Describe how current literature, appropriate to the practice setting, is available, disseminated, and used to change administrative and clinical practices.

Background on Research and Evidence-Based Practice at the MGH

To set the stage for sources of evidence for Forces 6.22 through 6.28, it’s important to provide an overview of the background on the evolution of the nursing research and evidence-based practice at the MGH.

Nursing research is an integral component of the professional practice model at Massachusetts General Hospital. The Yvonne L. Munn Center for Nursing Research (The Munn Center) is the organizational structure that supports and promotes nursing research. Generated out of the quality improvement and evaluation programs of the 1980s and funded initially as a research award and lectureship in the 1990s, The Munn Center has evolved into an established research center within the Institute for Patient Care. The development pathway included the creation and enhancement of a number of research components: the Nursing Research Committee within the Collaborative Governance structure, the Clinical Nurse Specialist Research Task Force, the Nursing Research Operations Group, the Norman Knight Visiting Scholar Program, the Yvonne L. Munn Nursing Research Awards, the Yvonne L. Munn Post-Doctoral Fellowship, and the Doctoral Forum. The goals formulated for the program guided its development:

- Implement the structure and generate the resource needed to advance nursing research at MGH.
- Foster an organizational climate at MGH that integrates and advances a nursing research agenda.
- Expand a professional practice model to include evidence-based clinical practice informed by nursing research.
- Generate research opportunities for all nursing and promote knowledge-based practice throughout the MGH nursing community.
- Disseminate MGH nursing research findings at national and international meetings and in relevant publications.
- Initiate and further develop partnerships with multiple groups to complement and enhance the contributions of nursing research initiatives and improved quality, safe, and cost-effective patient care.
The development of The Munn Center culminated this year in the incorporation of the Yvonne L. Munn Center for Nursing Research as one of the pillars of The Institute for Patient Care; the creation of a discrete Munn Center cost center and budget; the appointment of the first Director if the center; the hiring of Nurse Researchers and other staff for The Munn Center; the move into dedicated space; and the initiation of the first-of-its-kind Nurse Scientist Advancement Model for doctorally-prepared nurses.

This brings The Munn Center to a new beginning. The challenges for The Munn Center are many. In this research-intensive institution, The Munn Center aims to change the structure of the way people understand research to incorporate nursing research. As part of the organization structure, nursing research is also involved in generating knowledge to improve the quality of care, evaluating the organization and the workforce, and addressing outcomes for the recipients of our care. The Munn Center provides the infrastructure to showcase nursing knowledge; to ask and study the questions of concern to clinicians and patients; to build on existing knowledge and translate knowledge into evidence-based practice; to cultivate a spirit of inquiry and create a community of scholars; to promote nursing research at all levels.

Use of Current Literature

Current literature is an important resource to staff in maintaining clinical competence and excellence in practice and is therefore made available in a variety of ways. Throughout the institution, clinical work stations provide staff access to a variety of current references (attachment 6.22.a), including CareNotes ™, a searchable data base of information and references for staff and patients; MicroMedex®, a searchable database of drugs that is used in place of the Physicians Desk Reference; as well as links to the Treadwell Library and the Nursing Procedure Manual. The Treadwell Library is a full-service library on the campus of MGH whose holdings include 1,500 Journal subscriptions (of which 99% are available on line), a collection of 15,000 books and more than 200 eBooks. Attachment 6.22.b describes the library’s services and staff.

The Nursing Procedure Manual includes clinical nursing procedures, which are influenced by current literature. Nursing procedures are developed and updated as needed, and reviewed every three years by the Practice Committee. This process includes referral to clinical experts who incorporate findings from recent literature into recommended procedural changes. The procedures, after review and approval by the Practice Committee, are added to the on-line Nursing Procedure Manual with significant literature references. Attachment 6.22.c is an example of such a procedure.
Departmental budget allocations also provide funding for journals, books and other publications for individual services or centrally located for broader access. In FY 2007, the department spent over $90,000 in this line item.

Recent clinical practice changes that have been influenced by current literature include pain partnerships, care of the tube fed patient, placement of PICC lines and implementation of therapeutic touch practices.

Pain Partnerships is collaborative patient education project between the Post Anesthesia Care Unit (PACU) and the Pre-Admission Testing Area (PATA) that focused on pain control using patient controlled analgesia (PCA) devices. A PATA-PACU joint task force reviewed current literature, investigated current practices of both units, identified pre-surgical education as an appropriate approach, and proposed and implemented three educational activities to provide patient education and prepare PATA nurses for practice changes. They followed up with an evaluation with both patients and staff. Attachment 6.22.d describes this initiative. The staff education presentation (attachment 6.22.e) includes the most significant literature references identify by the task force. The success of the brochure on PCA Pump (attachment 6.22.f) led the Task Force to develop a similar brochure for patients receiving epidural pain control (attachment 6.22.g).

Care of the tube-fed patient is being addressed through the efforts of an interdisciplinary group of clinicians (Clinical Nurse Specialists, Speech and Language Pathologists, a Librarian, a Nutritionist and a Physical Therapist) in discussion with their Physician colleagues. The task force, in addition to completing a nursing staff survey and collecting data on numbers of patients fed with tube feeding formula, conducted an extensive literature review, as evidenced by this abstract from their report of June, 2007:

The literature was searched via MEDLINE and CINAHL for the years 1986-2007, mined for citations from references, explored for relevant associations’ and governmental web sites, and Dr. Norma Metheny, a nursing expert in the field was contacted. A recommended reading list of guidelines and journal articles was created from more than 500 citations. The task force appraised research by using levels of evidence table and reviewing consensus/expert opinion documents.

