" since these articles have been published since 2000. These approaches integrate nursing competency with a model of nursing practice so that the competence assessment is an ongoing part of everyday care.

Benner's Novice to Expert

Patricia Benner changed the way we look at the professional development continuum of registered nurses when she published *From Novice to Expert* (Benner, 1984). In this book, Benner describes her research applying the Dreyfus Model of Skill Acquisition to nursing practice. Through comprehensive interviews of nurses at various levels of experience, she identified five levels of practice.

One key concept from her research is that it is not the nurse's schooling or degree that establishes his or her level of practice - it is the amount of experience the nurse has. The more patients a nurse works with, the more the nurse is able to discern patterns associated with certain conditions, and the more holistic the nurse's practice becomes.

Another critical aspect of Benner's levels of practice is that they are setting-specific; that is, an expert neonatal nurse would not necessarily be an expert in coronary care. Keep this in mind for chest drainage when nurses move among similar units, but with different patient populations.

For example, if a medical unit becomes a medical-surgical unit, the nurse with expert assessment skills will be able to transfer those skills to a new patient population. However, that otherwise expert nurse may not have much experience with chest drainage on a medical unit. Similarly, a coronary care nurse who is expert at dysrhythmia analysis may not be at the same level working with critically ill trauma patients requiring chest drainage.

Many organizations have adopted Benner's model as a theoretical framework for clinical ladders and critical care orientation programs. Table 1 shows how this model can be applied to care of patients requiring chest drainage; you can modify this as needed for your particular practice setting.

Table 1: Application of Benner's Novice to Expert Model

	Novice	Advanced Beginner	Competent	Proficient	Expert
Benner's Element	• No experience • Focus on objective only • Tasks and lists	• Some experience • Rules & guidelines • No priorities or discrimination	• Sees actions in terms of long-range goals • Copes with & manages multiple needs	• Perceives situations as a whole • Knows what to expect • Decision-making less labored	• No longer relies on analytic skills • Extensive background & experience • Intuitive grasp of whole situation • Can predict events
Respiratory Assessment (adapted from McGregor, 1990)	Explain correct technique for auscultation	Demonstrate correct technique for auscultation	Differentiate between normal & abnormal findings	Interpret findings and suggest interventions	Anticipate complications & interventions based on assessment findings
Chest Drainage	Identify components of a chest drain system	Confirm correct setup and proper functioning of a chest drain system	Differentiate between normal and abnormal findings when examining a chest drain system	Correlate findings of assessment of chest drainage system to underlying pathophysiology	Predict interventions that may be necessary for a given patient if chest drain assessment findings change

Common Elements of Competent Practice

Finnish nurse researchers (Meeretoja, Eriksson & Leino-Kilpi, 2002) wanted to establish indicators for competent practice that were universal for nursing care in any setting in their 1000-bed medical center. They based their analysis on Benner's later work with colleagues (1996).

An initial survey of 122 nurses (a majority of whom were staff nurses) identified 173 indicators of competent practice. These were reviewed, categorized, and then distributed to 25 groups of experts to identify those indicators that received a level of agreement across specialties. In rank order, these indicators are shown in Table 2.

This research is interesting for a number of reasons. Notice how these indicators have little to do with policy or procedures and much to do with holistic management of situations and nursing professionalism. Compare how these indicators were ranked by nurses in a large teaching hospital in Finland to how you would rank them based on your organizational culture.

To introduce a more holistic and less task-oriented view of competent practice, you may ask nurses in your organization to rank these items in order of importance. You can replicate that aspect of this study and then examine the cultural differences evident in the results.

These researchers ask colleagues to replicate their work and to examine the relationship between nursing care by nurses who possess these skills and continuously apply them to practice and the outcomes of patients cared for by these nurses.

Table 2: Application of Indicators of Competent Practice

Indicators of Competent Practice	Application Examples (Patients with Chest Drainage)
Acting accurately in life-threatening situations	Recognizing signs of hemorrhage, massive air leak or tension pneumothorax
Coordinating nursing team activities	
Anticipating significant changes in a patient's condition	Monitoring for bubbling and tidalling in the water seal chamber and the rate of drainage in the collection chamber
Promoting the patient's participation in and control of his or her own health/illness care	Teaching the patient about chest drainage
Providing an early warning signal	
Incorporating relevant research into practice	See articles on chest drainage, references
Providing continuity for student nurse mentoring	
Mentoring novices and advanced beginners	
Providing emotional and informational support to patients	
Guiding patients accurately and individually	
Capturing the individual demands for patient guiding	
Administering medications and IV therapy safely	
Incorporating the patient and the family into the nursing care planning	
Coaching other team members in rapidly changing situations	

The California Model

In 1993, a group called the California Strategic Planning Committee for Nursing (CSPCN) was formed to identify causes of the nursing shortage and to recommend a master plan for the state's nursing workforce needs (Keating et al., 2003a and 2003b). In one phase of the project, a task force examined the mismatch between the expectations of the workplace and nurses' educational preparation. The project developed competency statements for different nursing practice roles: LVN, RN care provider, RN care coordinator, and APRN. Each role's expectations addressed four key elements of nursing practice:

- Care provider
- Advocate
- Teacher
- Supervisor

Competency statements were developed for practice activities expected of nurses at different points on Benner's continuum (see Table 1): novice, competent, proficient, and expert. These are called the Competency-Based Role Differentiation Model (CBRDM). The task force worked with organizations whose job descriptions and performance evaluation tools included key differences among nursing roles: knowledge and skill required, levels of complexity of practice and responsibility for care, work effort and working conditions.

