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Managing Radiation Exposure

Dr. Kristin M. Nelsen, Chief of Staff

As you know, the media is increasingly raising concerns about the level of radiation to which the public is exposed and related health risks. Radiation exposure happens in many locations, from security screening at airports to medical imaging and diagnostics.

In the medical industry, recent collaborative campaigns to reduce exposure have included Image Gently in 2007 for pediatric patients and Image Wisely in 2009 for the entire population. However, there is a need to more broadly disseminate the concept of "safe and effective" radiation use. Both the American College of Radiology and the Radiology Society of North America are dedicated to doing just that, eliminating unnecessary imaging and lowering the radiation exposure of necessary exams.

Meanwhile, as physicians, we should renew our awareness about radiation to protect ourselves and our patients from any unnecessary hazards. We should start by adopting the ALARA principle (As Low As Reasonably Achievable), which means every reasonable measure is taken to ensure that all patients receive the smallest amount of radiation possible.

Below is a short "refresher course" to help all of us succeed.

Source	mSv
Airport Security Scan	0.0001
Two-view Chest Radiograph	0.1
Barium Enema	3 to 8
Bone Scan	6
Head CT	2 to 4
Abdominal CT	8

Exposure Sources

Humans are exposed to background radiation on a daily basis through cosmic radiation, radioactive materials in the earth and radiation in the food we eat. Radiation is measured in Sieverts (Sv) or Grays (Gy). The average background radiation in the U.S. is approximately 3 mSv/yr.

Exposure Impacts

Advanced imaging has many benefits as it provides physicians with the tools to help save lives. It may reduce the need for surgery and also assist us in determining treatment plans that speed recovery.

However, radiation from multiple exams over time can have adverse outcomes. Children in particular are at higher risk from radiation effects due to their rapidly proliferating cells which are more radiosensitive. Also, children have a longer life expectancy and thus a greater chance to develop cancer over their lifetime. Other rapidly growing cells at high risk from radiation include epithelial, bone, blood, gonad, thyroid and fetus. The risk of radiation-induced cancer is linear, cumulative and does not have a "safe" threshold (BEIR VII model). Induced cancers can be delayed 10-40 years.



When “Achoo!” Could Be More Complications of Acute Sinusitis

GUEST AUTHOR

Dr. Keith Scharf, Valley ENT Associates

Most people experience sinus issues at some point in their life. It’s easy to attribute this condition to allergies or the common cold. However, it can be lethal if not prevented or diagnosed properly.

A Common Ailment

Acute sinusitis is a common ailment that affects 16% of the U.S. population annually. A number of factors can contribute to the development of sinusitis. The most common cause is a viral respiratory infection. Up to 0.5% of upper respiratory infections develop into a bacterial sinusitis. Allergic rhinitis has also been considered a contributing factor, but a causal relationship has not been proven. Sinusitis occurs because of the failure of normal mucus transport and decreased sinus ventilation. Occlusion of the sinus ostia leads to diminished mucociliary transport, stagnation of secretions, decreased pH and lowered oxygen tension within the sinus, creating a culture medium for bacteria.

Microbiology

Studies have shown that 70% of cases of community-acquired sinusitis in adults and children are caused by *Streptococcus pneumoniae* and *Haemophilus influenzae*. *Branhamella (Moraxella) catarrhalis* causes 25% of the cases of acute sinusitis in children. Less frequently encountered pathogens include *Staph aureus*, *Neisseria sp.*, anaerobes and gram negative rods. Fungi are normal flora in the upper airway, but can cause acute sinusitis in immune-compromised patients.

Complications

Complications of paranasal sinus infections most often involve the orbit and periorbital. Purulent sinusitis can be considered a life threatening disease because of its potential for intracranial complications. Sinusitis can lead to brain abscess (see below), subdural empyema, meningitis, cavernous sinus thrombosis, epidural abscess and osteomyelitis occurring either alone or in various combinations. The two primary

routes of intracranial extension are through the destruction of the bony wall of the sinus (direct), or through diploic, dural and meningeal veins (indirect). Intracranial complications are most often associated with infections of the frontal, ethmoid and sphenoid sinuses and rarely from the maxillary sinuses.

The most important prognostic indicator in patients with intracranial extension is the mental status and degree of orientation at the time of diagnosis. These complications are most often seen in males between 20 and 30 years of age and have a mortality rate of approximately 30%. Despite recent advances in treatment and diagnostic imaging, intracranial complications of acute sinusitis are often not recognized early enough to prevent significant morbidity and mortality.

Diagnosis

Signs and symptoms of acute sinusitis include mucopurulent rhinorrhea, headache, fever, facial/tooth pain, and halitosis. They are generally present for greater than seven days. Complications involving the orbit will also present with edema and erythema of the eyelid and surrounding area, and possible changes in vision. In patients with intracranial extension, mental dullness, lethargy and seizures may be seen although many cases are neurologically silent making the diagnosis difficult.

Cavernous sinus thrombosis will typically present with chemosis of the conjunctiva, in addition to facial swelling diplopia and diminished visual acuity. CAT scan, MRI and lumbar puncture may all be necessary in the diagnosis and management of complicated acute sinusitis. Plain sinus x-rays generally have little role in clinical management.

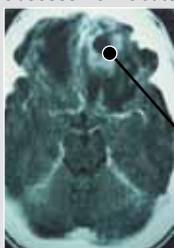
Treatment

Prompt treatment of complicated sinusitis is necessary to prevent vision loss, neurological sequelae or even death. Treatment entails high dose, broad spectrum intravenous antibiotics. Periorbital infections usually do not require surgical intervention unless an abscess develops. In patients with meningitis and cavernous sinus thrombosis, surgical treatment of the affected sinuses is likely to be necessary. This may require an external or endoscopic approach. Epidural abscess, brain abscess and subdural empyema also require a craniotomy to drain the intracranial purulent collection.

It is critical that clinicians realize that sinusitis is a potentially lethal disease and that intracranial complications and death associated with it can be prevented by early detection and eradication of the primary disease.

For more information, contact Dr. Keith Scharf at 989.799.8620 or www.valleyent.info/.

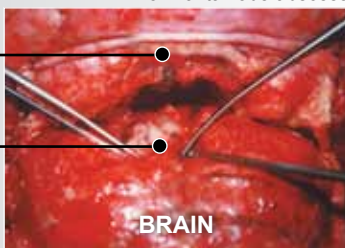
Axial CT scan showing frontal lobe abscess from acute frontal sinusitis



FRONTAL SINUS

ABSCESS

Intraoperative craniotomy for frontal lobe abscess



BRAIN



National Food Allergy Guidelines Established

GUEST AUTHOR

Dr. Michael McAvoy, Valley Allergy Clinic, PC

There is a great deal of misunderstanding and confusion associated with defining, diagnosing and managing food allergies. Although food allergies are thought to be significantly on the rise in the United States, multiple studies have demonstrated that 50–90% of presumed food allergies are not allergies at all.