The task force identified five topic areas described as folders that were catalogued for retrieval in RefWorks:

- Insertion/ placement/ maintenance of feeding tubes
- Prevention of aspiration in the tube fed patient
- Prevention of clogging/ the flushing of tubes/ medication administration
Evidence-based literature grading scales were identified and evaluated. The task force found the identification of a useful tool and the application of a grading system to be a difficult aspect of this process. For future evidence-based endeavors, the task force would recommend requesting expert advice from the Munn Center for Nursing Research in the selection of an appropriate grading scale/ tool.

The task force has identified recommendations for practice changes that are being finalized and reviewed by all involved prior to presentation to the Nursing Practice Committee for incorporation into procedure revisions.

Peripherally Inserted Central Catheters (PICC) are increasingly being used for intravenous therapy. The insertion is a complex technique performed by skilled Intravenous Therapy (IV) nurses that requires assurance of correct placement. In circumstances where the IV nurse could not be certain of correct placement, the patient needed to be referred to Interventional Radiology (IR) for confirmation. Because of the increasing number of PICC lines challenging a very busy IR department, patients’ therapeutic interventions could be delayed. The IV team, looking for ways to reduce these delays, reviewed current literature regarding PICC placement. Attachment 6.22.h shows a selection of the bibliography developed in this review. As a result of the literature review and their review of current practices, the IV team acquired ultrasound devices to assist in assuring proper placement, identified and trained a dedicated ultrasound PICC team, standardized procedures and documentation, and increased the PICC team availability to 16 hours seven days a week. As a result, the IR referrals decreased by two-thirds from the previous year.

Current literature also influences administrative practice. In 2004, the Institute of Medicine, in their report Keeping Patients Safe: Transforming the Work Environment of Nurses, identified as an issue the error-producing fatigue resulting from staff who provide patient care in excess of 12 hours in a 24-hour period or 60 hours in a 7-day period. At the same time, Rogers et al reported the results of research on the relationship extended work hours on nursing errors. As a result, nursing leadership asked to what extent to which MGH Staff Nurses were working in excess of 12 hours a day or 60 hours per week. Worked hours data were extracted from the OneStaff® scheduling/payroll system for a 12-week period and analyzed to identify the current state for Staff Nurses. The results were reasonably good: only 1.9% of worked shifts were greater than 12 hours,
and only 0.1% of worked weeks were greater than 40 hours. Nursing Directors received data for their individual units and were able to identify potential issues. The analysis was repeated in 2005, and showed that, primarily through increased awareness and unit-based attention to worked hours, the percent of shifts greater than 12 hours had decreased by 46% to 1.0% of total shifts. Analysis in subsequent years demonstrates that this low percentage for both shift length and hours per worked week has remained constant. However, other questions were raised: What is the current state regarding worked hours for other categories of staff, including other clinical, clerical and environmental staff? What is the impact of looking at seven consecutive days that are not the Sunday to Saturday normal work week? How many consecutive days are staff actually working? Data for these role groups were extracted beginning in 2005, and in the most recent analysis, all of these questions are addressed (see attachment 6.22.i) and presented both to senior executive leadership and to Nursing Directors and Operations Coordinators. The information provides a basis for ongoing administrative decision-making.
Treadwell Library at MGH, one of the first hospital libraries in the country, has a history of service and innovation. The mission of the Library (http://massgeneral.org/library) is “to be the center of excellence for managing the knowledge resources essential to the hospital’s high quality patient care, teaching, and research.” Treadwell Library is an active member of the Medical Library Association and the American Medical Informatics Association.

**Physical and electronic resources:** Open to all of the MGH community, the Library offers a place to search for information in print and online sources, use professional information services, network with colleagues, and study quietly. Book and journal collections are continually evaluated to meet ever-changing needs. The library staff includes 9 master’s prepared librarians, one computer systems webmaster, and 12 support staff.

MAGIC (http://magic.mgh.harvard.edu), the online catalog, includes book, journal and media holdings -- in print and online -- for Treadwell and other libraries in the Partners HealthCare System. Treadwell Library subscribes to 1,500 journals of which 99% are available online. The library maintains a collection of 15,000 books as well as more than 200 eBooks.

Online resources are easily available from off-campus locations. Treadwell provides access to a wide range of health care databases which cover the following areas: medicine (including MEDLINE); nursing and allied health (including CINAHL); psychiatry and psychology (including PsycINFO); evidence-based healthcare (including Cochrane Systematic Reviews); health planning and administration; and consumer health and alternative medicine.

**Research and reference services:** Librarians are available for quick or comprehensive searches in the databases and can be reached by email, fax, phone or in person. Librarians also answer reference questions, verify citations and find facts, statistics, biographical and other information.

**Teaching and training:** The Library offers group and individual classes in database searching and retrieval, including MEDLINE, CINAHL, PsycINFO, and QUOSA (information manager), and RefWorks (citation manager.)

**Additional services:** The Library has books and media for borrowing, reserve materials for use in the library, and a rapid InterLibrary Delivery service for articles and books from outside sources. In addition, the librarians assist with projects related to copyright questions, scanning, management of department libraries, and organization of information among other types of support.