The task force invited hospitals to submit job descriptions and performance appraisals to the group for analysis to see if there was agreement between workplace expectations and the model developed. While a number of organizations assessed nursing performance according to Benner's levels of proficiency, only two documents provided criteria by which to evaluate the nurses. Thus, it was almost impossible to match the workplace expectations with the CSPCN's recommendations. The group's analysis of the documents provided identified common practice areas:

- Nursing process
- Safety
- Professional growth
- Patient / family teaching
- Leadership
- Management

Once the CBRDM was developed, it was tested in both schools of nursing and hospitals to seek congruency between education and practice. Behaviors identified for optimal nursing practice include:

- Exercising leadership in advocating for the patient
- Applying an ethical perspective in clinical decision-making
- Functioning effectively as a team member within the organizational structures to deliver patient care

Each of these elements has expectations for different experiential levels of practice from novice to expert, according to Benner's definitions. Nursing schools are now implementing this competency-based framework for curriculum development. This approach is groundbreaking because students will be able to transition from education to practice while being evaluated by the same criteria and with a clear understanding of expectations of the next phase of their practice.

This model also provides a framework for clinical ladder programs that will recognize the nurse's professional growth in the workplace.

NIC NOC: Who's There?

For the past twenty years, there has been an increased emphasis on standardizing language used to describe nursing practice. Standardizing language facilitates research. If nursing researchers agree on and use the same language, studies can be compared and replicated more easily because no one reading the study has to try to figure out what the researchers are describing.

In contemporary nursing practice, three standardized languages exist: the North American Nursing Diagnosis Association (NANDA), the Nursing Interventions Classification (NIC), and Nursing Outcomes Classification (NOC).

NIC is unique because it focuses on nursing behavior rather than the patient's condition or outcome. In this model, an intervention is "any treatment, based upon clinical judgment and knowledge, that a nurse performs to enhance patient/client outcomes" (Dochterman & Bulechek, 2004). Each nursing intervention has a label, a definition, and a set of activities (behaviors or

actions) nurses do to implement the intervention and help move a patient toward a desired outcome.

NOC describes nursing outcomes so that results of nursing interventions can be measured and evaluated. These research-based statements provide criteria that can be used to determine if a nursing intervention (including multidisciplinary care) is successful. Each outcome has a label, a definition, a list of indicators, and a Likert scale that allows nurses to evaluate patient status in relation to outcome achievement. Scales range from 1 to 5 where 1 is the least desired patient behavior, and 5 is the most desired behavior. Definitions of the Likert scale change depending on the nature of the outcome, with 10 different measurement scales defined in the third edition (Moorhead, Johnson & Maas, 2004). Examples include:

- Severely compromised to not compromised
- Severe deviation from normal range to no deviation from normal range
- None to extensive
- Never demonstrated to consistently demonstrated

In this classification system, scoring can be used daily (or less frequently, depending on the element being evaluated) to objectively evaluate the patient's progress toward outcome goals.

All three languages can be linked to standardize documenting, evaluating and analyzing nursing care. LaDuke (2002) points out that this language can be used to define a set of skills for job descriptions, as a basis for orientation, for performance appraisals, and to evaluate competent nursing practice. NIC allows nursing leaders to use standard terms to describe how we define nursing skills. This can help determine appropriate staffing levels and the most efficient staff mix, depending on the patient population and acuity based on the interventions required.

Because NIC clearly identifies an intervention, defines it, and provides the individual activities the nurse may need to perform to complete the intervention, it is, in itself, a competency assessment tool. LaDuke points out that the activities listed for each intervention constitute indicators of research-based performance criteria that can be used for valid, objective competence assessment.

NIC and NOC can be taken further. If, for example, you use the Benner model for nursing skills acquisition, you can form an expert committee to analyze the NIC activities and determine which are expectations for novice / advanced beginner practice, competent, proficient, and expert practice.

Table 3 shows how NIC and NOC can be used for patients who require pleural chest drainage (note that this example is not the only way these languages can be used and is not all-inclusive).

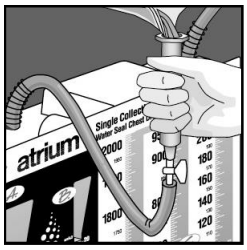
Table 2: Application of Indicators of Competent Practice

Risk for impaired breathing pattern related to compressed lung tissue and ventilation/perfusion mismatch, as evidenced by decreased SpO_2, tachycardia, tachypnea, shallow breathing, decreased breath sounds	
NIC 3350: Respiratory monitoring	Selected related activities: • Monitor rate, rhythm, depth and effort • Note chest movement, watching for symmetry, accessory muscle use and retractions • Palpate for equal lung expansion • Percuss thorax • Note tracheal location • Listen to breath sounds • Monitor for dyspnea • Assess for crepitus • Review chest x-ray results
NOC 0403: Respiratory status: ventilation	Outcome statement: Patient's respiratory status will be minimally compromised or not compromised
Indicators: Scored severely compromised to not compromised Respiratory rate, respiratory rhythm, symmetrical chest expansion, breath sounds scored severe to none Accessory muscle use, abnormal breath sounds, shortness of breath	

Whichever method you choose, we hope this review of available options provides you with a range of resources you can explore further to develop a plan that fits your patient population, organizational culture, and guiding philosophy of nursing care.