To address this concern, in December 2010 the National Institute of Allergy and Infectious Diseases (NIAID), which is part of the National Institutes of Health (NIH), established the first-ever national guidelines on the diagnosis and management of food allergies.

Common Allergens

The guidelines state that the most common food allergens in the United States are egg, milk, peanut, tree nuts, wheat, crustacean shellfish and soy. A 2007 survey conducted by the Centers for Disease Control and Prevention (CDC) estimated that food allergies affect 5% of children under the age of five, and that 4% of Americans over the age of five have a food allergy. The prevalence of peanut allergy in the United States is about 0.6% of the population.

Fortunately, most children with food allergies will eventually grow to tolerate milk, egg, soy and wheat. Far fewer children, however, will grow to tolerate tree nuts and peanuts. The time course of food allergy resolution in children varies by food and may occur as late as the teenage years.

Diagnosing Allergies

The food allergy guidelines recommend that self-reports of presumed food allergy must be confirmed by a diagnosis from a healthcare professional. Often there is much confusion on what should be defined as an allergy. Non-allergic food reactions, such as food intolerances, are frequently confused with food allergies and result in misdiagnosis.

The guidelines recommend performing a skin puncture test, or serum IgE, to assist in the identification of foods that may be provoking IgE-mediated food-induced allergic reactions. Although a positive skin test or serum IgE test means sensitization, these results alone are not sufficient to diagnose a food allergy. A patient does not have a food allergy unless

An expert panel was convened to help draft the guidelines, and was chaired by Joshua Boyce, MD, of Brigham and Women's Hospital in Boston. All panel members were specialists from a variety of relevant clinical, scientific and public health areas.

In addition to a copy of the complete guidelines, you can find an excellent summary for clinicians and a separate “layperson” summary for patients and families at <http://www.niaid.nih.gov/topics/foodallergy/clinical>. It is important to note that these guidelines are not an official regulatory document of any government agency.

Below is an overview.

they also have clinical symptoms associated with exposure to the specific sensitized food. The larger the IgE test, the more likely the patient has the food allergy and the less likely they will outgrow the allergy. Low-level positive tests are often false positives.

Sometimes food is wrongfully blamed. Many chronic non-allergic urticaria patients are often found avoiding foods because they don't realize urticaria can occur without allergic triggers.

The Guideline Committee also points out that “additional concerns relate to the differences in the diagnosis and management of food allergies in different clinical practice settings”. The guidelines note that there are many “non-standardized and unproven procedures” like allergen-specific IgG4 and applied kinesiology.

Notable Guideline Information

Many common questions and concerns about food allergies were addressed in the guidelines; a few of these are as follows:

- Insufficient evidence exists to recommend routine food allergy testing prior to the introduction of highly allergenic foods (such as milk, egg, and peanut) in children who are at high risk of reacting to the introduction of such foods – meaning children with preexisting severe allergic disease and/or a family history of food allergies.

Nevertheless, the expert panel felt there may be some value in food allergy evaluations that include an oral



Continued on page 5



What Is HPV and How Is It Affecting Your Medical Practice?

GUEST AUTHOR

Dr. James Hines, Valley OB/GYN Clinic, PC

Practicing OB/GYNs, family physicians, internists and pediatricians often find themselves answering questions from teenage patients and their mothers multiple times every day about the most common sexually transmitted infection (STI), Human Papillomavirus (HPV). Approximately 20 million Americans are currently infected with HPV. Another 6 million people become newly infected each year.

49%

of teenage girls in the U.S. received the HPV vaccine in 2010.

Over 120 HPV types have been identified and are referred to by number. About a dozen HPV types – 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, and 59 – are considered “high-risk” types because they appear to be a necessary factor in the development of cervical cancer as well as many cases of anal, vulvar, vaginal and penile cancer. Several types of HPV, in particular type 16, have been found to be associated with HPV-positive oropharyngeal cancer (OSCC).

HPV infection is limited to the basal cells of stratified epithelium, the only tissue in which they replicate. The virus infects basal keratinocytes through microabrasions or other epithelial trauma that exposes segments of the basement membrane. The infectious process is slow, taking 12-24 hours for initiation of transcription. The viral oncogenes, E6 and E7, are the HPV proteins that are thought to modify the cell cycle to allow for viral genome replication and promote tumor growth/malignant transformation.

Fortunately, most HPV infections in young females and males are temporary and have little long-term significance. Around 75 percent of infections are gone in one year and 90 percent in two years, being cleared by the body’s immune system. We try to avoid HPV testing in patients less than 21 years of age because most will clear the HPV infection within two years and we would like to avoid unnecessary treatment and surgical procedures.

In The Office

“What is HPV and how did I get it?”

“How do I get rid of it?”

“How do we treat the cervical dysplasia?”

Clinically, these are the most typical questions asked of a physician, requiring him or her to be very blunt and forward. It’s important to talk about multiple partners and that one

of them or each of them probably transmitted the virus through sexual activity. Condoms do not completely protect a person from the virus because the areas around the genitals including the inner thigh are not covered, thus exposing these areas to the infected person’s skin. Sexual abstinence is definitely discussed and encouraged as a means to avoid contracting HPV, acquiring other viral strains, and preventing viral spread.

It is important to paint a picture of hope that up to 90 percent of individuals will clear the virus. Only 10 percent will go on to develop persistent cervical dysplasia or cervical cancer. This gives the individual some hope that they will clear the HPV infection, but close follow-up and possible treatment of the dysplasia may be necessary. We may discuss further diagnostic and treatment options with the patient, such as cryoconization, loop electrical excision procedure (LEEP) and conization depending on their individual situation and questions.

HPV CLEARED BY BODY’S IMMUNE SYSTEM



Prevention

“How does the HPV vaccine work?”

“What vaccines are available?”

Two vaccines are available to prevent infection by several HPV types. Both Gardasil and Cervarix protect against initial infection with HPV types 16 and 18, which currently cause about 70 percent of cervical cancer cases. Gardasil also protects against HPV types 6 and 11, which cause 90 percent of genital warts.

Each product is a non-infectious recombinant vaccine that targets the HPV L1 capsid protein in an attempt to induce immunity against the virus. Thimersol, an organomercury compound, is not utilized as a preservative.