09/2007
SUBCUTANEOUS ADMINISTRATION OF MEDICATIONS FOR PAIN AND SYMPTOM MANAGEMENT

KEY WORDS:
- Subcutaneous (SQ)
- Infusion
- Analgesia
- Opioid (narcotic)
- Sedative
- Antiemetic
- Pain
- Confusional State
- Delirium
- Agitation

LEVEL OF PERSONNEL: RN

DESIGNATED CLINICAL AREAS: ALL

PURPOSE:
To provide an alternative route for the frequent or continuous administration of medications for symptom relief.

APPLICABLE POLICY STATEMENTS:
- Consult with the MGH Pain Management Center or Palliative Care Service must be made by the patient’s primary care physician and/or designee.
- An order including medication, dilution, dosage range, route, bolus dose and interval (if indicated) and starting rate of infusion (if applicable) must be written by the MGH Pain Service or Palliative Care Service.
- When on a continuous opioid infusion, all parenteral and oral opioid orders will be written by the Pain Service or Palliative Care Service.
- Licensed clinicians will be responsible for programming the pain management pump.
- The pump used to deliver PCA will be used to deliver infusions of controlled medications such as opioids and benzodiazepines.
- Tubing will be changed every 96 hours or more often based on need.
- The medication syringe will be changed every 96 hours or more often based on the patient’s symptom management needs.
• If IV bag utilized, it will be changed every 24 hours.
• The subcutaneous cannula and dressing will be changed every 7 days or more often based upon need.

CRITICAL ELEMENTS:

1. Subcutaneous infusions are primarily infused into tissue where SQ injections are given. The best sites include the abdomen and thighs. Less frequently the fleshy part of the upper arm and even the chest are used. Include the patient in site selection.

2. Sites must be checked every 4 hours for swelling, redness, oozing, or pain at the insertion site. Slight tenderness might be expected. Local discomfort is generally due to chemical irritation from the medication and is usually the limiting variable. It may be necessary to adjust infusion rate and/or concentration, or to rotate the cannula site more frequently. Mild to moderate local swelling as the sole observable sign is generally not an indication to rotate the site. Redness generally indicates a need to move the site (and to consider decreasing concentration).

3. Subcutaneous infusion rates will typically be in the 1 – 3 mL/hr range. PCA volumes should be at the lower end of the range, when possible. Patient ability to tolerate infusion volume is highly variable and could be several times that rate in some individuals.

4. An extension tubing without access ports is recommended due to adequate length for freedom of movement and due to the safety features of no access ports.

5. Many medications can be used for subcutaneous symptom management. Common examples include:

<table>
<thead>
<tr>
<th>Pain</th>
<th>GI Symptoms</th>
<th>Agitation/Delirium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morphine</td>
<td>Metoclopramide (N/V)</td>
<td>Midazolam</td>
</tr>
<tr>
<td>Hydromorphone (Dilaudid)</td>
<td>Ocreotide (diarrhea)</td>
<td>Haloperidol</td>
</tr>
</tbody>
</table>

NOTE: Meperidine (Demerol) is contraindicated for both frequent/continuous use and for the subcutaneous route.

6. IV team available for consult re: placement of needle.

EQUIPMENT:

• PCA pump
• 60 cc luer lock syringe
• Needle (e.g. 20 ga., 1 inch)
• Alcohol wipes
• Medication label
• Tubing label
• 24 gauge (Yellow) Saf-T-Intima catheter (call customer service in MM)
• Extension Set tubing without access ports
• Transparent occlusive dressing
• Clear plastic tape
**NURSING ACTIONS:**

1. Check medication order.
2. Draw up appropriate volume of medication into the syringe and label with a red medication sticker.
3. Set up pump and attach primed tubing to the subcutaneous needle set and prime the needle set.
4. Wipe selected insertion site with alcohol followed by povidone-iodine. Allow alcohol and povidone-iodine to air dry.
5. Insert needle:
   a) Remove needle cover
   b) Insert needle at 30-45º angle into subcutaneous tissue.
   c) Withdraw needle from cannula.
   d) Attach tubing
6. Cover insertion site with transparent occlusive dressing and window edges with clear plastic tape.
7. **Label tubing “FOR SUBCUTANEOUS ADMINISTRATION ONLY.”**

**DOCUMENTATION:**

1. Location and condition of subcutaneous site and dressing.
2. Patient condition is documented using the appropriate forms and language, as well as, the Progress Note.
   a) Patient-controlled analgesia is documented on the PCA Flow Sheet.
   b) Pain assessment should include pain severity (when patient can self-report) documented on the Clinical Record and Measurement Flowsheet.
   c) Sedation assessment should include use of the following sedation scale:

<table>
<thead>
<tr>
<th>Opioid-induced sedation level</th>
</tr>
</thead>
<tbody>
<tr>
<td>S = sleep, easy to arouse</td>
</tr>
<tr>
<td>1 = awake &amp; alert</td>
</tr>
<tr>
<td>2 = slightly drowsy, easily aroused</td>
</tr>
<tr>
<td>3 = frequently drowsy, arousable, drifts off to sleep during conversation</td>
</tr>
<tr>
<td>4 = somnolent, minimal or no response to physical stimulation</td>
</tr>
</tbody>
</table>

d) When treating agitation/delirium, the use of a standard agitation-sedation scale should be considered.
3. Progress notes should summarize any significant changes and patient response. Patient teaching and patient’s understanding of SQ therapy should also be charted on the Patient Family Education Record. Pain assessment and reassessment should be documented on the Patient Care Flow sheet.