Psychomotor Checklists

In keeping with the philosophy that competence can be assessed in many ways, here are some tips for using the checklists that follow.



Rather than simply checking "Yes" or "No" on the checklist, as has been traditionally done in "competency fairs" or clinical laboratory "check-offs," you can instead use a code as to how competence was evaluated.

For example, under the "Yes" column of the checklist, you might want to consider using the following codes rather than a check mark:

T The item was met through testing

O The item was *observed* in actual clinical practice

C The item was evaluated by reviewing patient *charts* / documentation

Q The item was evaluated through *CQI / TQM* or risk management review

You can add other codes based on your institutional guidelines for evaluating nursing competence.

The checklists are designed to be photocopied with the checklist on the front and the explanations of each item on the back. On the form, NA means not applicable, NI means needs improvement. If an item is marked "needs improvement," a plan for improving competence should be documented.

Psychomotor Checklist: Atrium Ocean Water Seal Chest Drains

Psychomotor Skills

Prepare and collect needed equipment and supplies:

1. Atrium Ocean Water Seal Chest Drain
2. Hospital suction tubing to connect drain to vacuum source (if ordered)
3. Sterile fluid (500 ml)

	Yes	No	NA	NI
Open package and open sterile wrap[1]				
Swing out floor stand and set drain upright on floor stand[2]				
If present, slide the tube clamp to where the tubing enters the drain[3]				
Fill water seal chamber to 2cm fill line by using funnel[4]; remove funnel after use				
Fill suction chamber to desired suction level after removing vent plug[5]				
Replace vent plug over suction control chamber opening after filling[6]				
Connect chest drain to patient, maintaining sterility of tube connector[7]				
Connect chest drain to suction source, using hospital suction tubing[8]				
Check suction tubing stopcock to assure stopcock is in open position[9]				
Turn suction source on[10] AND				
Increase source suction for constant, gentle bubbling in chamber[11]				
If source suction cannot be adjusted, adjust bubbling with stopcock[12]				
Demonstrate 2 ways to maintain drain below patient's chest level[13]				
Observe water seal chamber for bubbling or tidalling[14]				
Observe level of water in water seal chamber[15]				
Demonstrate use of manual high negativity vent[16]				
Demonstrate adjusting water level in water seal & suction control with needle & syringe[17]				
Demonstrate assessment of fluid level in suction control chamber and how to add fluid if needed[18]				
Demonstrate use of drain for gravity drainage[19]				

Evaluator _____ Date _____

Psychomotor Checklist: Atrium Ocean Water Seal Chest Drains

[1] Double wrap allows drain to be handed into sterile field for setup in the OR. If sterile fluid path packaging is used, drain is *not* entered into sterile field. Instead, sterile patient tube pack is passed into the sterile field. The inside of drain is sterile; outside is not. In other clinical settings, remove the connector cap and, using sterile technique, attach the drain's connecting tubing to the chest tube.

[2] Floor stand maintains stability of unit during setup.

[3] Patient clamp should remain open at all times during use so tube is not inadvertently closed off.

[4] Fill water seal chamber to the indicated 2cm level. Pull attached funnel forward and down creating a loop where funnel enters tubing. Fill funnel to the top with sterile fluid. Lift funnel straight up, straighten tubing and fluid will flow into water seal chamber. Funnel automatically measures correct amount of fluid, 45ml.

[5] Typically filled to -20cmH_2O.

[6] Vent plug helps dampen sound of water bubbling.

[7] Tubing is sterile when package opened. Tubing can be maintained in sterile field if drain is set up in the OR. Or the cap can be removed from patient connector, and tubing can be passed to sterile field setup during bedside chest tube insertion (or changing chest drains), since connector remains sterile. Sterile connector slides into sterile chest tube.

[8] Suction source can be wall vacuum regulator or electric suction pump; suction tubing provided by hospital.

[9] Stopcock should remain open so there is no obstruction to air flow; however, the patient will not be harmed if the stopcock is inadvertently closed because of built-in safety features.

[10,11] As soon as bubbles appear, excess negativity is vented into the atmosphere. Vigorous bubbling is not required for standard use.

[12] If suction source cannot be adjusted, the stopcock can be gradually closed to limit vacuum flow into the chest drain and regulate bubbling if required.

[13] Gravity will assist drainage into chest drain. The swingout floor stand, hangers or carry handle will keep it in the best position.

[14] Bubbling indicates air leak is present; tidalling reflects pressure changes in the chest with breathing.

[15] If there is a condition of increased negative pressure in the chest, the water level in the small arm of the water seal will rise. The manual high negativity vent should be used to vent negative pressure from the system and return the water level to baseline. (If the water goes all the way to the top of the water seal, the drain will automatically vent and the water will return to baseline — in this case, there is no need to use the manual high negativity vent.)

[16] Nurses should know how to operate the manual high negativity vent and recognize situations in which it should be used. It is used only when drain is operating with source (typically wall) suction.

[17] Nurses should know how to add and remove sterile fluid from the water seal chamber & suction control chamber, using a needle (20 gauge or smaller) and syringe.

[18] Nurses should know to pinch off suction tubing momentarily to assess fluid level, and to momentarily stop source suction when adding fluid.