In 2010, 49 percent of teenage girls in the U.S. received the HPV vaccine. Cervarix is approved for girls and women aged 10-25 while Gardasil is approved for both men and women from the ages of 9-26.

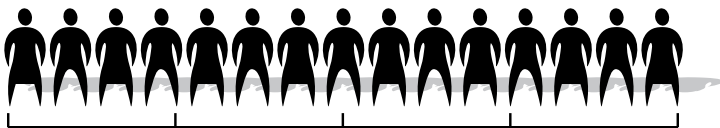
The Debate

“Is the vaccine safe and efficacious?”

“Would it not encourage our teenagers and young adults to be promiscuous, knowing that they are protected from the serious HPV types?”

“Is it morally acceptable to give a vaccine?”

Several large studies have shown the vaccine to be highly immunogenic, well tolerated, and effective against HPV types 16 and 18 infections. The most common side effect is localized irritation at the injection site. It is efficacious as discussed under “Prevention.”



~20 million

Americans are currently
infected with HPV.

Patients need to realize that even though the HPV vaccine does protect against several strains of HPV, it does NOT protect against all of them nor does it protect against other STIs or pregnancy. Certainly, in some patients, having this vaccine might encourage sexual promiscuity, but this shouldn't keep anyone from continuing to vaccinate.

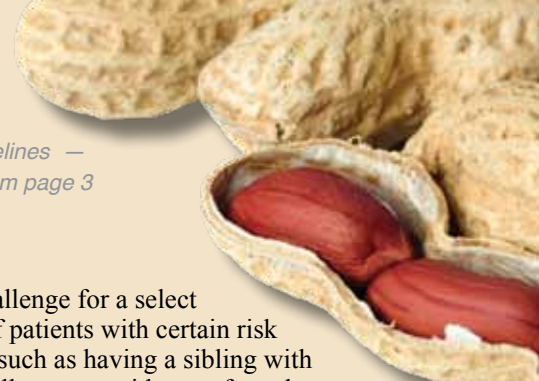
Would you give this vaccine to your son or daughter? Now that is something to think about, especially when you stop to consider that the *Committee Opinion* (number 467, September 2010) of the American College of Obstetricians and Gynecologists recommends that the initial HPV vaccination target females aged 11-12 years. To be maximally effective against all HPV genotypes included in either vaccine, vaccination should be given before the onset of sexual activity. At the end of the day, though, it is a personal decision that families and their children need to make.

In Conclusion

Because HPV is a common STI, most providers will be confronted with the issue, sometimes on a daily basis. Staying aware of HPV and talking about it openly with patients can help decrease its occurrence and aid in prevention. To vaccinate or not to vaccinate is an age-old debate. The fact that we do have a vaccine to offer patients is a step in the right direction.

For more information, contact Dr. Hines at 989.753.8453 or vobsaginaw@aol.com.

Allergy Guidelines —
continued from page 3



food challenge for a select group of patients with certain risk factors, such as having a sibling with peanut allergy, or evidence of another underlying food allergy (e.g., testing for tree nut allergy in a child with peanut allergy). It is possible that a food allergy evaluation prior to the introduction of a food could potentially prevent allergic reactions. However, widespread skin prick tests and serum IgE tests are not recommended.

- A healthcare professional should consider evaluating a child for milk, egg, peanut, wheat and soy allergy if the child is younger than five years old and has eczema that does not go away with treatment, or has eczema and a history of allergic reactions to a specific food.
- Children with moderate to severe eczema are at risk for developing food allergy, especially allergy to milk, egg and peanut. These children may benefit from a food allergy evaluation.
- There is not enough clinical evidence to show that measuring total serum IgE levels is sensitive or specific enough to diagnose food allergy.
- Although the expert panel recommended skin prick and serum IgE tests, they recommended that intradermal testing should not be used to make a diagnosis of food allergy. Intradermal testing poses a risk of adverse reactions and can be falsely positive.
- There is no evidence to suggest that restricting a mother's diet while she is pregnant or breastfeeding prevents the development of food allergy in her child.
- It is recommended that a mother exclusively breastfeed her infant until the child is four to six months, unless breastfeeding is not advised for medical reasons. There is no strong evidence that breastfeeding increases the likelihood that an infant will develop food allergy.
- It is not recommended to give an infant at risk for food allergy a soy milk formula instead of cow's milk formula to prevent food allergy from developing.
- There is no evidence that supports delaying the introduction of solid foods to an infant beyond four to six months will prevent allergic diseases from developing. This includes giving an infant a food containing milk, eggs, peanut, tree nuts, soy or wheat.

Accurate food allergy diagnosis is extremely important so people don't experience a fear of certain foods, the inconvenience of avoiding them, and the potential loss of nutritional benefits.

For more information, please contact Dr. McAvoy at 989.799.9490 or mmcavoy@charter.net.



Getting the Cold Treatment

Dr. Dennis Boysen, Covenant Regional Wound Healing and Hyperbaric Medicine Center

Physicians who work in a cold climate like the Great Lakes Bay Region can occasionally expect to see patients suffering from prolonged exposure to freezing temperatures. The two most detrimental cold injuries are frostbite and hypothermia. Cold injury treatments vary depending on the severity of the case, and physician intervention is often necessary for patient recovery.

With winter upon us, it might be helpful to review the following information about cold injuries and treatments, and to proactively caution your patients about over-exposure before they engage in outdoor activities.

Frostbite

COLD INJURY PHYSIOLOGY

There are two pathophysiological effects of frostbite on the body. One effect is direct cell damage where actual freezing of the exposed tissue occurs. As tissue freezes, ice crystals form on the outside of the cell membrane (extracellular) and damage the cell membrane. This changes the cell's osmotic gradient, leading to intracellular dehydration and eventually resulting in cell death. As the temperature continues to fall, intracellular ice formation results which leads to actual mechanical destruction of the cells.

The second effect of cold exposure is progressive dermal ischemia. When the body senses a dangerous drop in core temperature, it responds by inducing alternating cycles of vasoconstriction and vasodilatation. This directs blood to the vital organs, while giving periodic bursts of blood to the extremities (known as the hunting reaction). With vasodilatation, a degree of partial thawing results and this, with continued cold exposure and repeat refreezing, leads to further cellular damage – especially to the endothelial cell. This results in damage to the cell and progresses to increasing the viscosity of the blood, causing a progressive thrombosis of the microcirculation and eventual cell death and/or loss of limb or body organs.

Cold injury classifications are as follows:

- **Mild:** such as pernio or chilblains.
- **Moderate:** such as trench foot (nontropical immersion foot).
- **Severe:** with sub-categories such as frostnip, superficial frostbite and deep frostbite.