**REFERENCE:**


<table>
<thead>
<tr>
<th>CONTACT PERSON(S):</th>
<th>PRACTICE AREA:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annabel Edwards, RN CS, MSN</td>
<td>Department of Anesthesia</td>
</tr>
<tr>
<td>Clinical Nurse Specialist</td>
<td>MGH Pain Center</td>
</tr>
<tr>
<td>Constance Dahlin, APRN, BC, PCM</td>
<td>MGH Palliative Care Service</td>
</tr>
<tr>
<td>Edna Riley, RN</td>
<td>MGH IV Team</td>
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<tr>
<td>Thomas E. Quinn, MSN, RN, AOCN</td>
<td>Department of Nursing</td>
</tr>
<tr>
<td>MGH Cares About Pain Relief</td>
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</table>

Approved: Council on Practice (6/9/92)
Revised: Council on Practice (4/97)
Reviewed: Nursing Practice Committee (4/00)
Reviewed: Nursing Practice Committee (1/02)
Revised: Nursing Practice Committee (6/06)
Attachment 6.22.c continued
Patient Education

Pain partnerships
A collaborative patient-education project between the Pre-Admissions Testing Area and the Post Anesthesia Care Unit

—by Suzanne Cretena, RN, staff nurse

Controlling pain is a collaborative effort between care providers and patients. In 2001, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) implemented pain-management standards recognizing a patient's right to pain relief. Pain is now considered a fifth vital sign, evaluated along with pulse, blood pressure, temperature, and respiration. Pain is assessed using a visual analog scale with a range of numbers and pictures from 0-10. The American Society for PeriAnesthesia Nurses encourages the documentation of pain levels as well as pain-management education as a standard of care in the peri-operative setting.

As a nurse in the Post Anesthesia Care Unit (PACU) for many years, I knew one of the most challenging aspects of nursing care is controlling patients' pain after surgery. My experience was that patients didn't know a lot about pain management and often had unrealistic expectations after major surgery. Most patients received a patient-controlled analgesia (PCA) device to manage their pain. This is a hand-held pump that gives patients some control of their pain medication. PCAs are used in many areas of the hospital to deliver safe and effective pain-management intraoperatively. Pain goes beyond what patients recover from general anesthesia and often continues post-operatively.

PATA educates about 60 patients per day on how to prepare for a safe and successful hospital experience. My goal was to formally educate patients on post-operative pain control so they 'have a better understanding of what to expect after surgery.' I believe that well-informed patients are more successful at controlling their pain post-operatively without fear or medication.

Most patients receive PCAs in the post-operative setting and continue to use them after they're transferred to a unit. Working with nurses in both units, we formed the PATA-PACU Task Force to better meet the pain-management needs of our patients.

The first step in this collaborative initiative was to investigate the current practices of both units. Informal focus groups were used to document current practice, bring the voice of the patient forward, and brainstorm about ways to improve nursing practice. A review of the literature supported pre-operative education as a way to foster the use of PCAs and better prepare patients for the need for pain-management. The task force proposed three educational initiatives:

- Create a patient-education PCA pamphlet
- Bring PCA pumps to the Pre-Admissions Testing Area for patient education
- Prepare PATA nurses to make and document this practice change

PATA nurses accepted the proposal and collaborated with PACU staff to develop and refine the PCA pamphlet. The assistance of Karen Hoebrocker of Interpreter Services, the pamphlet was completed in simple, easy-to-understand language.

The pamphlet, How to use a PCA pump to control your pain after surgery, is available to clinicians in all patient care units. Nurses can use this tool to better inform patients about pain-management, providing positive clinical outcomes.

For more information about the PATA-PACU Task Force, call 8-3381. How to use a PCA pump to control your pain after surgery can be ordered from Standard Register (item 684750).
Pre-Operative Education of Patient Controlled Analgesia (PCA)
Sharon Kelly-Sammon RN, BSN, CPAN, CCRN
Susan Croteau RN, BSN
Pamela Enge RN, BA
The Pre-Admission Testing Area and Post Anesthesia Care Unit (PATA-PACU) Pain Task Force
Massachusetts General Hospital
Boston, MA

Identification of Four Problems
• Pre-operative patients who were ordered PCA post-op were not routinely identified in the preadmission setting
• Patients were admitted to the PACU without adequate preparation and knowledge about how to effectively use PCA
• It was difficult for post-op patients to learn how to use PCA in the PACU setting due to the effects of anesthesia, anxiety and pain
• Patients were not prepared for the amount of pain they would experience post operatively and had unrealistic expectations

Project Objectives
During the pre-admission appointment
• Identify patients who were likely to receive PCA
• Educate those patients how to use PCA pre-op, explain the benefits and reinforce the 0-10 pain scale
• Help patients set realistic post-op pain expectation
Interventions

Likely PCA candidates were identified by the PATA nursing staff and given an informational pamphlet that describes what PCA is and how to use it.

Patients were given the How To Use a PCA Pump... pamphlet. A PCA pump was also available in the unit as a visual aid.

The benefits of effective pain control and how to rate their pain based on the 0-10 pain scale were also discussed during the pre-op appointment.

Likely PCA Candidates

Patients most likely to receive PCA were identified by the PACU and PATA staff based on prior knowledge and experience.

The PACU sets up between 20 and 60 PCA pumps per day, depending on the daily case count. It is estimated that 33-50% of Phase I PACU patients seen in PATA will have a post-op PCA order.

