

### **Pain: the 5<sup>th</sup> vital sign**

Pain is a national epidemic and BMC is no exception. To reinforce the importance of effective pain management, the multidisciplinary pain working group has designated October as “Stop Pain at BMC” month to raise awareness of the issue.

Not only is effective pain management the right thing to do for our patients, JCAHO has incorporated this into their standards, requiring that all patients receive appropriate assessment, interventions, and reassessment regarding pain. Additionally, clinicians must incorporate effective pain management in their patient and family education and discharge planning process.

Who is the expert about pain? It is the person who is experiencing the pain. The Patient Bill of Rights states that all patients have the right to: have their report of pain taken seriously; a thorough and prompt intervention, reassessment, referral to a pain specialist if necessary; and participate actively in their pain management plan. Pain may seem like a simple issue, but it is multidimensional and can affect every aspect of the healing process. Pain affects sensory and emotional systems, and can increase length of stay. Pain is influenced by culture and past experiences with pain. Individual assessment is crucial to plan the appropriate interventions.

Barriers to achieving optimal pain management are from clinicians and the patients themselves. Incomplete assessments, lack of knowledge, and attitudes about pain can influence how providers intervene on the patient’s behalf. Patients may be fearful of addiction to medication, about side effects, or have cultural influences that affect how they express and deal with pain.

There are several dedicated individuals working to improve pain management at BMC, with representatives from multiple departments and specialties, including anesthesia, medicine, nursing, neurology, pediatrics, pharmacy, and child life and social services. The pain working group, the pain CQI committee, and pain resource nurses are a resource on each unit. Additional resources for our patients include: the Interventional Anesthesia Pain Clinic, Neurology Pain Management Clinic,

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Behavioral Pain Group, and the clinical experts throughout the various departments.

The pain working group has developed a comprehensive tool kit, rich with resources for all clinicians and available on the BMC Intranet. Visit the Hot Topics section for more details, and for a list of pain-related Grand Rounds in various departments. Also, all are welcome to the October’s Schwartz Center Rounds: When is Enough, Enough? Pain Management for a Patient With a Substance Abuse History. This will be held Friday, October 27 from 12:00 – 1:00 in room L-112 in the BU School of Medicine. Lunch will be served beginning at 11:30.

*G Wilkes  
M Barrella*

### **Erratum**

In the July, 2006, edition of the Inpatient Times, the author of the article “Food and Nutrition Services: the quick and easy” was listed as Linda Teuwen. It was actually Kelly Plowe.

## **THE INPATIENT TIMES**

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# **The Inpatient Times**

*All the news that makes you more fit to treat*

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### **Ten questions about the future of our inpatient service**

The inpatient Medical Service of Boston Medical Center has a rich tradition of clinical and educational excellence. This tradition creates a special responsibility for each of us to help the Medical Service reach new levels of excellence. As I approach this daunting task as your new Chair, I would like to share a list of ten questions regarding the inpatient medical service that have arisen in the past few weeks. These ten questions may not be an inclusive list or even be the correct questions to pose at this time. Nonetheless, I offer them here to engage you in a dialogue designed to make the future of the inpatient medical service worthy of its storied past and of the trust bestowed upon us by our patients and our trainees.

1. How can we improve the experience of being a patient on the inpatient medical service?
2. Have we optimized movement of patients through transitions in care to optimize patient safety and quality of care, minimize inconvenience to patients, use resources efficiently, and to enrich the training experience?
3. What specific steps could we take that would have the biggest impact in making the patient care environment safer?
4. How can we sustain improvements in meeting hospital goals for quality of care on the inpatient service, including hand hygiene, performance on the Center for Medicare and Medicaid Services indicators, and medication reconciliation?
5. How can we further optimize communication with patients and staff?
6. How can we improve interdisciplinary coordination of care?
7. How can we insure that the clinical training experience fosters independent thinking among trainees while also providing an appropriate level of supervision?
8. How can we further develop specific educational goals for our trainees and measures to judge whether these goals have been achieved?
9. How can our teaching program and its component activities further encourage an evidence-based, rigorous, and supportive learning environment?
10. How can we optimize clinical excellence and the best ideals of professionalism for our trainees on the inpatient medical service?

We will need your help in formulating creative, effective, and enduring answers to these and other questions. The leadership of BMC has made substantial investments in the inpatient service to help us meet our joint goals of improving the quality and efficiency of care, patient satisfaction, and the clinical training environment. We will be using these new resources to hire Medical Directors and Master Clinicians at levels of support that will permit a greater focus on the inpatient service. We will also be critically examining the hospitalist program to expand its capacity and to provide a rewarding career for our hospitalist physicians and physician associates. These investments and your considerable energy and insights should help us create an inpatient service that defines “Best Practices” for an urban, academic medical center. My fondest hope is that we will continue to improve all aspects of what we do and our impact on the quality of life of our patients. I look forward to getting started!