Clinical spectrums can be divided into symptoms such as:

- **Frostnip:** This is an early and less severe form of frostbite and the only fully reversible cold injury.
- **Pernio or chilblains:** This is due to repeated exposures to cold especially in presence of high humidity. Lesions are red, pruritic and located on feet or other exposed areas and is self limiting.
- Frostbite is the most severe form of injury and is characterized by actual destruction of the tissue.

Another useful classification is as follows:

- **1st Degree:** Also known as frostnip, symptoms are itching and pain accompanied by white plaque with peripheral erythema.
- **2nd Degree:** Symptoms are blisters filled with clear/milky fluid surrounded by erythema and edema will appear in the first 24 hours.
- **3rd Degree:** Symptoms are hemorrhagic blisters with black eschar appearing over a two-week timeframe.
- **4th Degree:** Defined as complete necrosis and tissue loss.

TREATMENT OPTIONS

Frostbite treatment should generally be started by re-warming the affected area with 40-42°C water for 15-30 minutes or until thaw is complete. After the area is thawed, debride any white blisters and treat with aloe-vera. Elevate the affected limb and splint as needed. For pain management, an analgesic may be administered. In addition:

- Administer anti-tetanus prophylaxis, ibuprofen 400 mg orally every 12 hours.
- Perform daily hydrotherapy for 30-45 minutes and 45°C.
- Avoid massaging the affected areas since this worsens tissue damage.

Patient with frostbite prior to treatment.



Patient after frostbite treatment, showing full recovery.



- Obtain photographic records upon admission and every 24 hours until patient discharge.
- Prohibit smoking.

Early and aggressive hyperbaric oxygen therapy (HBO) may be beneficial as it has been shown to minimize vasoconstrictive agents, free radicals, endothelial damage and thrombosis. It has also been shown to increase oxygen diffusion and helps to salvage marginal tissue until revascularization occurs and reduces or stabilizes endothelial cell wall repair and prevents thrombosis. Surgical treatment may include aggressive debridement and amputation but this is delayed until the ischemia is complete which takes one to three months.

PATIENT RECOVERY

If treated early enough, it is possible for mild frostbite to be completely reversed. However, if infection or gangrene sets in, the extent of the damage won't be known for up to three months after the incident occurred. Long-term effects include damage to sweat glands, altered sensation of frostbitten area, joint stiffness, cold sensitivity and a change in skin color of the affected area.

Hypothermia

COLD INJURY PHYSIOLOGY

Hypothermia is the most deadly cold injury, occurring when the core body temperature is 35°C or below. It can present even in above freezing temperatures, affecting both the central nervous system as well as the cardiovascular system. If untreated, the patient can develop tachycardia, increased myocardial consumption, bradycardia and eventually die.

If you have a patient that is experiencing any of the symptoms below, he or she may be hypothermic:

- Numbness of the injured part
- Feeling of clumsiness and lack of fine motor control
- Thick speech
- Hallucinations
- Bluish hue to skin
- Dilated pupils
- Slow or weak pulse

Treatment Options

Hypothermia treatment is determined by the level of patient suffering. Whenever you encounter a hypothermic patient, ATLS protocols should be initiated immediately. Mild to moderate hypothermia (core body temperatures ranging from 30-35°C) is best treated by submerging the patient in a warm bath with the water temperature between 40-42°C. The bath temperature range is critical because temperatures lower than 40°C have been shown to reduce tissue survival, and temperatures higher than 42°C may increase the risk of injury through thermal damage. The bath should last 15-20 minutes or until the end of vasoconstriction which is often indicated by a red or purple skin tone. During the bath, active motion can be beneficial, but be sure to avoid direct massage as it may damage tissue. Severe cases of hypothermia (core temperatures below 30°C) are most effectively treated with a cardiopulmonary bypass, which can be used in conjunction with warm intravenous solutions and body cavity lavage.

PATIENT RECOVERY

Patients who are able to survive their hypothermia are generally able to make a full recovery. They may incur a few possible side effects such as elevated risk of infection and may be susceptible to bed sores during recovery.

For more information, please contact Dr. Boysen at 989.583.4401 or dboysen@chs-mi.com.

Hyperbaric oxygen therapy has been shown to increase oxygen diffusion and helps to salvage marginal tissue.





Night Night, Sleep Tight

GUEST AUTHOR

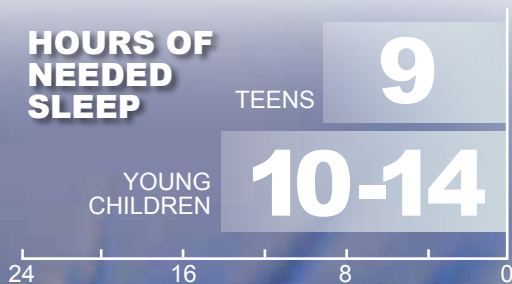
Dr. George Zureikat, Mid-Michigan Sleep Center and Covenant HealthCare Sleep Center

It's not always easy to diagnose adults with sleep problems, much less children.

Children need 10-14 hours of sleep each day while teenagers need at least nine. However, 10% of children and adolescents routinely feel sleepy during the day.

For some kids, this might be a passing phase or the result of poor sleep habits. But for others, it can be symptomatic of a more serious underlying sleep disorder such as sleep apnea, narcolepsy, insomnia, periodic limb movements, seizures, enuresis (bedwetting), or chronic parasomnias such as sleep-walking, nightmares and night terrors.

Left untreated, the consequences can be dire. Lack of sleep can adversely impact concentration, school and athletic performance, self-esteem, socialization skills, family dynamics and personal safety. In some cases, it can even lead to heart failure, hypertension and other health issues.



If your young patients are suffering from sleep issues, below are three key steps to help them get a good night's sleep.



Step 1: Improving Sleep Habits

The following tips could help kids get more sleep without further treatment:

- Plan a daytime schedule that ensures 9-14 hours of sleep time.
- Maintain a regular wake-up time, seven days/week.
- Avoid bright lights during night-time visits to the bathroom.
- Create a pre-sleep ritual such as a warm bath, light snack and reading.
- Avoid large meals for two hours before bedtime.
- Exercise regularly but avoid intense exercise for up to two hours before bedtime.
- Avoid caffeine for six hours before bedtime (coffee, tea, pop, chocolate, cocoa).
- Start a weight reduction plan if children are obese.



Step 2: Diagnosing Key Disorders

You may want to prescribe a sleep center study or consultation if your patients continue to complain of sleepiness or if they already express the following symptoms:

- Snoring, breathing issues, restless sleep, difficulty waking up, sleepiness, hyperactivity or poor concentration, which are symptoms of Obstructive Sleep Apnea.
- Involuntary muscle spasms in the child's arms or legs, a symptom of Periodic Limb Movement Disorder.
- Continued parasomnia behavior, which can be the result of sleep-related epileptic seizures.
- Uncontrollable urges to sleep at inappropriate times, a symptom of narcolepsy.
- Difficulty initiating and/or maintaining sleep.