[19] When removing suction and preparing the patient for ambulation or transport, the two critical issues are to keep the stopcock on the suction tubing in the fully open position, and to keep the patient clamp on the patient side of the drain open.

Psychomotor Checklist: Atrium Oasis Dry Suction Chest Drains

Psychomotor Skills

Prepare and collect needed equipment and supplies:

1. Atrium Oasis Dry Suction Chest Drain
2. Hospital suction tubing to connect drain to vacuum source (if ordered)
3. Note: Sterile fluid is provided with drain

	Yes	No	NA	NI
Open package and open sterile wrap[1]				
Swing out floor stand and set drain upright on floor stand[2]				
If present, slide the tube clamp to where the tubing enters the drain[3]				
Remove ampoule of sterile water from the back of the drain, twist off the top, and add water to the water seal chamber through the suction port (located on the top of the drain, in front of the carry handle).[4]				
Fill water seal chamber to 2cm fill line[5]				
Connect chest drain to patient, maintaining sterility of tube connector[6]				
Connect chest drain to suction source by attaching hospital suction tubing to the suction port on top of the drain[7]				
Adjust suction regulator on drain to desired level by turning dial located on the side of the chest drain[8]				
Turn suction source on; increase source level to -80mmHg or higher[9]				
Check suction monitor bellows; state indicator of proper bellows expansion[10]				
If bellows is not at or past ▲ mark, increase source suction pressure*[11]				
Demonstrate lowering suction level: Turn down suction set on drain to lower level[12] AND				
Depress manual high negativity vent (both must be done)[13]				
Demonstrate three ways to maintain drain below patient's chest level at all times[14]				
Observe water seal chamber for bubbling or tidalling[15]				
Observe level of water in water seal chamber[16]				
Demonstrate adjusting water level in water seal with needle & syringe[17]				
Demonstrate use of drain for gravity drainage[18]				

* For suction pressures of -20cmH_2O or greater

Evaluator _____ Date _____

Psychomotor Checklist: Atrium Oasis Dry Suction Chest Drains

[1] Double wrap allows drain to be handed into sterile field for setup in the OR. If sterile fluid path packaging is used, drain is *not* entered into sterile field. Instead, sterile patient tube pack is passed into the sterile field. The inside of drain is sterile; outside is not. In other clinical settings, remove the connector cap and, using sterile technique, attach the patient line to the chest tube.

[2] Floor stand maintains stability of unit during setup.

[3] Patient clamp should remain open at all times during use so tube is not inadvertently closed off.

[4] Sterile saline or sterile water may be used, unless autotransfusion is planned; then use sterile saline.

[5] Fill water seal chamber to the 2cm fill line using the prepackaged sterile water provided with the drain. Prepackaged water speeds set up and eliminates the need for hospital stock sterile fluid for irrigation during drain setup.

[6] Tubing is sterile when package is opened. Tubing can be maintained in sterile field if drain is set up in the OR. Or the cap can be removed from patient connector, and tubing can be passed to sterile field setup during bedside chest tube insertion (or changing chest drains), since connector remains sterile. Sterile connector slides into sterile chest tube.

[7] Suction source can be regulated or unregulated wall vacuum or electric suction pump.

[8] Suction level is easily changed by adjusting the suction dial on the side of the chest drain. Dial down to lower the suction level and up to increase the suction pressure setting (preset at -20cmH_2O).

[9] Source suction must be set at -80mmHg or higher (more negative pressure) at a minimum of 20 liters per minute airflow in order for the dry suction unit to operate properly.

[10,11] For suction pressures greater than or equal to -20cmH_2O, the bellows in the suction monitor window must expand to the ▲ mark or beyond. If the bellows does not expand this far, source suction must be increased until the bellows reaches the proper point. If desired suction is less than -20cmH_2O, any visible expansion of the bellows into the window confirms suction operation.

[12,13] When suction levels are *decreased* on a dry suction chest drain, the manual high negativity vent must be depressed immediately after the adjustment is made to vent excess negativity in the system resulting from the original higher suction setting. If this is not done, the patient and system will be subjected to higher negativity than that indicated by the suction regulator. The water level in the water seal will rise to reflect this higher negativity and remind the nurse to depress the manual high negativity vent. (The vent is used only when the patient is connected to source suction.)

[14] Gravity will assist drainage into chest drain. The swing out floor stand, the multi-position hangers, and the easy-to-grip handle (when used during ambulation) all maintain the drain in the ideal position for drainage.

[15] Bubbling indicates air leak is present. Tidalling reflects pressure changes in the chest with breathing. Nurses should describe air leak monitor 1 (low) to 5 (high).

[16] Nurses should know how to operate the manual high negativity vent and recognize situations in which it should be used. It is used only when drain is operating with source (typically wall) suction.

[17] Nurses should know how to add and remove sterile fluid from the water seal chamber, using a needle (20 gauge or smaller) and syringe in the port grommet in the back of the drain.

[18] Nurses should know to pinch off suction tubing momentarily to assess fluid level, and to momentarily stop source suction when adding fluid.