*D Coleman*

## PT RIME:

### the new model of student evaluation

At the start of the 2006-2007 academic year, BUSM introduced a new evaluation form for all clinical rotations. This form was the result of a collaborative process involving all clerkships and disciplines. The form uses a vocabulary that is summarized by the acronym PT RIME. This vocabulary describes the key attributes and competencies we seek in our students. The evaluation form serves not only as a guide for the student (what to learn) but also for the teacher (what to teach, observe, ask, model, discuss and evaluate).

#### Professional

- Assumes **responsibility** to provide high quality patient care and **reliably** gets it done on a day-to-day basis.
- Demonstrates **honesty and integrity**. (e.g. "I don't know.") Accepts responsibility for errors.
- Displays **Altruism**. Demonstrates that behaviors are guided more by patients' interests than self-interest. **Advocates** for patients.
- Acts with **Humanism**. Builds a therapeutic relationship through a respectful, empathic approach that gains the trust of the patient.

#### Team/Systems

- Develops productive, collaborative working relationships with members of the health care team and effectively contributes to the provision and improvement of quality patient care.
- Seeks help appropriately.
- Demonstrates **adaptability**.
- **Partners** with other health care providers.

#### Reporter

- **Reliably gets the facts and identifies the problems** from the history, exam, studies, medical records and other pertinent sources.
- **Reports information accurately** and in an **organized** format through write-ups, daily progress notes and oral presentations.
- Identifies patient's clinical problems.

#### Interpreter

- **Prioritizes** problems.

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- Offers **patient-specific differential diagnosis**. Success equals commitment to a working diagnosis and 3-5 other reasonable, weighted possibilities, and provides **support** for them. Addresses diagnostic concerns in this patient.
- **Integrates** information from labs and imaging into the assessment/interpretation.  
**High Level Interpreter**
  - Assesses **severity of illness**.
  - Determines whether the patient is progressing toward target outcome.

#### Manager

- Offers reasonable diagnostic and therapeutic plans supported by data and sound reasoning.
- Success equals proposal of 3-5 reasonable possibilities for diagnosis and therapy for each of the major problems.

#### **High Level Manager**

- Weighs benefits and risks in the individual patient.
- Incorporates patient values and preferences into the decision making.
- Educates patient and negotiates treatment plan.

#### Educator

- Takes the initiative and demonstrates effort toward **self-improvement** by identifying and addressing learning needs, in addition to seeking out and responding to feedback. Takes criticism well.
- Becomes the **'local expert'** for his/her patients.
- Effectively shares this learning with the team.

At first glance, this evaluation appears more complex than its predecessor. However, we believe that it is more concrete, behaviorally-based descriptors will provide more guidance for you in your role as teacher and evaluator, and that you can complete it in a timely fashion. And while we have increased the level of detail on the form, your narrative comments remain an essential component of the evaluation. We encourage housestaff and faculty to employ the PT RIME vocabulary in evaluating and describing student performance.

If you have questions or comments, please contact Dr. Warren Hershman, warren.hershman@bmc.org or 638-7230.

*W Hershman*

## It's Pharmacy Week!

National Hospital and Health-System Pharmacy Week was October 22-28 this year. The profession of pharmacy is constantly evolving to optimize the pharmaceutical care we provide to patients. In honor of pharmacy week, the pharmacy residents at BMC would like to provide you with the following update in pharmacy practice.

#### **Pharmacy Education**

The Doctor of Pharmacy degree (Pharm.D.) is awarded to graduates of Accreditation Council for Pharmacy Education approved programs upon the completion of a minimum of six years of studies. The first two pre-pharmacy years consist of general science classes and can be completed during the first two years of a six year program or as part of an undergraduate degree before applying to a four year professional program. The four professional years begin with three years in the classroom taking courses in medicinal chemistry, pharmacotherapeutics, and pharmacokinetics to name a few. The final year of the program consists of intensive clinical rotations in both the inpatient and outpatient settings.

#### **Licensure**

To become licensed, graduates must pass the pharmacy boards. All licensure candidates in the US must take the North American Pharmacist Licensure Examination which tests clinical and drug specific knowledge. In addition, every state has a Multi-state Pharmacy Jurisprudence Examination which focuses on state and federal laws applicable to pharmacy practice.

#### **Pharmacy Residency Programs**

More pharmacists are opting to further their pharmacy education through residency training programs. Similar to physician graduates, pharmacy residents must participate in a match program. The PGY-1 year is a general Pharmacy Practice residency involving a wide breadth of rotations in critical care, ambulatory care, internal medicine, and various specialty areas. The PGY-2 year allows pharmacists to specialize in a particular practice setting. At BMC we currently have five PGY-1 residents

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as well as five PGY-2 residents in the specialties of critical care, oncology, infectious disease, cardiology, and ambulatory care.