Step 3: Diagnosis and Treatment

After the sleep center study, which should be conducted in a kid-friendly, comfortable environment, the pediatric sleep specialist will provide a diagnosis and recommended treatment plan with the referring physician. Depending on the diagnosis, treatment can range from surgery and CPAP support to medical intervention and weight reduction programs.

Remember that sleep disorders are common and treatable. If left untreated, they can lead to serious complications.

For more information, please contact Dr. Zureikat at zureikat@midmichigansleep.com or 989.583.2930.



Treating Patients in Their Golden Years

GUEST AUTHOR

Dr. Mirza Hussain, *Alli Med, PLLC*

The golden years should be a time of relaxation and enjoyment. Unfortunately, this is often offset by physical and mental health complications, with many elderly individuals becoming “frequent flyers” in our hospitals. However, it is too easy to dismiss health issues as “old age.” For example, complaints like “I feel confused” might actually be a treatable condition such as an undiagnosed urinary tract infection.

This is why it’s important to address health problems in the elderly with the same attention given to younger patients. Perhaps we all need to cater to their special needs a little better than we do. It might require more time as the elderly tend to be more talkative, but the outcomes are often better.

In the June 2011 issue of *The Chart*, Dr. Mridha gave an excellent overview of diagnosing and treating dementia that I urge you to review if you haven’t already. Two additional considerations that come to mind when treating the elderly:

- Managing medications and dosages properly
- Helping patients and families cope with role reversal

Medication Management

Managing and reconciling medications for elderly patients can be especially difficult for many reasons, including:

- Memory loss makes it difficult for them to follow a medication regimen.
- They may also forget the names of their meds or to bring a list to their appointments.
- Side effects can be prolonged and amplified, as aging bodies don’t “flush” meds out as quickly.
- They often take multiple medications and sometimes receive duplicate prescriptions.
- Seniors may be unable to afford their medication and/or abstain from taking them.

Therefore, it is critical to double-check the medications of your elderly patients with every visit, and to encourage them to get younger family members involved in medical appointments (especially if patients are forgetful).

Proper dosing is another important issue requiring special attention in the elderly. Interestingly, there is a program readily available on smart phones that can provide the renal dose of medication based on the patient’s Creatinine Clearance (CrCl) level. *See Useful Links on page 11.*

We all know that CrCl declines with age – again, the aging body loses its ability to readily flush out waste. Most seniors over the age of 65, according to the Cockcroft-Gault formula, have a CrCl between 30 and 60 even without renal disease, which is low. In addition, many seniors end up developing renal disease as a result of hypertension and diabetes mellitus among other complications – so it makes it even more im-

portant to monitor the CrCl levels before prescribing. If the patient presents a CrCl of less than 30, lower dosing should be applied. A few examples include:

- Cipro which is usually dosed at 500mg oral or 400mg IV q12h, should be reduced to 250mg oral or 200mg IV every 18 to 24 hours.
- Acyclovir, a common prescription for seniors with shingles, should only be taken three times a day instead of the usual five times a day.
- Claritin should be reduced to every other day instead of daily.

There are also many medications known to accumulate in the body due to declining renal function and are detrimental to seniors’ health. Some of these include Digoxin, Amiodarone and Dilantin. Recently, Simvastatin has had warnings about interactions with other medications, and doses higher than 40mg are not recommended for the elderly. *See Useful Links on page 11.*

Last but not least, general anesthesia in elderly patients can be detrimental to their health and have lasting effects.

Studies on postoperative cognitive dysfunction (POCD), for example, indicate

that a large number of elderly patients who have gone under general anesthesia have POCD conditions last-

ing three months or longer. Patients and their families often notice that cognition

was never fully restored. Another

distressing finding of the study was that patients with residual POCD

symptoms were more likely to die within one year of surgery.

Therefore, partic-

ular consideration must be given

when advising elderly patients on

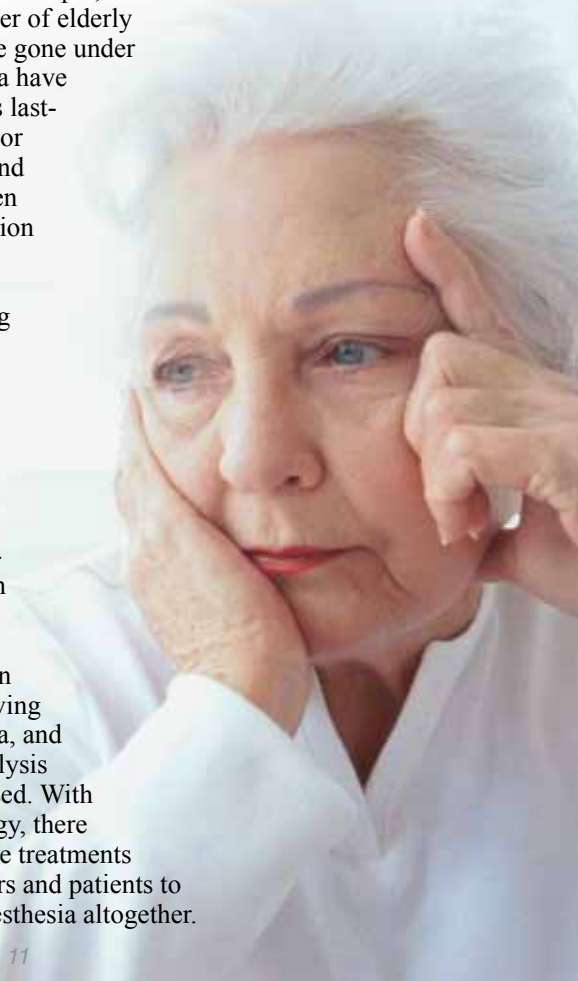
procedures involving general anesthesia, and

a risk-benefit analysis should be discussed. With

modern technology, there may be alternative treatments

that enable doctors and patients to avoid general anesthesia altogether.

Continued on page 11





Soothing the Psoriasis

GUEST AUTHOR

Dr. Brent M. Boyce, Saginaw Bay Dermatology

With winter upon us, the air is getting drier and many people are cranking up their humidifiers. Other people, however, are also running to their doctor to treat flare-ups in psoriasis which are triggered by dry air, colder temperatures and reduced sunlight. If they run to you, below is some useful information to help explain the disease and treatments before you refer them to a specialist.