![Pie chart showing average daily PACU PCA distribution based on type of surgery.]

- Urology
- Gynecology
- Orthopedic
- Plastic
- General Surgery
- Neurology
- Thoracic
- Not seen in PATA or didn't use PCA

PATA-PACU Pain Task Force Members

Sharon Kelly-Sammon, Pam Enge, Sue Croteau
Members of the PATA Nursing Staff

Peter Hayes, Jen Neves, Joan Braddock, Joan Gallagher

How To Use PCA Pamphlet

- Insert pamphlet here
- 4 pages...
- Front page, inside pages (left and right), back page

Process of Implementation

A literature search was done to investigate the latest evidence regarding perioperative teaching and PCA. It revealed that patients who had the best PCA pain control received pre-operative PCA teaching in the PATA, and received further reinforcement in the PACU.

Based on this evidence, a patient teaching PCA pamphlet entitled How To Use PCA was designed. Under the guidance of a plain language specialist, it was rewritten and revised several times. It was endorsed by members of the Patient Education Committee, MGH Cares About Pain Relief Project, Nursing Practice Committee and Anesthesia Department.

The pamphlet was given to identified PCA patients in the PATA after the contents were discussed by the nurse during the pre-admission appointment.

Finally, patients were shown how to use their PCA in the PACU, and reinforcement was given as needed. These patients were also observed by staff on how well they were able to operate the pump and control their pain.
Quality Assurance

A survey was done on 40 random nurse observations of adult first time PCA users over the course of three weeks. It consisted of four questions:

1. Did the nurse experience frustration and difficulty in the past explaining PCA to post-op patients?
2. If yes, was the learning difficulty related to misunderstanding the concept and/or remembering how to use the pump despite repeated explanations?
3. Did the nurse find that learning how to use PCA was easier for patients who received the pamphlet than those who did not?
4. Did the patient who received the pamphlet get better pain control using PCA than patients who used PCA before the pamphlet was implemented?

Results

The response was overwhelmingly positive. It was clear that PACU nurses who were often frustrated teaching PCA to first time users prior to the initiation of the patient teaching pamphlet; had a much easier time after the pamphlet was introduced, and noted that patients seemed to have less difficulty operating the PCA pump and controlled their pain better.

Successful Practice Statement

Patients who receive the PCA education pamphlet better understand the concept of PCA, are able to operate the equipment more easily, and are better at controlling their pain in the PACU.
Implications for Peri-Anesthesia Nurses

If ASPAN pain and comfort guidelines for PCA teaching are followed consistently throughout all perioperative phases, including pre-admission and then reinforced in the PACU; there is a foundation of knowledge present to build upon, ensuring success and a positive experience for the patient. As a result:

• pain is lessened
• the patient has a measure of control over his/her environment.
• there is less anxiety and fear for the patient

References

What are the advantages of a PCA pump?

- It allows you control over when you get your pain medicine
- The medicine goes into your IV line so it can act quickly on your pain and you can get the medicine as often as you need it.
- Patients with good pain control tend to recover faster and on average, leave the hospital sooner.

Rating your pain
Your doctors and nurses will ask you about your pain. They will ask you to rate how strong your pain is. At MGH we use this scale to rate pain:

<table>
<thead>
<tr>
<th>How strong is your pain?</th>
<th>Quite a lot of pain</th>
<th>Worst Pain imaginable</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>No pain</td>
<td>Quite a lot of pain</td>
<td>Worst Pain imaginable</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>No hurt</td>
<td>Little bit hurts</td>
<td>Little more hurts</td>
</tr>
</tbody>
</table>

Everyone feels pain differently. Use the scale to tell your doctors and nurses how strong your pain is. This will help them to work with you on controlling your pain.

For more information visit the MGH Pre-Admission Testing Area (PATA) website: http://www.massgeneral.org/pata

How to use a PCA pump to control your pain after surgery

This patient pushes the PCA pump button to control his pain medicine.

Developed by the PATA-PACU Pain Task Force

MASSACHUSETTS GENERAL HOSPITAL
Pre-Admission Testing Area
Jackson Building, Room 121, Boston, MA 02114
A PCA Pump is one of several ways to treat pain after surgery. Your doctor may order a PCA pump for you.

What is a PCA pump?
- It is a computerized pump that is attached to your IV (intravenous) line.
- With the PCA pump you push a button to give yourself pain medicine instead of getting injections for pain.
- PCA stands for Patient Controlled Analgesia. Analgesia means, “pain relief”.

How does it work?
When you feel pain, press the button connected to the PCA pump. You will hear a beep.

This lets you know the pump is working. The pump sends the right amount of medicine directly into your IV.

Will the PCA pump give me medicine every time I press the button?
No. The pump is programmed to allow time for the medicine to work. This is called the “lockout time”.

If you press the button during the lockout time, you will not get another dose.

After the lockout time passes, the pump will give you more medicine when you press the button again.

If your pain does not lessen, let your nurse know. Your nurse can program the pump to give you an extra or loading dose.

How often should I push the button?
Press the button when you are feeling pain. For most patients the goal is to be comfortable without being too drowsy.

Can I overdose myself?
No. The lockout time protects you from getting too much medicine. Whenever the pump allows you to have the pain medicine, you will get a very small amount.

Can I become addicted?
It is very unlikely that you will become addicted to the medicine from using the PCA pump. You will use the PCA pump only for a short time.