#### **Board Certification**

Pharmacists also have the option to further their credentials by taking a board certification examination. Board certification can be obtained in the following areas of expertise: nuclear pharmacy (BCNP), nutrition (BCNSP), oncology (BCOP), pharmacotherapy (BCPS), and psychiatry (BCPP).

#### **Decentralized Clinical Pharmacists**

The inpatient pharmacy department at BMC has adopted a decentralized model of practice, in which the majority of our pharmacists practice on the medical units. This model has been made possible by new technologies such as computerized physician order entry (CPOE) and automated dispensing machines (e.g. Pyxis) which have minimized the technical demands on the pharmacist. In addition to approving all medication orders for their assigned units, the decentralized clinical pharmacists participate in patient care rounds and perform a variety of targeted clinical functions including IV to PO conversions and aminoglycoside dosing per pharmacy protocol. The presence of pharmacists in the units has led to an increased number of clinical interventions that have positively impacted patient care.

#### **Clinical Pharmacy Specialists**

Clinical pharmacy specialists at BMC are advanced level practitioners with residency training and/or several years of clinical experience. They work closely with other healthcare providers on their assigned services to optimize patient care by promoting the appropriate use of medications. Clinical specialists perform a variety of functions including clinical practice (e.g. rounding with patient care teams, medication review, patient counseling, drug information), quality improvement (e.g. medication use evaluations, guideline development, committee participation), education (e.g. formal lectures and in-services for physician and nursing staff), and cost-containment for high-expenditure medications. BMC currently has clinical pharmacy specialists are serving the following clinical areas: ambulatory care (3), medicine (2), critical care (2), cardiology (2), infectious disease, emergency medicine, hematology/oncology, and pediatrics.

*A Partridge*

### **It's that time again...Flu season**

It is that time of year again...flu season! The influenza season in New England typically begins in November or December, peaks in February and may continue through March or April. In the U.S., approximately 36,000 persons die per year as a result of influenza. Persons who are at highest risk for influenza related death are those less than 2 years of age, greater than 65 years of age and persons of any age with chronic medical conditions. The best way to prevent influenza and complications due to influenza is by vaccination.

The Advisory Committee on Immunization Practices (ACIP) has designated groups recommended for vaccination based on risk of influenza related complications. Persons at high risk for influenza related complications include children between the ages of 6-59 months, persons at least 50 years of age, persons of any age with chronic medical conditions and women who will be pregnant during the influenza season. Also, those who are in close contact with persons at high risk for complications, including *health care workers*, household contacts and other persons who have frequent contact with those at high risk should be vaccinated. It is expected that vaccine supply this year will be adequate, therefore vaccination of all patients, both high risk and healthy, is recommended to begin at the same time.

There are four vaccines available for the 2006-07 season: three different Trivalent Inactivated Influenza Vaccines (TIV) and one Live Attenuated Influenza Vaccine (LAIV). The vaccines are antigenically equivalent and contain antigens for both influenza A and B. Each year the vaccine composition is determined using global surveillance and developed based on what is expected to circulate in the next season. This is why it is important to get vaccinated every year. The TIV vaccines are inactivated and composed of particles and purified surface antigens. There are three manufacturers for the TIV vaccine which are administered by intramuscular injection. The LAIV vaccine contains live, attenuated (or weakened) virus and is approved for use in healthy, non-pregnant persons 5-49 years of age. The LAIV

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vaccine is given by intranasal administration.

Immunity takes approximately 2 weeks to develop after vaccination, therefore vaccination programs usually start in late September or early October based on vaccine supply. At BMC, the inpatient vaccination and outpatient vaccination for this season began the first week and second weeks in October, respectively. BMC's community flu day, which offers vaccines for free to the community as well as BMC staff, is scheduled for October 25<sup>th</sup> in the Menino Pavilion lobby and October 27<sup>th</sup> in the East Newton Pavilion lobby. Stop by and get yourself vaccinated!

For more information of influenza and vaccination, here are a few links that will be useful:

- Massachusetts Department of Public Health – <http://www.mass.gov/dph/cdc/epii/flu/fluprov.htm>
- CDC influenza webpage – <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5510a1.htm>
- CDC Vaccine Information Statements – <http://www.cdc.gov/nip/publications/vis/default.htm>
- Screening tools for contraindications to vaccination –
  - Trivalent Inactivated Influenza Vaccines (TIV) – <http://www.immunize.org/catg.d/p4066.htm>
  - Live, Attenuated Influenza Vaccine (LAIV) - <http://www.immunize.org/catg.d/p4067.htm>

*D Whitney*

## ***HEY EVERYBODY!!!***

**Get your free flu shot today  
at Menino Pavilion Lobby**

**or**

**this Friday  
at Newton Pavilion Lobby!**

***Do it for your patients, yourself,  
and your family! Just do it!***

### **Implementing the National Patient Safety Goals 2006-2007:**

#### **Patient safety is not an accident**

As the newest member to the BMC Senior Leadership Team I have been very impressed with the priority and resources that BMC dedicates to patient safety. The Patient Safety Committee is comprised of members from disciplines who are well known advocates for our patients at BMC. Each member is part of a team that is responsible for the implementation, education and monitoring of one of the National Patient Safety Goals (NPSGs). In future publications we will highlight the work of these teams.