Psychomotor Checklist: Atrium Express Dry Seal Chest Drains

Psychomotor Skills

Prepare and collect needed equipment and supplies:

1. Atrium Express Dry Seal Chest Drain
2. Hospital suction tubing to connect drain to vacuum source (if ordered)

	Yes	No	NA	NI
Open package and open sterile wrap[1]				
Connect chest drain to patient, maintaining sterility of tube connector[2]				
Connect drain to vacuum source by attaching hospital suction tubing to the suction port on the top of the drain[3]				
Turn suction source on; increase level to -80mmHg or higher[4]				
Remove the ampoule of sterile water from the back of the drain, twist off the top, and add water to the air leak monitor by seating the top of the ampoule in the luer connector on the back of the drain and squeezing the plastic ampoule[5]				
Swing out floor stand or hang drain from bed frame, using flexi-hangers[6]				
Adjust suction regulator on drain to the desired level by turning the dial located behind the face of the regulator up to increase imposed suction and down to decrease imposed suction[7]				
Check suction monitor bellows, state indicator of proper bellows expansion[8]				
If bellows is not at or past mark, increase source vacuum*[9]				
Demonstrate lowering suction level: Turn down suction set on drain[10] AND				
Depress manual high negativity vent (both must be done)[11]				
Describe how to determine if vacuum (negative pressure) is present inside the drain[12]				
Describe air leak monitoring[13]				
Demonstrate use of drain for gravity drainage (transport/ambulation)[14]				

* For suction pressures of -20cmH_2O or greater

Evaluator _____ Date _____

Psychomotor Checklist: Atrium Express Dry Seal Chest Drains

[1] Double wrap allows drain to be handed into sterile field for setup in the OR.

[2] Tubing is sterile when package is opened. Tubing can be maintained in the sterile field if drain is set up in the OR. Or the cap can be removed from patient connector, and tubing can be passed to sterile field set up during bedside chest tube insertion (or changing chest drains), since connector remains sterile. Sterile connector slides into sterile chest tube.

[3] Suction source can be regulated/unregulated wall vacuum or electric suction pump.

[4] Source suction must be set at -80mmHg or higher (more negative pressure) at a minimum of 20 liters per minute airflow in order for the dry suction unit to operate properly.

[5] This step is optional for emergency set up or conditions in which an air leak is not present. If the water ampoule is not present, the air leak monitor can be filled with 45ml of sterile water or sterile saline by using a luer connector syringe and injecting the sterile fluid via the luer port located on the back of the drain (laying drain on face will facilitate injecting fluid). NOTE! There is a mechanical one-way valve inside the drain that provides protection as a traditional water seal does. If the air leak monitor is filled with water, it provides redundant one-way valve protection.

[6] Maintain drain below level of the chest to facilitate gravity drainage.

[7] Suction level is easily changed by adjusting the suction dial on the side of the chest drain. Dial down to lower the suction level and up to increase the suction pressure setting (preset at -20cmH_2O).

[8] Source suction must be set at -80mmHg or higher (more negative) and generate at least 20 liters per minute of airflow in order for dry suction regulator to operate properly.

[9] Suction regulator is pre-set at -20cmH_2O and may not require adjustment.

[10] For suction pressures great than or equal to -20cmH_2O, the bellows in the suction monitor window must expand to the p mark or beyond. If the bellows does not expand this far, source suction must be increased until the bellows reaches the proper point. If desired suction is less than -20cmH_2O, any visible expansion of the bellows into the window confirms suction operation.

[11] When suction levels are decreased on a dry seal chest drain, the manual high negativity vest must be depressed immediately after the adjustment is made to vent excess negativity in the system resulting from the original higher suction setting. If this is not done, the patient and system will be subjected to higher negativity than that indicated by the suction regulator. The water level in the air leak monitor will rise to reflect this higher negativity and remind the nurse to depress the manual high negativity vent. (This vent is used only when the patient is connected to source suction.)

[12] A check mark in the vacuum indicator window, labeled B, indicates vacuum is present in the drain. If the indicator window is blank, no vacuum is present.

[13] The air leak monitor, labeled C on the drain, should be observed for bubbling (if filled). Bubbling right to left indicates an air leak is present, and the numbers indicate the magnitude of the leak 1 (low) to 5 (high).

[14] When removing suction and preparing the patient for ambulation or transport, it is critical to keep the patient clamp on the patient side of the drain open (if present).

Psychomotor Checklist: Atrium Chest Drain Autotransfusion

Continuous ATS With Blood Compatible Infusion Pump

Note: Must maintain proper standard precautions during autotransfusion procedures.
Based on hospital policy or physician order, anticoagulant may be added to collection chamber.

Psychomotor Skills

Prepare and collect needed equipment and supplies:

1. Atrium ATS Chest Drain
2. Microemboli blood filter (40μ)
3. Non-vented, blood compatible IV administration tubing set
4. Infusion pump
5. 3-way stopcock
6. 60cc syringe

	Yes	No	NA	NI
Assure clamp on ATS access tubing on drain is closed				
Open cap on end of access tubing and attach blood filter using aseptic technique				
Attach IV tubing to blood filter				
Attach three-way stopcock and syringe to distal end of tubing in order to pull blood out of drain to prime filter				
Open clamp on access tubing				
While keeping filter and IV tubing drip chamber “upside down” aspirate blood using the syringe to prime the filter and the drip chamber until the chamber is half-full				
Once the drip chamber is half-full, turn the tubing “right side up” and continue to aspirate, filling the tubing with blood and purging all air				
Check that one end of IV tubing is connected to filter and access line on chest drain; the other end is then connected at patient’s IV site				
Set infusion pump “rate” and “volume to be infused” based on rate of patient drainage				
Record drainage volume according to hospital procedure				

Evaluator _____ Date _____

Psychomotor Checklist: Atrium Chest Drain Autotransfusion

Self-Filling ATS Bag

Note: Must maintain proper standard precautions during autotransfusion procedures.
Based on hospital policy or physician order, anticoagulant may be added to collection chamber.
Proper identification of ATS bag according to hospital policy is essential.