How long should I use the PCA pump?
It depends on the type of surgery you have. Most patients are able to switch to pain medicine by mouth within a day or two.

Does the pain medicine have side effects?
Yes. Drowsiness is the main side effect. Also watch for itchiness, nausea, vomiting and constipation.

If you have any side effects, let your nurse know right away so that the symptoms can be treated.

Are PCA pumps safe?
Yes. PCA pumps have now been in use for many years. The pumps have safety features. When you press the button, the pump:
- gives only the prescribed amount of medicine
- gives the medicine only if the lockout time has passed
- gives a set amount of medicine during a one hour period

**WARNING**
Only the patient should press the PCA pump button. DO NOT allow others to press the button for you!
• Other side effects may include:
  • Nausea
  • Drowsiness
  • Itching
  • Constipation
  • Lightheadedness
  • Numbness/weakness in the legs
• If you have any side effects, let your nurse know so symptoms can be treated.

Rating your pain
• Your doctors and nurses will ask you to describe your pain.
• They will ask you to rate how strong your pain is.
• At MGH we use this scale to rate pain:

<table>
<thead>
<tr>
<th>How strong is your pain?</th>
</tr>
</thead>
<tbody>
<tr>
<td>No pain</td>
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</tr>
<tr>
<td>0</td>
</tr>
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<td>No hurt</td>
</tr>
</tbody>
</table>

Not all types of surgeries are suited for an Epidural
• You, your surgeon and your anesthesiologist will decide on the best way to control your pain for your type of surgery.
• At MGH, an Epidural is most often chosen for pain control for chest, vascular and major abdominal surgery.

Developed by the PATA-PACU Pain Task Force

MASSACHUSETTS GENERAL HOSPITAL
Pre-Admission Testing Area
Jackson Building, Room 121, Boston, MA 02114
www.massgeneral.org/pata
An Epidural is one of several ways to control your pain both during and after surgery.

**What Is an Epidural?**
An Epidural is a method of pain control in which a local anesthetic and/or pain medication is injected into the Epidural space in your back to provide pain relief to your surgical site during and after your procedure.

![Diagram of Spinal Cord, Epidural Space, Spinal Fluid, and Epidural Catheter]

**How does it work?**
- An ultra thin tube called an Epidural catheter is inserted into an area outside the spinal cord and spinal fluid. This area is known as the **Epidural space**.
- The catheter is connected to a pump that continually gives you pain relieving medication. It can be used both during and after your surgery.
- The Epidural will decrease the amount of pain around your incision site.
- The nurse manages and monitors the pump. He/she will assess your pain repeatedly and make any necessary changes to the pump to keep you comfortable.

**Are Epidurals safe?**
- Epidurals have been in use for several years and are considered very safe and effective. Epidurals are frequently used for pain control during labor and delivery.
- Anesthesiologists who specialize in pain control will monitor you and the Epidural each day while it is in place.

**How is it inserted?**
- An anesthesiologist inserts the Epidural catheter.
- You will be either on your side or sitting up over a table.
- The doctor will feel for landmarks on your back to guide the insertion.
- The doctor will clean your back and inject a local anesthetic to numb the skin where the catheter will be inserted.
- He or she will tape the catheter into position. It will stay in place until the medication is discontinued.

**Does it hurt?**
- You will feel only slight pressure when the catheter is inserted.
- You will not feel the catheter at all after it has been inserted, or while the medication is going in.
- You will not feel any pain when the catheter is removed.

**What are the advantages of an Epidural?**
- You will have good pain control because an Epidural targets your surgical site.
- Your pain will be minimized because of the constant and continuous medication infusion.
- You may not need to receive as much general anesthetic during your surgery.
- You will feel less sedated and more awake after your surgery.
- You may have the ability to get up and walk around sooner post-operatively.
- It will be easier to do breathing and coughing exercises.

**How long will I have the Epidural?**
- Most patients have an Epidural for 2-3 days.
- You will be switched to an oral pain medication before your Epidural is removed.

**Does the Epidural have side effects?**
- Yes. The most common one is difficulty passing urine. You will have a urinary catheter in place to drain urine for as long as you have the Epidural.

*Continued on back*
PICC ULTRASOUND REFERENCE LIST

Author: Robinson MK, Mogensen KM, Grudinskas GF, Kohler S, Jacobs DO.

Institution: Department of Surgery, Brigham and Women's Hospital, 75 Francis Street, Boston MA 02115; mkrobinson@partners.org.

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Author: Donaldson N.

Title: Expediting evidence-based improvements in PICC-related patient care outcomes.


Author: Ean R, Kirmse J, Roslien J, Dickerson K, Grimes E, Lowrie A, Woodman K.

Institution: Dept of Nursing, Mayo Clinic, Rochester, MN.

Title: A nurse-driven peripherally inserted central catheter team exhibits excellence through teamwork.


Author: Robinson-Reilly M, Fletcher T.

Institution: Clinical Nurse Consultants in Oncology, Manning Rural Referral Hospital, Taree, NSW.

Title: PICC innovation leads to improved health services.


Author: Tilton D.

Institution: Clinical Education Specialist, Shawnee Mission Medical Center, Shawnee Mission, KS.

Title: How to fine-tune your PICC care.

Author: Burns D.

Title: The Vanderbilt PICC Service: program, procedural, and patient outcomes successes.

Falkowski A.

Nurse-Manager, Vascular Access Nursing Service, Christiana Care Health System, Newark, DE.