The purpose of the Joint Commission's NPSGs is to promote specific improvements in patient safety. The goals highlight problematic areas in healthcare and describe solutions to these problems. Recognizing that sound system design is intrinsic to the delivery of safe, high quality health care, the goals generally focus on system-wide solutions. Each year the Joint Commission develops new National Patient Safety Goals specific to each of its accreditation programs. For 2007, two new or expanded goals have been added that are applicable to the Hospital Program here at BMC.

Goal 8B: Medication Reconciliation has been expanded to include providing a complete list of medications to the patient on discharge from the facility.

Goal 13: Encourage patient's active involvement in their own care as a patient safety strategy.

Goal 13A: Define and communicate the means for patients and their families to report concerns about safety and encourage them to do so.

BMC encourages patients to bring any safety concerns to the staff's attention in order to resolve safety issues to make their BMC experience as positive as possible. Since the implementation of the National Patient Safety Goals in 2003, BMC leadership has worked with staff and clinicians to ensure implementa-

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tion across the organization. The NPSG's currently in place are:

**Goal 1:** Patient Identification (Patti Ann Collins, Nursing):

- Inpatient: patient name and Medical Record Number
- Outpatient: patient name and date of birth

**Goal 2:** Communication (Susan Haas, Chief Medical Officer):

- "Read Back" verbal orders and results
- Do not use dangerous abbreviations
- "Critical results" call back
- "Hand off" communication

**Goal 3:** Medication Safety (Mary Young, Pharmacy):

- Standardized drug list
- Annual review of look-alike/sound-alike drugs
- Label all medications (e.g. syringes, cups, basins, solutions) on and off the sterile field

**Goal 7:** Health Care Associated Infections (Bob Burke, Infection Control):

- Hand Hygiene
- Wash hands before and after patient contact
- Manage health care-associated infections

**Goal 8:** Reconcile Medications (Jeff Greenwald, Medicine & Denise Mehegan, Quality):

- Ensure a complete and accurate medication list is maintained and communicated across the continuum of care in the hospital and after discharge.

**Goal 9:** Reduce Falls (Cheryl Merrill, Nursing):

- Reduce the risk of patient harm from falls; Implement a falls reduction program.

The Joint Commission provides guidance on how to effectively comply with each goal's requirements. This guidance includes detailed answers to Frequently Asked Questions (FAQs), which are posted on the Joint Commission Web site ([www.jcaho.org](http://www.jcaho.org)).

*P Healy*

## Remember the game “telephone?” Don’t play it with your patient’s information!

Breakdowns in verbal and written communication between health care providers are a major concern in the delivery of care. Medical errors are the eighth leading cause of death in this country each year and it is estimated that two-thirds of medical errors are preventable. Effective and timely sign-outs are required to reduce medical errors. Here at Boston Medical Center, as one of our patient safety goals, we are focusing on improving handoffs and communication.

Many barriers contribute to the communication difficulties between clinicians. A lack of standardization and structure can result in omission of critical information. Differences in communication styles can lead to frustration. Some clinicians are very descriptive and verbose while others only want the “bottom line.”

Effective and timely sign-outs are particularly important in our current housestaff training system. There is night float, day float, and weekend coverage. Our patients have multiple complex medical problems and ineffective sign out can lead to suboptimal care. However, a handoff can be beneficial. The person accepting the care of the patient has a fresh perspective on the situation and this can lead to better detection of errors.

Here are some measures that you can take to improve your handoffs and sign-out:

**Try to communicate face-to-face:** Since much of communication is nonverbal, the face-to-face interaction is very valuable. Two-way verbal communication remains best method of information transfer. In this way, there is also an opportunity to ask questions and clarify ambiguities.

**Limit interruptions:** Handoffs, or transitions in care, are particularly vulnerable times in which the propensity for medical errors increases. Since the transfer of responsibility is such an important part of patient care, try to review the sign out in an environment with limited interruptions. This will prevent communication errors and omission of information.

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**At least use the phone:** There are occasions when face-to-face transfer is not feasible. An example is the “weekend” covering team. In this case, a communication with the responsible team by a phone call is essential. While the write-ups and sign out sheets may be very detailed, a brief conversation by phone with an opportunity to ask and answer questions is essential.

