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November is National Diabetes Month: A Snapshot of Assessing Diabetic Foot Ulcers

National Diabetes Month is observed each year in November. This is a time for Associations including; The American Diabetes Association (ADA), National Institute of Health (NIH), and Centers for Disease Control and Prevention (CDC) in partnership with communities across the country – and the world – to shine a spotlight on diabetes and encourage action to change the way diabetes is treated. Diabetes doesn't stop. It is 24/7, 365 days a year. It is very important to understand diabetes in order to prevent serious health problems such as heart disease, stroke, blindness, kidney disease, and nerve damage that can lead to amputation.

Why is awareness about diabetes important?

- Nearly 26 million Americans have diabetes
- Another 79 million adults in the United States have prediabetes, a condition that increases their chances of developing type 2 diabetes
- If left undiagnosed or untreated, diabetes can lead to serious health problems such as heart disease, blindness, kidney disease, stroke, amputation and even death. With early diagnosis and treatment, people with diabetes may prevent the development of these health problems
- The total estimated cost of diagnosed diabetes in 2012 is \$245 billion, including \$176 billion in direct medical costs and \$69 billion in reduced productivity.

Diabetic foot ulcers (DFUs) are defined as; Ulcers caused by the neuropathic and small blood vessel complications of diabetes, from the Resident Assessment Instrument (RAI) Manual, Section M. Diabetic foot problems, such as ulcerations, infections, and gangrene, are the most common cause of hospitalization among diabetic patients. Routine ulcer care, treatment of infections, amputations, and hospitalizations cost billions of dollars every year and place a tremendous burden on the health care system.

Diabetic foot ulcers typically occur over the plantar (bottom) surface of the foot on load bearing areas such as the ball of the foot. These ulcers are usually deep; with necrotic

tissue, moderate amounts of exudate, and callused wound edges. The wounds are very regular in shape and the wound edges are even with a punched-out appearance, and sometimes callused. These wounds are typically not painful due to the peripheral neuropathy which causes loss of sensation.

Diabetic peripheral neuropathy is caused by high blood glucose which damages nerves and blood vessels. This is because nerves carry messages back and forth between the brain and other parts of the body and the small blood vessels provide nerves with nutrients and oxygen required to survive and function. These nerves are extremely sensitive to any change in nutrients and oxygen supply. High blood glucose damages these small blood vessels that feed the nerves. When the vessels are damaged, a sufficient supply of nutrients and oxygen no longer reaches the nerve, causing the nerve to become damaged and eventually die. High blood glucose also damages the outer protective layer of nerves, affecting their ability to transmit signals. Foot ulcer evaluation should be three-fold including; assessment of neurological status, vascular status, and evaluation of the wound itself.

Neurological status can be checked by using the Semmes-Weinstein monofilaments to determine whether the patient has "protective sensation," which means determining whether the patient is sensate to the 10-g monofilament. Monitoring the resident's blood glucose levels in conjunction with the hemoglobin A1C is vital as high blood glucose levels impair healing of ulcers and is a causative factor in diabetic neuropathy.

Vascular assessment is important for eventual ulcer healing and is essential in the evaluation of diabetic ulcers. Vascular assessment includes checking pedal pulses, the dorsalis pedis on the dorsum of the foot, and the posterior tibial pulse behind the medial malleolus, as well as capillary filling time to the digits. The capillary filling time is assessed by pressing on a toe enough to cause the skin to blanch and then counting the seconds for skin color to return. A capillary filling time > 5 seconds is considered prolonged. If pedal pulses are nonpalpable, the patient should be sent to a noninvasive vascular laboratory for further assessment, which may include checking lower

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Dry Eye Syndrome

Dry eye syndrome is a decreased tears production or increased tear film evaporation over the eye that keeps the eyes lubricated and moist. Nearly five million Americans 50 years of age and older are estimated to have dry eye. Tens of million more have less severe symptoms of dry eye syndrome. Dry eye is more common after menopause however women who experience menopause prematurely are more likely to have eye surface damage from dry eye.