The Disease

Psoriasis is a chronic skin disease that affects about 2-3 percent of the American population. It can range from being a minor nuisance to a debilitating disease. Psoriasis causes skin cells to rapidly build up on the skin's surface and develop into areas of raised, red, irritated skin. The affected areas can become dry, itchy and painful. Symptoms include:

- Scaly spots
- Cracked skin
- Inflamed, scaly scalp
- Blistering on hands and feet
- Fissuring and small vesicles on hands and feet
- Stiff or swollen arthritic joints
- Thickened or pitted toe and finger nails



Psoriasis usually appears on the knees and elbows, but can occur anywhere on the skin or nails.

Psoriasis usually appears on the knees and elbows, but can occur anywhere on the skin or nails. Most patients with the disease cycle through periods of flare-ups lasting from weeks to a few months, followed by a remission and then another flare-up.

Psoriasis is not contagious; it's genetic and aside from cold, dry weather it is also triggered by stress, skin injuries, alcohol and medications such as beta blockers, ace inhibitors and lithium.

Complications

It can be easy to pass off psoriasis as an unfortunate rash. However, it's important to avoid underestimating three key complications of this disease:

- The psychological impact can be profound. Psoriasis can create agoraphobia-like symptoms in which patients become extremely withdrawn and embarrassed about their appearance and subsequently avoid normal activities in public or even with their family.
- It can cause severe arthritis requiring aggressive management.
- It has been linked to increased risk of other diseases like hypertension, diabetes and lymphoma.

Treatment

Psoriasis is an old foe of humans. In fact, one recorded psoriasis treatment suggested by the Greek philosopher Hippocrates was to treat it with doses of arsenic. Thankfully for patients, knowledge and treatment have advanced significantly since then.

Living a healthy lifestyle is especially important for patients with psoriasis as it is comorbid with health issues like depression, diabetes, heart disease and obesity. Since psoriasis can affect the entire body, the treatment plan should be holistic and include exercise, a healthy diet, a strong support network and coping techniques – in addition to medication management.

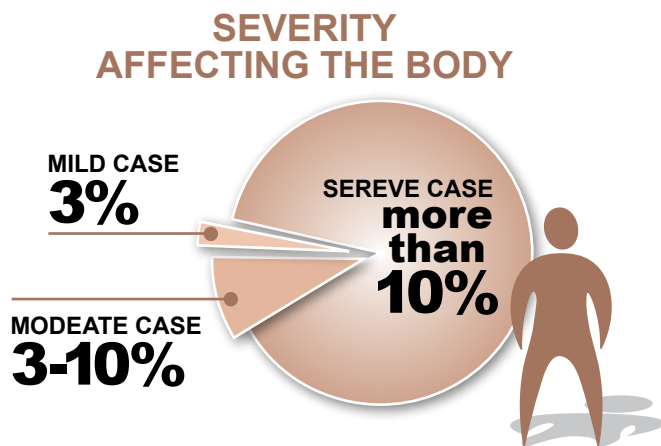
Medication Management

In treating psoriasis, the goal is to break the cycle that causes increased skin cell production and to smooth the skin by removing scales. A variety of medications are available, but decisions often depend on the severity of the disease. Psoriasis has three levels of severity:

- Mild: Cases affecting less than 3 percent of the body
- Moderate: Cases affecting 3-10 percent of the body
- Severe: Cases affecting more than 10 percent of the body

Treatment for Mild Psoriasis: Affected skin usually includes the elbows, knees, scalp, hands and feet. These cases are almost always treated with topical medications such as creams, ointments, shampoos and moisturizers. Active ingredients include corticosteroids at low to moderate potency, vitamin D analogues, retinoids and calcineurin inhibitors.

Treatment for Moderate to Severe Psoriasis: Medium to high potency corticosteroids may be effective for moderate psoriasis. Another option is phototherapy using ultraviolet (UV) light, which is proven to yield good results for moderate to severe symptoms. The light penetrates the skin to slow the growth of affected skin cells by reducing the inflammation responsible for the increased cell proliferation. Phototherapy is flexible too, as it can be administered at home or in a medical setting two to three times a week until only weekly maintenance is needed. Recently, narrowband UVB has become the gold standard for phototherapy. Patients are only exposed to a very narrow range of wavelengths thus reducing the exposure to UV radiation that does not produce therapeutic benefits.



If the psoriasis isn't responding to phototherapy or topical medications, traditional systemic drugs may be prescribed such as Acitretin, Cyclosporine and Methotrexate which are taken by mouth or injection.

An exciting new psoriasis treatment is protein-based biologic drugs, such as Amevive, Enbrel, Humira, Stelara and Remicade, which block T-cells and TNF-alpha cytokine. These are administered via injection or IV and usually have fewer side effects than traditional drugs. For one of these drugs, a six-week study found a positive clinical response in more than 40 percent of patients, and 70 percent of those saw continued improvement.

While all of the therapies discussed above are effective in managing cutaneous psoriasis, those patients with psoriatic arthritis should be treated with systemic medications to prevent disease progression.

There is no cure for psoriasis, but treatment plans can help patients live happy and functional lives. Increased commitment to research – including biologic drugs – is raising the hope for even more effective treatments in the future.

For more information, contact Dr. Boyce at 989.883.3800 or bboyce@saginawbayderm.com.

Role Reversal

As people age they tend to regress, requiring more supervision and possibly 24-hour care. Parent-child role reversals are a frequent occurrence as people age and are, at once, a sad and rewarding thing to see. It is sad in the sense that parents lose some independence, but rewarding when the family gets heavily engaged.

With role reversal, however, comes a great deal of stress. A Gallup poll found that 41% of Baby Boomers with a living parent are providing care for them financially, personally or both. Take, for example, the relationship between an elderly mother and her daughter. As mom ages, she becomes more forgetful and unable to make personal decisions. The daughter tries to adjust to the fact that mom no longer holds an independent position in their relationship, and it is now the daughter's responsibility to make decisions for mom in terms of finances and healthcare. The mother may become resistant and in denial, causing friction. The daughter is frustrated and worried her mother will get hurt, and is spending a lot of time away from her paying job to help her mother. Meanwhile, her siblings can't agree what to do. Such situations can actually cause entire families to fall apart.

It is a difficult change for both the parent and the child and one that physicians can possibly help resolve. We can do this by providing patients and their caregivers with access to the resources and information that help them cope. See Useful Links below.

Seniors are currently the fastest growing demographic in the U.S. As baby boomers age, the number of elderly patients will continue to increase exponentially. As physicians, it is important to stay ahead of the curve in ways that make our patients' golden years as golden as possible.