**Use a standardize approach:** Natural language is naturally ambiguous! Use a standard approach when discussing each patient. Each sign-out should include, but not be limited to, the following:

- 1) Diagnosis and current condition of the patient
- 2) Recent changes in condition or treatment
- 3) Anticipated changes in condition or treatment
- 4) What to watch out for in the next interval of care

**Use the SCM “sign-out” function:** This is a wonderful example in which the electronic medical record can improve patient care. However, the information in this record is only as good as what you enter. Medications, room number, and attending of record are automatically entered by the computer but be sure to update the problem list and to provide a concise write up of anticipated events (example: If pt spikes a fever, please culture and start vancomycin). You can then review these “if-then” statements with the oncoming provider.

**Anticipate what may go wrong:** Obviously, unexpected clinical changes do occur. However, often, we have forewarning. During transitions of care, communicate to the receiving clinician the possible changes in clinical status and plans for care.

By improving the way we sign-out and by standardizing and improving handoffs, we can improve the care of our patients at Boston Medical Center. Here at BMC, we are in the process of developing a standardized handoff template—stay tuned!

*N Radhakrishnan*

### References:

1. IHI website: [www.ihi.org](http://www.ihi.org)
2. “Core competencies in Hospital Medicine” by the Society of Hospital Medicine
3. Joint Commission National Patient Safety Goal Toolkit

## Beware of Concomitant Aspirin and NSAID Use

The FDA recently released a warning statement regarding the concomitant use of aspirin, when used for cardioprotective effects, and ibuprofen (nonselective NSAIDs). The cautionary statement read as follows:

*“Ibuprofen can interfere with the anti-platelet effect of low dose aspirin (81 mg per day), potentially rendering aspirin less effective when used for cardioprotection and stroke prevention. Healthcare professionals should advise consumers and patients regarding the appropriate concomitant use of ibuprofen and aspirin.”*

Both aspirin (irreversibly) and nonselective NSAIDs (reversibly) bind to the acetylation sites of cyclooxygenase (COX) within the platelet. Therefore, when ingested concomitantly, the competitive inhibition between the two agents potentially reduces the irreversible binding of low dose aspirin which negates the expected inhibition of platelet aggregation and consequently decreases aspirin’s cardioprotective effects.

This warning statement pertains primarily to those patients who take a low dose aspirin daily for cardioprotection while on chronic use of NSAIDs. These agents are not contraindicated for concomitant use and the clinical implication of this interaction is unclear as it has not been evaluated in clinical endpoint studies. Nevertheless, the FDA includes the following recommendations to be considered for assistance in the appropriate management of patients requiring both agents.

1. Counsel your patients regarding the appropriate timing of low dose aspirin and the NSAID (including ibuprofen, naproxen, diclofenac and others).
  - a. To minimize the interaction, take the NSAID 2 hours after the immediate release low dose aspirin (not EC). In addition, ibuprofen can be given at least 8 hours before the aspirin dose and naproxen and diclofenac at least 12 hours before the aspirin dose. *Continued→*

- a. Minimal data is available regarding the use of enteric coated aspirin (ECASA), however if a patient is taking ECASA and a NSAID dose, would recommend spacing by at least 12 hours.

Appropriate timing of the two agent’s doses will

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aspirin, can be used. Nevertheless, naproxen possesses its own side effect profile which could be of potential detriment and therefore it requires an evaluation of risks and benefits.

2. Avoid or minimize the duration of NSAID use. Occasional NSAID use is likely to have minimal risk for negating the antiplatelet effect of low dose aspirin due to the long lasting effect of aspirin on platelets.
  - a. Consider the use of analgesics that do not interfere with antiplatelet effects of low dose aspirin for populations at high risk of cardiovascular events.
  - b. If COX-2 selective agents, such as celecoxib, are being considered for use, the underlying cardiovascular risk of the patient must be assessed, as these agents have been associated with an increase in myocardial infarction and cardiovascular related mortality.

For further questions or recommendations, please contact Toby Trujillo, Pharm.D., BCPS (#1072) or Kate Phillips Pharm.D.(#2988) or any of the clinical pharmacists.

*K Phillips  
T Trujillo*

For further reading on this topic:

1. Food and Drug Administration website. [http://www.fda.gov/cder/drug/InfoSheets/HCP/ibuprofen\\_aspirinHCP.htm](http://www.fda.gov/cder/drug/InfoSheets/HCP/ibuprofen_aspirinHCP.htm)
2. Catella-Lawson F, Reilly MP, Kapoor SC et al. Cyclooxygenase Inhibitors and the Antiplatelet Effects of Aspirin. *N Engl J Med* 2001;345:809-17.
3. Patrono C, Rodriguez LA, Landolfi R et al. Low-Dose Aspirin for the Prevention of Atherothrombosis. *N Engl J Med* 2005;353:2373-83.
4. Stacy ZA, Dobesh PP, Trujillo TC. Cardiovascular Risks of Cyclooxygenase Inhibition. *Pharmacotherapy* 2006;26(7):919-38.