Doing it better: putting research into practice. Improving the PICC insertion process.

Nursing. 2006 Feb; 36(2): 26-7. (2 ref)

Gamulka B, Mendoza C, Connolly B.

Vascular Access Program, Hospital for Sick Children, Toronto, ON, Canada; beth.gamulka@sickkids.ca.

Evaluation of a unique, nurse-inserted, peripherally inserted central catheter program.


Designing and monitoring an RN-based PICC team.


Director, Specialty and Support Services, Portland VA Medical Center, Portland, OR.


Communicating Nursing Research. 2004 Spring; 37 407.

Davis J, Kokotis K.

A new perspective for PICC line insertions: cost effectiveness and outcomes associated with an independent PICC service.


Sherrod J, Warner B, Altimier L.

PICC Team Coordinator, Neonatal Intensive Care Unit, Good Samaritan Hospital, Cincinnati, OH.

Designing and monitoring an RN-based PICC team.


Anstett M, Royer TI.
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Title  The impact of ultrasound on PICC placement.
Author  Moureau NL.

Institution  President, PICC Excellence, Inc., Hartwell, GA.
Title  I.V. rounds. Using ultrasound to guide PICC insertion.
Author  McMahon DD.

Institution  Nurse Manager, Resource Management Center, STAT and PICC Programs, University of Washington, Medical Center, Seattle, WA.
Title  Evaluating new technology to improve patient outcomes: a quality improvement approach.
Author  Dobson L, Wong DG.

Institution  Director of Clinical Services/Ambulatory Treatment Unit, Valley Lutheran Medical Center, Mesa, AZ.
Title  Development of a successful PICC insertion program.
Author  Crawford M, Soukup M, Woods SS, Deisch P.

Institution  Center for Advanced Nursing Practice, BryanLGH Medical Center, 1600 South 48th St, Lincoln, NE 68506-1299.
Title  Peripherally inserted central catheter program.
WORK SCHEDULE ANALYSIS
2004 – 2007

Combined Leadership
October 2, 2007

BACKGROUND

- Questions generated by review of
  - IOM report Keeping Patients Safe: Transforming the Work Environment of Nurses
  - Recent research on the impact of fatigue on work performance
  - JCAHO consideration of standards on work schedules

QUESTIONS

- To what extent are staff nurses working
  - more than 12 hours per day?
  - 12-hour shifts?
- To what extent are staff nurses working
  - More than 60 hours per week
  - 6 to 60 hours per week
METHODOLOGY

- Data Source: OneStaff
- Time Frames:
  - 2004 = April 4 to June 26
  - 2005 = April 3 to June 25
  - 2006 = April 2 to June 24
  - 2007 = April 1 to June 23
- Time Period for Each Year
  - 12 weeks
  - 84 days

METHODOLOGY (CONTINUED)

- Study Sample
  - All staff nurses with worked hours recorded
    - Agency personnel excluded
  - All patient care units and procedure areas on OneStaff
    - Three units not on OneStaff in 2004 (Anticoag,Yawkey Infusion, Instrument Room) added in subsequent years

METHODOLOGY (CONTINUED)

- Variables
  - All recorded worked hours by employee by date
  - Outliers reviewed for accuracy
    - All shifts recorded as 20 hours or more
    - All weeks recorded as 88 hours or more
  - Data analyzed by individual, aggregated for total department
**Description of Sample**

<table>
<thead>
<tr>
<th>Time Frame</th>
<th>SN</th>
<th>Shifts</th>
<th>Weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY2004</td>
<td>2,402</td>
<td>74,798</td>
<td>26,212</td>
</tr>
<tr>
<td>FY2005</td>
<td>2,510</td>
<td>78,436</td>
<td>26,405</td>
</tr>
<tr>
<td>FY2006</td>
<td>2,654</td>
<td>84,235</td>
<td>28,007</td>
</tr>
<tr>
<td>FY2007</td>
<td>2,773</td>
<td>87,957</td>
<td>28,502</td>
</tr>
<tr>
<td>% Change</td>
<td>15.4%</td>
<td>17.6%</td>
<td>17.0%</td>
</tr>
</tbody>
</table>

**Staff Nurse Shift Length**

2004 to 2007

- Total shifts increased by 18%
- Shifts > 12 hours
  - Decreased by 45%
  - As a percent of total shifts decreased from 1.9% to 0.8%
  - Significant decrease in 2005 from 2004 has been maintained
- Shifts = 12 hours
  - Most predominant shift for staff nurses
  - Over 50% of all shifts worked are 12-hour shifts
  - 80% of staff nurses work at least some 12-hour shifts

**Staff Nurse Shifts 2004 - 2007**

![Chart showing total shifts and shifts > 12 from 2004 to 2007]
**Staff Nurse Week Length**

2004 to 2007

- Total weeks increased by 17%
- Weeks >60 hours
  - Decreased by 11%
  - Average per week decreased from 3.0 to 2.7
- Weeks 55 – 60 hours
  - Increased by 35%
  - Average per week increased from 15 to 20.

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**Staff Nurse Weeks 2004 - 2007**

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**Answers Generate Questions**

- What about other role groups?
  - Other clinical staff?
  - Clerical staff?