For more information, contact Dr. Hussain, at 989.790.2690 or mirzajhussain@hotmail.com.

Useful Links

- See <http://www.epocrates.com/> for Epocrates Rx (the basic version) and get a free download from Android Market for Android phones or from App store for Apple products such as iPad and iPhone.
- Refer to the Beers Criteria at <http://www.empr.com/potentially-inappropriate-drugs-for-the-elderly-beers-list/article/125908/> for a full list of drugs that require caution when prescribing to seniors.
- For caregiver resources, encourage caregivers to Google "Elder Care." A good resource for dementia-related issues is: http://www.alz.org/living_with_alzheimers_caring_for_alzheimers.asp

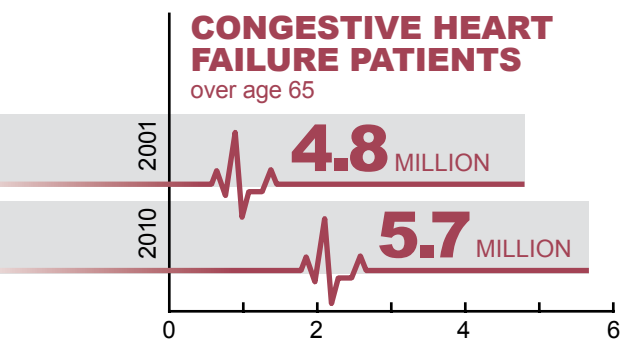


Keeping Up with Myocardial Maintenance

GUEST AUTHOR

Dr. Peter Fattal, MidMichigan Cardiovascular Institute

For the past few decades, the U.S. population has enjoyed an ever-expanding life expectancy due to improvements in disease recognition, management and prevention – despite a growing obesity problem. In the 1960s, our average life expectancy was just under 70 years and now it is 80 years. In the cardiovascular disease arena, the rapid application of advanced technologies combined with advanced pharmaceutical therapies has dropped the mortality of acute myocardial infarctions by 30 percent. While laudable, these successes have contributed to a burgeoning epidemic of older patients with cardiovascular disease and congestive heart failure. In fact, the prevalence of congestive heart failure has increased from 4.8 million patients in 2001 to 5.7 million in 2010 with an annualized incidence of 10/1000 patients above the age of 65.



Managing the Load

In great need, however, lies great opportunity. As the pace of cardiovascular disease has increased, so have scientific knowledge and therapeutics. Nowhere in medicine has the knowledge gained from the understanding of disease pathophysiology and progression blossomed into a more comprehensive approach to patient management born out of years of hard research.

Consequently, many patients – even those in their 80s – may be viable candidates for heart surgery if they are in good health otherwise. Today, much more is possible and the future offers even more promise. For example, since the “heart” of the issue is a dysfunction of the myocardium, we are watching with great anticipation the advances in stem cell research that may allow us to install “new” functioning myocardial cells.

Making Difficult Decisions

While the future is exciting, this is the here and now and sometimes we face difficult decisions in terms of what, how or if to treat. So what tools are at our disposal to guide those decisions?

First, we need to understand that the preponderance of dysfunction of the myocardium in the U.S. results from ischemic heart disease and myocardial infarction, which can take three forms:

- Completed infarction in which myocardial cells are replaced by non-contractile fibrous tissue.
- Stunned myocardium in which after an acute injury, myocardial tissues lose functional capacity transiently.
- Hibernating myocardium in which chronically hypoperfused myocardium has started down the pathway towards irreversible injury but still retains the potential for improved function.

Some techniques to identify areas of myocardium that may improve with revascularization and help guide therapeutic decisions are as follows:

- Delayed nuclear imaging will show uptake of tracer elements by living myocardial cells.
- PET scans and MRI scans can be used to identify metabolic activity in myocardial cells.
- Dobutamine echocardiography can be used to show improvement in regional myocardial function.

Such tests can help doctors weigh high-risk revascularization strategies with the promise of improved function and outcomes.

Partnering for Success

The biggest advance in therapy is paradoxically the simplest. This is a world where patients with heart failure are asked to balance the onerous task of taking up to six or more medications, and be cognizant and vigilant of dietary choices and restrictions. The partnering of patients, healthcare providers and institutions through specialty outpatient disease management programs, such as the Covenant Cardiomyopathy Clinic, has shown many benefits including:

- Dramatically reducing the risk of hospitalization for heart failure.
- Improving patient well-being and quality of life.
- Enhancing compliance with administration of appropriate drug and device therapeutics.
- Encouraging general education and health promotion in our community.

With the specter of healthcare reform looming and the impending shift of care to outpatient settings, we will all need to form even stronger partnerships with our patients and colleagues. That said, let’s also remember to be proactive and remind our patients that the best way to avoid the devastations of heart disease is by preventing it in the first place.

For more information, please contact Dr. Fattal at 989.754.3000 or pfattal@mcvi.com.



Serving Up Safety with HRO

Dr. Michael Schultz, Chief Medical Quality and Informatics Officer

Florence Nightingale once said, “It may seem a strange principle to enunciate as the very first requirement in a hospital that it should do the sick no harm.”

Clearly, Ms. Nightingale understood – even back then – that medical errors can be serious, actually harming patients rather than helping them. She probably also realized that medical errors create inefficiencies and inconsistent quality too.

Fortunately, over the years many safety protocols, systems and tools have been put in place to reduce error, but the reality is this – tens of thousands of deaths occur every year due to errors, and most are preventable. In fact, in a 2010 study, 134,000 Medicare patients experienced at least one harmful event in hospitals during a one-month period, and of those, about 15,000 died due to medical mistakes.

The resulting emotional and financial toll is huge on all parties involved. Clearly, something more is needed, especially as hospitals strive to compete in today’s highly competitive and transparent health care industry. For dramatic change to occur, patient safety programs can no longer be an incremental exercise or done in silos. They must be transformational instead, which is why a growing number of hospitals are implementing what is called the High Reliability Organization (HRO) concept.

Joining the HRO Movement

While HRO is a concept that Corporate America has pursued to various degrees for the past 20 years, it is only just emerging in the healthcare industry as a new approach to patient safety. HRO is highly dependent on human behaviors and personal accountability, and must have top-down support to succeed. The focus on patient safety must, in fact, be a Core Value of the healthcare institution and drive every single decision we make.

SAFETY AS THE CORE VALUE

Driving Every Decision We Make



Based on a presentation by Value Health Partners, along with medical staff leadership input, executive leadership at Covenant HealthCare has recently decided to join the HRO movement, with a goal to significantly improve patient safety performance in every single department across

Together, we must reliably deliver patient safety every single moment of every day.

the hospital. Leadership recognizes that patient safety is not the responsibility of any one person or group, but the responsibility of everyone involved with the patients’ care directly or indirectly – from hospital and medical staff to vendors and suppliers. Together, we must reliably deliver patient safety every single moment of every day.