## **Dysphagia in the elderly**

Dysphagia is a remarkably prevalent disorder in the aging population. In independently living populations of > 65 year olds, up to 15% may have dysphagia. In facility based populations, the prevalence is as high as 40%. Normal effects of the aging process, such as deterioration in salivary gland function or decreased reflexive opening of the upper esophageal sphincter, can be contributing factors to dysphagia, as can stroke or dementia. Finally, medications, including diuretics, anti-cholinergics, anti-histamines, and beta-blockers can lead to or worsen dysphagia due to xerostomia.

As always, a thorough history is helpful. The most important historical details are duration of symptoms, progression of symptoms, weight loss, and frequency of pneumonia. It is useful to divide potential etiologies of dysphagia into structural or functional causes. Structural issues that should be considered are tumors, webs, rings, diverticulum, strictures, and rarely, osteophytes. Symptoms concerning for malignancy include worsening symptoms, weight loss, otalgia, odynophagia, or hemoptysis, especially in a patient who uses tobacco or alcohol or had a prior caustic ingestion. Neurologic functional issues that should be considered are stroke, neurodegenerative diseases like advanced dementia or Parkinson's disease, and vocal cord paralysis. Non-neurologic functional disorders can include achalasia, scleroderma, pain leading to dysphagia, xerostomia and overall muscle weakness and atrophy.

Once a differential is made, the work-up can proceed. A barium swallow evaluates the full length of the esophagus, and can identify esophageal strictures, tumors and peristalsis. Another useful alternative to barium swallow is transnasal esophagoscopy (TNE) which is easily performed at the bedside. The main advantage of TNE over barium swallow is that a biopsy can be obtained immediately. If patients present with symptoms suspicious for aspiration, such as recurrent pneumonias, gurgly vocal quality or coughing with meals, a modified barium swallow (MBS) or functional endoscopic evaluation of swallowing with sensory testing (FEESST) may be more useful. A modified barium swallow (MBS)

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evaluates the patient's ability to swallow a variety of food consistencies. In the MBS, the focus is on the oral and pharyngeal phases of swallow. In FEESST, videolaryngoscopy is used to assess laryngeal and pharyngeal sensation, vocal cord integrity, elevation of the larynx, and function of the pharyngeal phase of swallow with various food consistencies. FEESST and MBS are complimentary tests providing information regarding different aspects of the swallow.

When a patient has had a stroke or other event that could affect swallowing, it is important to look for signs that swallowing is impaired (cough after swallow, voice change after swallow, abnormal volitional cough, abnormal gag reflex, dysphonia, and dysarthria). Patients should first be observed carefully during spontaneous swallowing. If no signs of swallowing impairment are noted then the patient may be tested under direct observation using small amounts of clear liquid. If no swallowing dysfunction is noted, the diet may be carefully advanced. However, if any of the signs noted above are exhibited, then the patient should be made NPO and a Speech/Swallow consult should be considered.

Treatment is diagnosis-dependent and may be medical or surgical. A speech pathologist may be able to provide therapeutic swallowing strategies or diet modifications to improve swallow safety and efficacy. Practical modifications as simple as changing the form of medications may help, as elders may not be aware that crushing pills or opening capsules into applesauce can facilitate ease of swallowing them but can alter efficacy. Many benefit from a switch to liquid formulation or even reevaluation of the necessity of some of their medications. Surgical cures of dysphagia are possible for certain diagnoses. Fortunately, many causes of dysphagia are treatable and your patients will be grateful for your attention to this troubling and potentially dangerous problem. *R Stone*

### **References:**

1. ECRI Report: Diagnosis and treatment of swallowing disorders (dysphagia) in acute-care stroke patients. Evidence report/ technology assessment No. 8; Siebens H, et al. Correlates of eating dependency in institutionalized elderly. *J Am Geriatr Soc* 1986; 34(3):192-98.
2. Bending A (2001) Hiding medicines or hiding problems? *Nursing & Residential Care* 3:439-40
3. *American Journal of Speech-Language Pathology* Vol.6 17-24 November 1997. Clinical Assessment of Swallowing and Prediction of Dysphagia Severity, Daniels SK et al.

## **The cost of unnecessary lab tests**

"Whether a laboratory test should be considered unnecessary or not depends primarily upon who you ask. In the eyes of a clinician, every test he or she orders is necessary. Most laboratorians, on the other hand, can tell multiple stories about clinicians who submitted duplicate test orders, insisted on the use of outdated tests, or ordered tests that were not recommended by the standard of care for a particular condition. As health care costs continue to escalate, however, the problem of unnecessary lab tests will become even more acute, as the financial burden to the system may run into the millions-if not billions-of dollars.