Types of dry dye are aqueous tear-deficient and evaporative dry eye. Aqueous tear-deficient dry eye is a disorder in which the lacrimal glands fail to produce enough of the watery component of tears to maintain a healthy eye surface. Evaporative dry eye may result from inflammation of the meibomian glands located in the eyelids. These glands make the lipid or oily part of tears that slows evaporation and keeps the tears stable.

What are causes of dry eye?

- Dry eye can be a side effect of some medications, including antihistamines, nasal decongestants, tranquilizers, angiotensin converting enzyme or ACE inhibitors for high blood pressure, diuretics, Parkinson's medications, birth control pills and anti-depressants.
- Skin disease on or around the eyelids.
- Diseases of the glands in the eyelids, such as meibomian gland dysfunction.
- Allergies
- Immune system disorders such as Sjogren's syndrome, lupus and rheumatoid arthritis.
- Chronic inflammation of the conjunctiva, the membrane lining the eyelid and covering the front part of the eye, or the lacrimal gland.
- Exposure keratitis, in which the eyelids do not close completely during sleep.

Symptoms of dry eyes:

- Sensitivity to light
- Tearing
- Stinging sensations in the eyes
- Burning feeling in the eyes
- The urge to scratch eyes often
- Blurry vision especially after a long day or after focusing for a long time
- Getting tired quickly after reading for a short while

Treatment options for dry eye depend on the cause. First priority is to determine if a disease is the underlying cause of the dry eye (such as Sjogren's dyndrome, lacrimal or meibomian gland dysfunction).

- Over-the-counter options are artificial tears, gels, and ointments for mild cases of dry eyes. To be applied more than four times a day if needed. Avoid artificial tears with preservatives.
- Fluid hydration is important; educate the resident on the importance of fluids.
- Cyclosporine or Restasis an anti-inflammatory medication decreases corneal damage, increases basic tear production, and reduces symptoms of dry eye.
- If dry eye results from taking medication, have physician evaluate changing medication that does not cause the dry eye side effect.
- More serious dry eyes may require a plug to the drainage holds, small circular openings in the inner corners of the eyelids where tears drain from the eye into the nose. Lacrimal plugs, also called punctual plugs are inserted painlessly by an eye care professional.
- Dietary sources of omega-3 fatty acids may decrease symptoms of irritation.
- Wearing glasses or sunglasses that fit close to the face (wrap around shades) can slow tear evaporation from the eye surfaces.
- An indoor air cleaner to filter dust and other particles.
- A humidifier may help by adding moisture to the air.

Sufficient tears are important for maintaining clear vision. Tears provide lubrication, reduce the risk of eye infection, wash away foreign matter in the eye, and keep the eye smooth and clear. Eye comfort is a key element of quality of life and safety for our residents within our facilities.

FDA requiring Color Changes to the Writing on Duragesic Pain Patches

The U.S. Food and Drug Administration is alerting the public that it is requiring color changes to the writing on Duragesic® (fentanyl) pain patches so they can be seen more easily.

In an effort to minimize the risk of accidental exposure to fentanyl patches, FDA is requiring the manufacturer of Duragesic® to print the name and strength of the drug on the patch in long-lasting ink, in a color that is clearly visible to patients and caregivers. The current ink color varies by strength and is not always easy to see. This change is intended to enable patients and caregivers to more easily find patches on patients' bodies and see patches that have fallen off, which children or pets could accidentally touch or ingest. The manufacturers of generic fentanyl patches are being requested to make similar changes.

Patients and caregivers should be aware that patches that are not stuck to the skin tightly enough may accidentally fall off a patient, posing a potential hazard to individuals in close contact, such as a child.

Used fentanyl patches require proper disposal after use. Fold the patch, sticky sides together, and flush it down the toilet with a witness to document destruction.

Go to: <http://www.fda.gov/Drugs/DrugSafety/ucm368902.htm> to view the FDA Drug Safety Communication which includes a data summary as well as recommendations for patients, caregivers, and health professionals.