- To what extent are those staff working
  - more than 12 hours per day?
  - More than 60 hours per week
EXPANDED ANALYSIS

- Expanded analysis starting in 2005
- Study sample categories added:
  - Clinical: Patient Care Associates, Surgical Technologists
  - Clerical support: Operations Associates, Patient Care Information Associates

DESCRIPTION OF SAMPLE

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>N</th>
<th>SHIFTS</th>
<th>WEEKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLINICAL</td>
<td>2005</td>
<td>421</td>
<td>17,033</td>
</tr>
<tr>
<td></td>
<td>2006</td>
<td>509</td>
<td>18,966</td>
</tr>
<tr>
<td></td>
<td>2007</td>
<td>546</td>
<td>20,306</td>
</tr>
<tr>
<td>% Change</td>
<td></td>
<td>29.7%</td>
<td>19.2%</td>
</tr>
<tr>
<td>CLERICAL</td>
<td>2005</td>
<td>310</td>
<td>12,584</td>
</tr>
<tr>
<td></td>
<td>2006</td>
<td>343</td>
<td>13,693</td>
</tr>
<tr>
<td></td>
<td>2007</td>
<td>383</td>
<td>16,065</td>
</tr>
<tr>
<td>% Change</td>
<td></td>
<td>26.8%</td>
<td>28.1%</td>
</tr>
</tbody>
</table>

SUPPORT STAFF SHIFT LENGTH

2005 – 2007

- Shifts >12 hours
  - Clinical – increased by 34%
  - Clerical – increased by 11%

- Shifts >12 hours as a percent of total shifts
  - Clinical – increased from 1.2% to 1.4%
  - Clerical – decreased from 6.8% to 6.0%
**Support Staff Shifts 2005 - 2007**

**Support Staff Shifts - Percent of Total Shifts**

**Support Staff Week Length**

- **2005 - 2007**
  - Weeks >60 hours
    - Clinical – decreased by 51%
    - Clerical – increased by 18%
  - Weeks >60 hours as a percent of total weeks
    - Clinical – decreased from 1.0% to 0.4%
    - Clerical – decreased from 3.4% to 3.0%
More Answers Generate More Questions

- What is the impact of considering week start at other than Sunday?

- How many consecutive days are staff working?
**ALTERNATE SCHEDULES**

- Analysis of alternate schedules
  - Calculate with week starts for each day of the week
  - Each day's cluster represents 11 weeks (77 days)
- Analysis of 7-day schedules with other than Sunday as start day demonstrated
  - Increased number of weeks >60 hours
  - Percent of total weeks remains low
  - Consistent for all role groups

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**STAFF NURSE WEEKS >60 / ALTERNATE START DAYS – % OF WEEKS**

![Graph showing the percentage of staff nurse weeks exceeding 60 hours across different start days for the years 2006 and 2007.]

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**CLINICAL WEEKS >60 / ALTERNATE START DAYS – % OF WEEKS**

![Graph showing the percentage of clinical weeks exceeding 60 hours across different start days for the years 2006 and 2007.]

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**CLERICAL WEEKS >60 / ALTERNATE START DAYS - % OF WEEKS**

<table>
<thead>
<tr>
<th>Days</th>
<th>% of Weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sunday</td>
<td>2.6%</td>
</tr>
<tr>
<td>Monday</td>
<td>3.1%</td>
</tr>
<tr>
<td>Tuesday</td>
<td>3.6%</td>
</tr>
<tr>
<td>Wednesday</td>
<td>3.9%</td>
</tr>
<tr>
<td>Thursday</td>
<td>3.8%</td>
</tr>
<tr>
<td>Friday</td>
<td>3.4%</td>
</tr>
<tr>
<td>Saturday</td>
<td>3.5%</td>
</tr>
</tbody>
</table>

2006: 3.1%  2007: 3.6%

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**CONSECUTIVE SHIFTS**

- Analysis includes all shifts of 4 hours or greater for 2006 and 2007 data only.
- For staff nurses, over three-quarters of shifts worked are in groups of three days or fewer.
- For support categories, the majority of shifts are in groups of four days or more.
  - For Clinical, over 55%
  - For Clerical, over 70%

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**CONSECUTIVE DAYS GROUPINGS PERCENT OF TOTAL DAYS - 2006**

<table>
<thead>
<tr>
<th>Days</th>
<th>Staff Nurse</th>
<th>Clinical</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 day</td>
<td>23%</td>
<td>11%</td>
</tr>
<tr>
<td>2 days</td>
<td>32%</td>
<td>18%</td>
</tr>
<tr>
<td>3 days</td>
<td>22%</td>
<td>15%</td>
</tr>
<tr>
<td>4+ days</td>
<td>21%</td>
<td>13%</td>
</tr>
</tbody>
</table>
CONSECUTIVE DAYS GROUPINGS
PERCENT OF TOTAL DAYS – 2007

UNANSWERED QUESTIONS

- What is the impact on quality, safety and productivity of extended shift lengths / work weeks?
  - Research on Staff Nurses is still limited
  - Research on other role groups is not available
- What is the impact of staff nurses' short work stretches on continuity of patient care, in view of
  - Increased number / percent of 12-hour shifts
  - Shorter patients' lengths of stay

LIMITATIONS

- Analysis of shift hours:
  - Professional exempt staff (staff nurses) time is generally recorded in shift blocks
  - Flex time worked not paid is not consistently recorded
- Analysis of weeks and consecutive day analysis:
  - Excludes recorded shifts of less than 4 hours
  - Includes shifts recorded as "administrative" or "project"
- Accuracy of records is dependent on accurate input by timekeepers