"One recent study of diagnostic tests and procedures ordered by physicians during routine health exams estimated the direct cost of five diagnostic interventions for which there lacked strong justification in asymptomatic patients at between \$59.2 million and \$255.6 million per year." (*Am J Prevent Med* 2006;30:521-527) The authors, Merenstein, et. al. state that "even more troubling is that these assumptions are conservative. The study only looked at the direct costs of non-recommended tests using Medicare reimbursement rates, which are significantly less than non-Medicare rates."<sup>1</sup>

The cost of testing is a difficult number to pinpoint. Most studies look at the amount billed for testing. Listed in the table below are several commonly ordered tests and their volumes for the first part of 2006 at Boston Medical Center.

	# tests 1/1/06-5/1/06	charge/test (\$)
Electrolytes panel	30,201	67
Serum glucose	15,717	11
Fingerstick glucose	127,583	18
CBC w/Diff	56,331	23
CBC no diff	55,687	18
Blood gas	5,892	92
Urine culture	14,569	38
Urinalysis	19,409	12

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While this list is not all inclusive of tests performed on our patients, it is a snapshot of some of the testing volume at BMC and what the hospital charges the insurance (or third party) payers.

In addition to the financial consideration, unnecessary tests can lead to specific patient issues. Some diseases will require monitoring of the patient to determine reoccurrence of a tumor (for example, the monitoring of PSA post prostatectomy, or thyroglobulin post thyroidectomy) and this type of testing should be ordered at defined intervals. In general "shot gun" testing should be avoided and screening tests should be utilized before more expensive confirmatory testing.

With respect to good patient care, repeated phlebotomy, can lead to unacceptable blood loss that may further compromise the patient's primary medical condition. Unnecessary repeated testing also strains the laboratory staff resources and detracts from those patients whose specimens need special attention.

In summary, providers should be aware of testing ordered by others caring for their patient, so duplication of orders can be avoided. Unnecessary testing will produce a large financial burden on our medical system and may also prevent us from giving exceptional care without exception.

*K Gregory*

### **Reference:**

1. Excerpts of this article were taken from: Clinical Laboratory News. "Unnecessary Lab Tests, Can Laboratorians Stop Clinicians from ordering them?" Volume 32, Number 9 pages 1-4. September 2006.

## **Editorial Note:**

In this edition of the Inpatient Times, Dr. Rebecca Stone, with the input of Dr. Greg Grillone, wrote an article on dysphagia in the elderly. The process of writing this article created the opportunity for ENT and Speech Language Therapy to discuss the topic. The article generally represents the views of the ENT Department but highlights the importance of addressing the evidence based approach to medical issues as well as unifying the approach to medical problems on which the medicine teams often consult. I appreciate the dialog and significant effort that went into this piece. *J Greenwald*

## What our diabetics really eat:

### Translating meal choices into research

It is well known that the prevalence of diabetes is increasing in the United States. It is estimated that more than 14 million individuals in the US have been diagnosed with either type 1 or type 2 diabetes mellitus (DM). Another 6 million individuals have undiagnosed DM.

Boston Medical Center serves many individuals from populations at greatest risk of developing diabetes (i.e. Hispanic, African American, Pacific Islanders). Hyperglycemia, defined as a random blood glucose (BG) >200 mg/dl, has been shown to occur in 38% of patients admitted to an inner city hospital, 26% of whom had known history of DM and 12% of whom had no history of DM (Umpierrez GE, et al. JCEM 2002). Hyperglycemia in the hospitalized patient is common as stress, illness or injury orchestrate the acute phase response leading to gluconeogenesis and increased insulin demands. Hospitalized patients with abnormal blood glucose control have an increased risk for complications, increased length of stay, and increased costs associated with hospitalization. Increased risks of infections and altered wound healing are common in the patient with DM as well as delayed recovery after stroke, MI and other critical illnesses (Clement S, et al. Diabetes Care. 2004; 27:553-591).

At BMC, Marie McDonnell, MD, Endocrinologist, directs the inpatient diabetes program. Dr McDonnell collaborates with various departments and providers to develop new methods to improve control of glucose levels in our inpatients. For example, as of now, any patient ordered for a carbohydrate-controlled diet does not receive regular juice with meals. Instead, the patient is encouraged to order fruit and is offered a sugar free juice

Insulin is often used as the primary method for regulating blood glucose (BG) in hospitalized patients. It is seen as an effective way to manage BG for the short time most patients are hospitalized (3-5 days). There are drawbacks for relying solely on insulin injections such as strict timing of administration and hypoglycemic risk. Diet is

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another important factor contributing to BG control in the hospitalized patient. High carbohydrate diets can lead to hyperglycemia in individuals with diabetes.