Psychomotor Skills

Prepare and collect needed equipment and supplies:

1. Atrium ATS Chest Drain
2. Atrium Self-Filling Blood Bag
3. Microemboli blood filter (40μ)
4. Non-vented, blood compatible IV administration tubing set

	Yes	No	NA	NI
Assure clamp on ATS access tubing on drain is closed				
Remove cap covering spike port at the end of chest drain ATS access line				
Insert the ATS bag spike located at the end of the tubing on top of the bag into the chest drain ATS access line; check that the clamp and the bag access line is closed				
Position bag below the collection chamber to facilitate gravity drainage				
Open clamps: first on ATS access line, then on the ATS bag				
Gently bend the bag where indicated to activate blood transfer				
Monitor blood transfer from chest drain to bag				
Gently squeeze bag as needed to push air back into drain, maximizing fluid capacity of bag				
When transfer is complete, close clamps on access line and bag				
Remove ATS spike from access line port and replace in spike holder on bag; re-cap access line port using aseptic technique				
Assure ATS access line clamp remains closed when not in use				
Label bag with patient identification information & expiration time according to hospital policy				

Blood Infusion

Prime IV blood administration and microemboli blood filter with sterile saline or blood (according to hospital policy)				
Invert ATS bag with spike port up; use aseptic technique to remove cap				
Insert blood filter spike into bag; return bag to upright position and hang on IV pole				
Open air vent on top of bag, then open IV clamp to complete priming				
Fill tubing to remove all air. Attach to patient and begin infusion				
Monitor transfusion and document according to hospital policy				

Evaluator _____ Date_____

Psychomotor Checklist: Atrium ATS In-Line Blood Bag

Note: Must maintain proper standard precautions during autotransfusion procedures. Based on hospital policy or physician order, anticoagulant may be ordered. Proper identification of ATS bag according to hospital policy is essential.

Psychomotor Skills

Prepare and collect needed equipment and supplies:

1. Atrium Chest Drain with in-line ATS patient tube connector
2. Atrium In-Line Blood Bag
3. Microemboli blood filter
4. Non-vented, blood compatible IV administration tubing set

	Yes	No	NA	NI
Hang the inline chest drain ATS blood bag on the front of the chest drain using the bag's metal hanger				
Close both clamps on ATS bag				
Slide the clamp on the patient tubing of the chest drain down to the connector at the top of the drain; close the clamp when ready to attach the bag				
Remove the caps from the two tubes on the ATS bag				
Separate the patient tubing from the corrugated tubing by pressing the connector lock and pulling the connector apart				
Place the patient tube into the tube on the right side of the bag; this is the tubing with the connector lock				
Attach the bag to the drain by placing the tube on the right side of the bag into the tube on the top of the drain				
Open the clamps on the ATS bag				
Open the clamp on the patient tube; **all clamps must remain fully open during use**				
Position tubing to eliminate dependent loops that could hamper drainage				
Record blood volume in ATS bag according to hospital policy; note that the drainage measurements on the left side of the bag are accurate when there is no vacuum applied; measurements on the right side of the bag provide accurate measurements when the system is subjected to -20cmH_2O				
To disconnect ATS bag from chest drain system, close both clamps on the ATS bag and the clamp on the patient tubing				
Disconnect the tube on the left side of the ATS bag from the drain, then disconnect the tube on the right side of the drain from the patient tube by depressing the connector locks				
Immediately reconnect the patient drain to the chest drain and open the patient clamp to re-establish drainage				
Connect the tubes on the top of the ATS bag to form a closed system				

Reinfusion

Note: A new microemboli blood filter must be used for each ATS bag.

	Yes	No	NA	NI
Prime the filter and blood administration set with saline before disconnecting ATS bag from chest drain (according to hospital policy)				
Invert the ATS bag and using aseptic technique, take the cover off the spike port				
Using a form twisting motion, insert the filter into the ATS bag				
Hang the ATS bag on the IV pole, and open the pressure infuser, do not open the vent on top of the ATS bag; limit infusion pressure to 150mmHg or less				
Open the IV tubing clamp to finish priming				
Connect blood tubing to patient IV and monitor transfusion according to hospital policy				

Evaluator _____ Date_____

Psychomotor Checklist: Atrium Express Mini 500 Dry Seal Chest Drains

Psychomotor Skills

Prepare and collect needed equipment and supplies:

1. Atrium Express Mini 500 Dry Seal Chest Drain
2. Hospital suction tubing to connect drain to vacuum source (if ordered)

	Yes	No	NA	NI
Open package and open sterile wrap[1]				
Identify components: mobile chest drain, adapter package, and tubing package[2]				
Using aseptic technique, open both packages[3]				
While maintaining aseptic technique, select the appropriate sized adapter and insert it into the open end of the patient tube[4]				
Close clamp on patient tube[5]				
Using aseptic technique, connect patient tube connector to chest tube/ thoracic catheter[6]				
Remove caps from the patient tube and the corrugated tube on the drain and connect the patient tube to the drain's tube until a click is noted[7]				
Open patient tube clamp[8]				
Demonstrate applying hospital suction tubing to suction port on top of the drain (if ordered)[9]				
Slowly increase source vacuum to at least -80mmHg[10]				
Describe how to determine if vacuum (negative pressure) is present inside the chest drain[11]				
Explain how to determine if the patient has an air leak from the chest tube[12]				
Describe two ways to keep the drain below the level of the chest tube site[13]				

* For suction pressures of -20cmH_2O or greater

Evaluator _____ Date _____

Psychomotor Checklist: Atrium Express Mini 500 Dry Seal Chest Drain

[1] All items inside double sequential blue wrap are separate and sterile.