Implementing HRO

Covenant HealthCare is working with the Value Health Partners collaborative to implement HRO as efficiently as possible by sharing resources and leveraging best practices with institutions that have already achieved HRO success. We are, for example, patterning our HRO effort after that of the Helen DeVos Children’s Hospital, which achieved a 76% reduction in serious safety events (SSEs) after two years, a remarkable improvement that is still being sustained three years later.

Such successes do not happen overnight. Achieving HRO is a two-year journey at the very least, and an ongoing commitment to sustain the gains. Covenant HealthCare is in the design phase of the process, with a target to officially launch HRO by first quarter of 2012. It is clear that a strong Physician Leadership Team will need to be developed, and that will be one of the first objectives. We will keep you informed in advance and as progress is made.

For more information, contact Dr. Schultz at 989.583.4103 or mschultz@chs-mi.com.

The Benefits of HRO

HRO will take Covenant HealthCare to new heights of performance. We will, for example, see:

- Breakthrough improvements in patient safety
- Enhanced enterprise efficiency
- Improved collaboration
- Lower operating costs
- Greater physician, employee and patient satisfaction
- Improved quality measurements
- Strong reputation among stakeholders
- Healthcare industry leadership



Helping People Walk Again

New Lokomat® System Makes Every Step Count

GUEST AUTHOR

Dr. Thomas Raymond, Physical Medicine and Rehabilitation

The treatment of debilitated and neurologically impaired patients suffering from traumatic injuries such as a stroke or spinal cord injury is centered on sensory stimulation and functional movement. The state-of-the-art Lokomat® robotic system is an exciting development in rehabilitation therapy for the lower limbs. It provides robot-assisted gait therapy on a treadmill which enables more repetition, greater efficiency, accelerated training and faster progress than ever before. Put simply, it makes every step count during rehabilitation as patients learn how to walk again.

More Repetition

The old adage, “practice makes perfect,” applies to any kind of task – whether it’s learning how to walk, talk, golf or play music. Practice and repetition, in fact, are key to forming new neurological templates in the brain. The Lokomat takes repetition to the next level by generating a consistent, reciprocal walking pattern for the patient at normal walking speeds over a long period of time – all of which is proven to retrain the brain faster and sustain the gains over time. The Lokomat, in fact, can perform hundreds of repetitions with the patient. Consequently, depending on the injury, the patient can more quickly advance to a walker.

Greater Efficiency

Before the Lokomat, clinical gait training was performed by physical therapists who manually moved the patient’s legs. This method required multiple therapists and leg movements were not always consistent. The Lokomat, however, allows the patient to accomplish more exercise in the same span of time, while giving therapists more time to treat more patients – so everyone wins.

In addition, the Lokomat is electronically linked to a computer so that statistical information can be easily stored, analyzed and retrieved. This includes data on gait performance, joint stiffness and range of motion. This is vital to managing patient progress, getting instant feedback, and performing studies on program effectiveness.

Accelerated Training

With the Lokomat, early rehabilitation can be accelerated because patients can actually start training as inpatients, and continue training as outpatients. Lokomat programs can also be adjusted to meet specific patient needs such as age, weight and diagnosis. However, patient screening is important. The patient must have at least trace motor power in two or more lower extremity muscles, be medically stable and have the motivation and cognition to follow through with the program. A single rehabilitation session is usually about 60 minutes. Set up takes around 10 minutes, with the actual walking therapy building up to 30-45 minutes and up to a distance of more than one kilometer. After Lokomat therapy is completed, the patient can continue therapy on other equipment.

Faster Progress

Patient improvements in gait profiles are possible after only a few training sessions. In addition to the physical results, patients generally feel better emotionally, showing a happier outlook and feeling of accomplishment and independence. For many patients, it could be the first time since their injury that they are able to walk upright without being surrounded by several therapists.

To bring this technology to the region, Covenant HealthCare has recently invested in a Lokomat system, and the physical therapy staff is incorporating the Lokomat regimen into the treatment programs of patients of all ages who qualify. Covenant HealthCare, in fact, is just the third hospital in the state to have the capabilities and training to support pediatric patients too.

For more information, contact Dr. Raymond at 989.598.4596 or tmtwin@yahoo.com.



Covenant HealthCare is one of only three hospitals in the state of Michigan to have the capabilities and training to support pediatric rehabilitation patients.



The Lokomat® system provides robot-assisted gait therapy on a treadmill which enables more repetition, greater efficiency, accelerated training and faster progress.

The Chart is published four times a year.
Send submissions to Maryvonne DeSmyter
at the Office of Physician Relations.

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Radiation Exposure — continued from page 1

Weighing the Risk

All physicians should weigh the benefits and risks of imaging procedures. The most harmful radiation is that from an exam that was not needed in the first place. To this end, it is good procedure to first consider radiation-free alternatives such as ultrasound or MRI. We should also strive to eliminate duplicate exams. For example, if a carotid Doppler is ordered and the results are normal, then a carotid CTA does not usually need to be done as well.

Optimizing Protocols

Medical facilities everywhere should optimize protocols to lower radiation dosage while obtaining the highest quality image necessary. At Covenant Medical Center, for example, we:

- Have implemented stringent protocols at all of our facilities.
- Have initiated a CT dose registry so that we will be able to compare our doses to national guidelines.
- Customize radiation doses based on patient body size and BMI.
- Check electronic patient records for recent exams to avoid unnecessary repeats.
- Use reconstructive techniques instead of reimaging the same area

of concern. A CT of the abdomen, for example, can be reconstructed to provide a CT of the lumbar spine. Reconstruction techniques can also obtain thinner sections (from 5 mm to 1.25 mm) to obtain better detail.

- Use low frame rates and last image holds during fluoroscopy and pulsed fluoroscopy when possible, which is critical to keeping the dose low.
- Shield body parts that are not imaged with lead aprons, use collimation when possible and use magnification sparingly.
- Switched from computed radiography to digital radiography, which lowers the dose to neonates while allowing images to be immediately available for viewing. CT angiography uses less radiation than standard angiography. In fact, by utilizing new CT scanners, we have reduced radiation doses by 40-50%.

Everyone plays a role in minimizing radiation exposure: doctors, patients, hospitals and medical associations. Together, let's take full advantage of the life-saving value of radiological exams, while minimizing risk.

Kristin M. Nelsen

Dr. Kristin M. Nelsen, Chief of Staff