Little is known about nutrition intake of acutely ill hospitalized patients on an oral diet. Providers rely in part on the consistent carbohydrate diet (often referred to as the ADA diet at BMC) to help with glycemic control for their patients with hyperglycemia. This meal plan incorporates a consistent carbohydrate content for each meal on a day-to-day basis. It should be noted that patient satisfaction is highly valued at BMC. Patients have choices regarding the type of carbohydrate ordered (i.e. refined vs. whole grain products). Additionally, patients do not have to order a 'mixed meal' that contains a balance of carbohydrate, non-starchy vegetables and protein, which ultimately affects the rate of glucose absorption.

With Dr. McDonnell as the principal investigator and a research team including a registered dietitian and research assistant, a study will soon be underway at BMC to assess what acutely ill hospitalized patients on consistent carbohydrate diet order and choose to eat. While patients are given a lot of menu choices, it is important for providers (physicians and nutrition/food service staff) to realize what patients want to eat. To know what foods patients choose to eat helps highlight areas for improvement. More healthful or fortified menu choices for foods commonly consumed may need to be considered if patients typically choose an unbalanced diet. For this reason, our primary objective for this study is to determine the percent of calories from carbohydrates consumed at the lunch meal and the ratio of carbohydrate, fat and protein consumed. We hypothesize that patients will choose a higher percentage of carbohydrates, "comfort foods," compared to fat and protein. A secondary objective includes determining what factors influence choices patients make when ordering and consuming their meals. Therefore, a short questionnaire will be administered to the patients after they are finished with their meal.

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There is an abundance of literature linking diet and food choice to diabetes control, which is why there are such defined recommendations. What is not clearly defined is what acutely ill hospitalized patients on an ADA diet are choosing to eat. It is important to know how intake of particular foods affects glycemic control when persons with diabetes or pre-diabetes enter the hospital setting. Therefore, another secondary objective and outcome of our study is to determine the effect of the percent of carbohydrates consumed on glycemic control. This is a landmark study and results will place another piece in the puzzle in determining how to improve glycemic control among patients with diabetes and hyperglycemia in the hospital setting.

*K Tapper*

### Meningeal signs

The major causes of meningitis in Kernig's days were pneumococcus and tuberculosis which both produce an intense pachymeningitis around the brain stem thus causing the classic meningeal signs. Viral meningitis may not be associated with pachymeningitis, therefore the classic signs may be absent. Assessment of the accuracy of the clinical examination in the diagnosis of meningitis is limited by the lack of prospective data.

Neck stiffness is a relatively useful clinical finding, with a pooled sensitivity of 70% (95% CI, 58%-82%). Kernig and Brudzinski signs have not been well studied, although in Brudzinski's original description of 42 cases of meningitis, Kernig sign had a sensitivity of 57% and Brudzinski's had a sensitivity of 97%.

**Kernig's sign:** Vladimir Mikhailovich Kernig, a Russian physician, first published the description of the meningeal sign in 1884. This is Kernig's original description: "I have observed...the occurrence of flexion contracture in the legs or occasionally also in the arms which becomes evident only after the patient sits up...the stiffness of neck and back will ordinarily become much more severe and only now will a flexion contracture occur in the knee

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and occasionally also in the elbow joints. If one attempts to extend the patient's knees one will succeed only to an angle of approximately 135 degrees. In cases in which the phenomenon is very pronounced the angle may even remain 90 degrees."

**Brudzinski's signs:** In 1909, Josef Brudzinski, a Polish physician, described many meningeal signs in children. *The classic Brudzinski's sign:* This is elicited with the patient lying on the back. If the neck is forcibly flexed forward, there occurs a reflexive flexion of the knees. *Brudzinski's cheek sign:* Pressure on the cheek below the cheekbone elicits a reflexive raising and a simultaneous flexion of the lower arm. *Brudzinski's symphyseal sign:* Pressure on the symphysis elicits a reflexive hip and knee flexion and abduction of the leg.

**Jolt accentuation of headache:** Jolt accentuation of the patient's headache is elicited by asking the patient to turn his or her head horizontally at a frequency of 2 to 3 rotations per second. Worsening of a baseline headache represents a positive sign. The sensitivity of this sign in one study of 34 patients was 97%.

### **Final Notes:**

1. The absence of all 3 signs of the classic triad of fever, neck stiffness, and altered mental status almost eliminates meningitis.
2. Fever is the most sensitive of the classic triad of signs of meningitis with neck stiffness the next most sensitive sign.
3. Kernig and Brudzinski signs appear to have low sensitivity but high specificity.
4. Jolt accentuation of headache may be a useful adjunctive maneuver for patients with fever and headache. In patients at sufficient risk of meningitis, a positive test result may augment the decision to proceed to lumbar puncture, whereas a negative test result essentially excludes acute bacterial meningitis.

### References:

*S Ramani*

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2. Durand ML, Calderwood SB, Weber DJ, et al. Acute bacterial meningitis in adults: a review of 493 episodes. *N Engl J Med.* 1993;328:21-28.
3. McGee, Steven. Evidence based physical diagnosis.