[2] Multiple adapters are provided to facilitate connections to a variety of chest tubes and thoracic catheters.

[3] The packages will typically be opened over the sterile field for chest tube insertion and the contents allowed to drop on the field so that the contents will remain sterile.

[4] This is typically done by the clinician inserting the chest tube or thoracic catheter.

[5] The patient tube can be handed off the sterile field at this point, and the assisting nurse closes the clamp before connecting to the device, or the clinician closes the clamp in the sterile field and hands the tubing off after connecting it to the patient tube.

[6] This is typically done by the clinician inserting the chest tube or thoracic catheter.

[7] Use aseptic technique when uncovering and attaching tubing connectors.

[8] Tubing clamp must remain open at all times chest drain is in use and shall be opened before suction (optional) is applied to the system.

[9] Suction tubing is used the same way as it is on a larger, traditional bedside chest drain.

[10] Vacuum source must be able to generate -80mmHg and a flow rate of at least 20 liters per minute air-flow (if used); suction level is fixed at -20cmH_2O.

[11] When vacuum is present, a check mark will appear in the window marked C on the drain.

[12] To assess for an air leak, fluid must be present in the collection chamber. If there is no drainage, 20ml of sterile fluid may be added with a luer connector syringe through the needleless access port. (Be sure to note any fluid added so it is not measured as drainage.) Temporarily tip the drain 90 degrees so that the numbers indicating drainage volume are at the bottom of the front of the drain. This will allow fluid to fill window A, through which bubbling can be observed.

[13] The drain can be maintained below the chest tube insertion site by using the attached belt straps or the single hanger by which the drain can be hung from the bed frame.

Psychomotor Checklist: Atrium Pneumostat Chest Drain Valve

Psychomotor Skills

Prepare and collect needed equipment and supplies:

1. Atrium Pneumostat Chest Drain Valve
2. Sterile scissors, if not already part of sterile chest tube insertion tray
3. 3cc syringe and sterile fluid

	Yes	No	NA	NI
Peel open packaging, maintaining sterility[1]				
Using sterile technique, cut off the beveled end of the patient catheter and insert the Pneumostat stepped connector firmly into the end of the patient tube sized 24-40 Fr[2]				
Alternatively, if the patient catheter is 8-20 Fr, use sterile technique and attach the short tube containing the small stepped connector on the Pneumostat device; the small stepped connector is then inserted firmly into the patient tube as above[3]				
Alternatively, if the patient catheter is a thoracentesis catheter, use sterile technique and attach the short tube containing the luer lock connector on the Pneumostat device; the luer lock connector is then attached to the patient tube[4]				
Add 1ml of sterile fluid to the air leak well[5]				
Describe monitoring for air leak[6]				
Maintain Pneumostat below the level of the chest tube insertion site to facilitate gravity drainage[7]				
Describe drainage monitoring[8]				

Evaluator _____ Date _____

Psychomotor Checklist: Atrium Pneumostat Chest Drain Valve

[1] The Pneumostat package will typically be opened over the sterile field for chest tube insertion and the contents allowed to drop on the field so that the contents will remain sterile.

[2] Depending on the patient chest tube, the bevel at the end of the catheter may be longer than the stepped connector, which may result in air leaks.

[3] The nurse should be able to identify the small stepped connector component of the Pneumostat package and its use.

[4] The nurse should be able to identify the luer lock connector component of the Pneumostat package and its use.

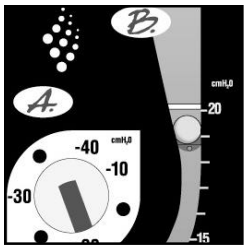
[5] The nurse should be able to identify the air leak well; capillary action allows the fluid to remain in the well.

[6] Bubbling through the fluid in the well indicates an air leak is present.

[7] Since the device is so light, it can hang freely, so it can move like a pendulum and always remain gravity dependent regardless of whether the patient is supine or upright; alternatively, the device can be taped to the chest.

[8] The Pneumostat is designed for patients with air leaks only; the 30ml collection chamber is designed as a reservoir for physiologic straw-colored pleural fluid. If bloody drainage is present, or drainage is accumulating at more than approximately 20ml per day, the Express Mini 500 Chest Drain may be more appropriate.

Case Studies



Note that answers are suggested based on national standards of practice. Nurses' responses should be considered within the context of the setting in which they will be practicing. For example, local practice will determine when it is appropriate to call the patient's physician (or APRN or PA) in many cases.

Design your own case studies appropriate to your clinical setting, using these examples as guides. If you identify a particular problem during competency assessment, risk management or clinical practice, then write a case study of that situation and use it for future training and evaluation.