Indications for Magnesium Oxide and Follow-up

Kimberly Baucher Ohio Northern University, PharmD Candidate

Many elderly patients are being discharged from the hospital on magnesium oxide without a clear indication. These patients also lack a recommendation for follow-up and monitoring while on this medication. Before determining follow-up it is important to find out what magnesium oxide is being used for. Magnesium oxide is specifically indicated for use as a dietary supplement, relief of indigestion and short-term for treatment of occasional constipation. However, since low magnesium levels can cause complications, supplementation can have benefits aside from just achieving normal magnesium levels.

Studies have been performed using magnesium in diabetic patients and the resulting effect on the lipid profile and glycemic control. However, while there are proven benefits in the lipid profile and glycemic control, diabetic patients tend to have lower magnesium levels to begin with. No studies have looked to see if these benefits would also exist for patients who are not diabetic but have low magnesium levels. Low magnesium levels have also been studied to have a role in depression, osteoporosis and restless leg syndrome. Eating a healthy diet which includes eating foods high in magnesium is associated with lower blood pressure but studies have not shown magnesium supplementation to have the same benefit. Magnesium supplementation has also been studied in patients with heart failure as they are more at risk for developing arrhythmias. It has shown to be beneficial in a study which followed patients taking a magnesium supplement for a year; however, it is important to ensure magnesium levels do not go too high as this may also cause cardiovascular complications.

There is no clear reason why patients are discharged from the hospital on magnesium oxide. However, if a patient has low magnesium it would be beneficial to use a supplement for many reasons as outlined above. The daily recommended intake of magnesium is 310 mg for females and 420 mg for males. When a supplement is being utilized the recommended dose is 800 mg a day. While the most frequently defined side effect is diarrhea, it is rare except with very high doses, and should be monitored. It is important to monitor magnesium levels while on supplements, though there is no defined time period between watching levels. The first time a magnesium level should be monitored is no more than 8 weeks after initiation of the supplement. After the initial level, levels should continue to be monitored at least twice a year. If levels come back high or the patient shows signs of high magnesium, the supplement should be stopped immediately. There is no defined time that a patient should remain on magnesium. As long as the patient's levels remain within normal range and there is a clear indication for use, the patient may remain on the supplement.

References

Dipiro JT. Disorders of potassium and magnesium homeostasis. *Pharmacotherapy: a pathophysiologic approach*. 2008. 885-888.

Lal J, Vasudev K, Kela AK, Jain SK. Effect of oral magnesium supplementation on the lipid profile and blood glucose of patients with type 2 diabetes mellitus. *J Assoc Physicians*. 2003 Jan; 51: 37-42.

Eby GA, Eby KL. Magnesium for treatment-resistant depression: a review and hypothesis. *Med Hypothesis*. 2010; 74 (4): 649-60.

Mathers TW, Beckstrand RL. Oral magnesium supplementation in adults with coronary heart disease or coronary heart disease risk. *J Am Acad Nurse Pract*. 2009 Dec; 21 (12): 651-657.

Ehrlich SD. Magnesium. University of Maryland Medical Center. 2011 June 17. Available from: <http://umm.edu/health/medical/alt-med/supplement/magnesium>

LexiComp [database on the Internet]. Hudson (OH): LexiComp. 2013 [cited 2013 Sept 15]. Available from: <http://online.lexi.com/crlsql/servlet/crlonline>

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extremity arterial pressures by Doppler and recording pulse volume waveforms. The ankle brachial index is often not helpful because of high pressures resulting from noncompressible arteries. Other components of the vascular assessment should include checking; lower extremity color, temperature, hair distribution, skin condition, nail condition, and pain.

Ulcer evaluation should include documentation of the wound's location, size, shape, depth, base, and border. Determining depth is important to identify whether the depth extends to full thickness which may include; to a tendon, joint, or bone. X-rays should be ordered on all deep or infected wounds, but magnetic resonance imaging often is more useful because it is more sensitive in detecting osteomyelitis and deep abscesses. Signs of infection, such as the presence of cellulites, odor, or purulent drainage, should be documented and aerobic and anaerobic cultures should be obtained of any purulent exudates. Culturing a dry or clean wound base has proven to be useless because most wounds are colonized, and this practice leads to over-prescribing of antibiotics.