Case Study One

Mr. Johnson, 26 years old, had a right lower lobectomy after a stab wound to the chest. He has a chest tube in his midaxillary line on the right side; it is properly positioned in the pleural space. He is 12 hours postop, and when you assess the chest drain, you note the water in the water seal chamber is at the -15cmH_2O mark. What does this mean, and what nursing actions are indicated?

Suggested answers

1. It means there is or has been a situation of high negative pressure in the chest.
2. Patient should be assessed to determine what may have caused the high negativity (chest tube stripping, deep breath to cough, respiratory distress).
3. Depress the high negativity vent to return the water level to baseline (if connected to suction).
4. Any answer that indicates the nurse would consult a colleague, check the policy and procedure manual, call a clinical nurse specialist, educator, or other nursing resource, or call Atrium would be correct, as it demonstrates problem-solving behavior to assist the nurse in properly addressing the situation.

Case Study Two

Mrs. Weston, 56 years old, had a thoracotomy 36 hours ago; a lobectomy was performed to remove a cancerous tumor. You turn her from supine into a side-lying position, and approximately 200cc of dark blood spills into the collection chamber of the chest drain. What does this mean, and what nursing actions are required?

Suggested answers

1. Since blood coming in contact with the pleurae is defibrinogenated, it does not clot within the chest. It's not uncommon for drainage to be inaccessible to the chest tube until the patient is turned. As long as it is dark in color, and there is no indication of fresh bleeding, no nursing actions are required other than regular assessment of the patient and chest drainage system.
2. Any answer that indicates the nurse would consult a colleague, check the policy and procedure manual, call a clinical nurse specialist, educator, or other nursing resource, or call Atrium would be correct, as it demonstrates problem-solving behavior to assist the nurse in properly addressing the situation.

Case Study Three

Mr. Sanchez, 66 years old, has had a CABG with the internal mammary artery used for the graft. He comes to the cardiothoracic ICU with two mediastinal chest tubes in place connected to one chest drain. During your assessment of the chest drain, you note new bubbling in the water seal chamber. Describe what you would do to determine where this air leak is from. What could an air leak from the chest indicate in this situation?

Suggested answers

1. Get two booted hemostats or special tubing clamps. Clamp one chest tube momentari ly, beginning at the patient, where the chest tube leaves the chest. Clamp and look at the water seal chamber to see whether the bubbling has stopped. If you clamp at the chest and the bubbling goes away, the leak is coming from the part of the chest drained by that chest tube. If you clamp at the chest and the bubbling persists, the leak is either between the clamp and the water seal chamber or from the other chest tube. Clamp the other chest tube at the chest simultaneously and check again for bubbling. If bub- bling stops, the leak is within the chest. If bubbling persists, the leak is between the clamps and the water seal chamber. While momentarily occluding the tube, move the clamp down the tubing toward the chest drain – clamp and reassess. When the bub bling goes away, the clamp is below the site of the leak.
2. If there is evidence the leak is coming from the chest, the physician should be notified, and the patient's respiratory status should be carefully monitored because it is a new finding. There could be an air leak from the lung due to a tear made in the pleura during dissection of the internal mammary artery.
3. Any answer that indicates the nurse would consult a colleague, check the policy and procedure manual, call a clinical nurse specialist, educator, or other nursing resource,

or call Atrium would be correct, as it demonstrates problem-solving behavior to assist the nurse in properly addressing the situation.

Case Study Four

Ms. Wu, 33 years old, was in a motor vehicle crash. She sustained multiple injuries, including fractured ribs and a pneumothorax. She now has ARDS and is on a ventilator with +10cmH_2O of PEEP. Assessment of the water seal chamber on the chest drain shows continuous bubbling. What does this mean, and what nursing actions should be taken?

Suggested answers

1. Perform a respiratory assessment to see if there are changes from baseline.
2. Continuous bubbling in the water seal chamber of a patient with a pneumothorax who is receiving PEEP from the ventilator is to be expected. Since positive pressure is continuously present in the lung, air will be continuously pushed out through the hole created by the pneumothorax.
3. Any answer that indicates the nurse would consult a colleague, check the policy and procedure manual, call a clinical nurse specialist, educator, or other nursing resource, or call Atrium would be correct, as it demonstrates problem-solving behavior to assist the nurse in properly addressing the situation.

Case Study Five

Mr. Goldstein, 72 years old had a single vessel bypass via OPCAB (off-pump coronary artery bypass). He was extubated in the operating room and is hemodynamically stable. How can early ambulation be facilitated to help reduce length of stay?

Suggested answers

1. Use a chest drain designed to enhance patient mobility such as the Express Mini 500 Mobile Chest Drain. The small, streamlined device allows the patient to walk without carrying the drain by providing straps that go around the waist or over the shoulder.
2. Connect the chest drain to suction only when indicated by individual patient assessment. Research shows that for a large majority of patients, suction is not required and can increase LOS.
3. Any answer that indicates the nurse would consult a colleague, check the policy and procedure manual, call a clinical nurse specialist, educator, or other nursing resource, or call Atrium would be correct, as it demonstrates problem-solving behavior to assist the nurse in properly addressing the situation.

Suggested Readings

Readings for Additional Information : Competency*

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*Not all of these articles support the competency models described in this monograph. Those marked with ** are the most recent and particularly innovative and informative as determined by the author.

Chest Drainage Suggested Readings

For an extensive list of references, please visit the Atrium website and go to this link:
http://www.atriummed.com/drainreadings