A thorough assessment accompanied by accurate and complete documentation is a vital component in treatment and preventive strategies for Diabetic foot ulcer management, and to maintain compliance with F 309: Quality of Care which states that the facility must ensure that the resident obtains optimal improvement or does not deteriorate within the limits of a resident's right to refuse treatment, and within the limits of recognized pathology and the normal aging process. Under Non-Pressure Related Ulcers, where Diabetic Foot Ulcers are found in the regulation, documentation must include:

- Assessment and diagnosis
- Clinical basis for the ulceration
- Ulcer edges and wound bed
- Shape of wound
- Condition of periwound tissue
- At least daily, staff should remain alert to potential changes in skin condition and should evaluate and document identified changes-F 314 (Monitoring, pg. 209)

In summary, ensure that your facility is utilizing the most current standards of practice for the prevention and management of diabetic foot ulcers. An excellent resource to utilize is the Wound Ostomy and Continence Nurses Society publication titled, *Guideline-Management of Wounds in Patients with Lower Extremity Neuropathic Disease*, found at their website: <http://www.wocn.org>. In addition, make sure your nursing staff is educated on facility policies and procedures pertaining to wound care in conjunction with utilizing facility wide protocols, if applicable. Educating staff is a vital component in order to enhance the quality of care provided to the resident, which is why we are in the healthcare profession.

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References:

- 2011 National Diabetes Fact Sheet, Retrieved October 1, 2013: <http://www.diabetes.org/in-my-community/local-offices/miami-florida/assets/files/national-diabetes-fact-sheet.pdf>
- CMS RAI Version 3.0 Manual Chapter 3, MDS Section M. (<http://cms.gov>)
- WOCN. Quick Assessment of Leg Ulcers. Glen View, Illinois, USA. Retrieved from <http://www.wocn.org>

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Melatonin: Does it help in the treatment of insomnia?

Kimberly Baucher Ohio Northern University, PharmD Candidate

Melatonin is involved in many physiologic processes, including circadian rhythms, mood regulation, anxiety, sleep and appetite. Approximately 80% of patients older than 65 years old report sleep-related problems. Melatonin supplementation has become a popular over-the-counter treatment for insomnia. However, there is still a debate on whether this treatment is actually effective.

From recent clinical studies it appears that the only time melatonin supplementation would be effective is if the patient has a disturbance in melatonin levels. For example, one study looked at melatonin use in patients taking beta blockers as these have the potential to suppress nighttime melatonin secretion. This study did show significantly improved sleep quality (increased sleep time and decreased time to sleep onset) in patients receiving 2.5 mg of melatonin every night compared to placebo. This is just one example of when it may be beneficial to use melatonin. Other studies have shown benefits with melatonin use in patients who are deficient due to dialysis and other disease states. When considering use of melatonin in a patient, it is important, as with any medication, to consider risk versus benefit as well as ensuring there is an appropriate indication. The most common side effects to monitor for include daytime drowsiness, headache, depression, dizziness and nausea. If it is determined that melatonin should be tried, it should be monitored for efficacy and if the patient shows no improvement, it should be discontinued.

Most studies for melatonin use a dose of 3 mg every night. However; the recommended dose in insomnia is 3 to 5 mg every night, given three to four hours before bed. Melatonin may cause drowsiness within 30 minutes of ingestion which should be a consideration with administration time. Use of melatonin for more than four weeks has not been looked at in studies.

References:

Dipiro JT. Sleep Disorders. Pharmacotherapy: a pathophysiologic approach. 2008. 1191-1201.
Comai S, Gobbi G. Unveiling the role of melatonin MT2 receptors in sleep, anxiety and other neuropsychiatric diseases: a novel target in psychopharmacology. J Psychiatry Neurosci. 2013 Aug 27; 38 (5): 130009.
Scheer FA, Morris CJ, Garcia JI, et al. Repeated melatonin supplementation improves sleep in hypertensive patients treated with beta-blockers: a randomized controlled trial. Sleep. 2012 Oct 1; 35 (10): 1395-1402.
LexiComp [database on the Internet]. Hudson (OH): LexiComp. 2013 [cited 2013 Sept 15]. Available from: <http://online.lexi.com/crlsql/servlet/crlonline>