PHARM NOTES

Neil Medical Group: The Leading Pharmacy Provider in the Southeast

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Understanding Glaucoma

Glaucoma is a group of diseases that cause increased intraocular pressure. If pressure remains high, the optic nerve is damaged resulting in optic nerve atrophy and loss of vision which in some cases can lead to blindness. It is an important geriatric disorder to treat as the incidence of glaucoma increases as we age. Often, as we focus on the prevalent diseases in the geriatric community such as: cardiovascular disease, diabetes, alzheimer's , etc., we forget the importance of good management of glaucoma.

There are currently four types of glaucoma that include Open angle glaucoma (OAG), Angle closure glaucoma (ACG), combined glaucoma and infantile glaucoma. Open angle glaucoma is the most prevalent type. A large portion of patients with glaucoma have "high" (greater than 21mm mercury) eye pressures. Routine follow-ups with an ophthalmologist are necessary to monitor pressures and effectiveness of treatment.

Open angle glaucoma occurs when the drain for outflow of fluid is open, but aqueous humor production is increased resulting in an imbalance. This excess aqueous humor results in higher intraocular pressures. The imbalance may be due to microscopic trabecular obstruction.

Risk factors for OAG include:

- Family history
- Ethnicity (> African Americans)
- Nearsightedness
- Diabetes
- Thyroid disease
- Steroids – topical (use of at least 6 weeks) or oral
- Thin corneas
- COPD
- Rheumatological problems

OAG is usually painless with a gradual onset. The patient may experience a white quiet eye and peripheral field defects, followed by loss of their central vision if untreated.

Opposite from OAG, Angle Closure Glaucoma is caused by the iris being in opposition to the trabecular meshwork with macroscopic drain closure. This closure does not allow the aqueous humor to drain. Thus, the amount of aqueous humor is not the problem – but the ability to drain the fluid is the issue. ACG may be acute or chronic.

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Test Your Knowledge: Influenza Vaccine Quiz

1. The influenza vaccine is recommended for which population?
   A. Middle-aged healthy adults
   B. Healthcare workers or caregivers
   C. Elderly
   D. All of the above
   E. B and C

2. When should the influenza vaccine should be administered?
   A. September
   B. October only
   C. At the first sign of infection
   D. Anytime between October and March

3. Which are common side effects of the influenza vaccine?
   A. gastrointestinal upset
   B. injection site redness/erythema
   C. mild aches
   D. mild elevated temperature
   E. b, c, and d

4. The injectable influenza vaccine is a live vaccine that can cause the flu in some people.
   TRUE or FALSE

5. State survey teams and the CDC require each resident in a nursing home to be offered the influenza vaccine yearly.
   TRUE or FALSE

6. Influenza can not cause death in the elderly.
   TRUE or FALSE

7. Residents that should not receive the vaccine include:
   A. those with weakened immune systems
   B. those with allergies to eggs
   C. those over 90 years of age
   D. those that have had the vaccine within the last 5 years
   E. all of the above

8. Facilities with a majority of employees receiving the flu vaccine will have lower rates of influenza infection in their residents.
   TRUE or FALSE

Answer key on page 8 . . .

Quiz written by Traci Burge, Pharm.D.

. . .continued from page 1 (Understanding Glaucoma)

Risk factors for ACG include:

- Farsightedness with crowded drainage angle
- Huge cataracts
- Ethnicity (> in Asians)
- Drugs (mydriatics, OTC vasoconstrictors, cold medications with pseudoephredrine, antihistamines)

ACG with acute onset presents with headache, nausea, vomiting, blurred vision or sudden loss of vision. The eye may be red and painful with a fixed mid-dilated pupil. Corneal edema is present with "halos" around lights. Intraocular pressure is extremely high and requires emergency treatment.

Treatment of glaucoma most often involves the use of ophthalmic drops although some oral medications are available. The conjunctival cul-de-sac holds only seven microliters of fluid while the average eye drop contains 39 microliters. Much of the medication drop is mixed with tears and lost in the nasolacrimal duct. The cornea absorbs the medication as long as the medication is non-ionized or only partially ionized. Three to five minutes should separate drops when administered to ensure absorption.

Open Angle Glaucoma treatment is most often pharmacological and sometimes surgical. Beta-blocker eye drops, alpha-agonists, carbonic anhydrase inhibitors and prostaglandin analogs may be prescribed. Combinations of medication categories may be used and several products on the market now make combination drops in one product. Prostaglandin analogs have become first-line treatment. See the table below for common side effects. Extreme side effects due to long-term use have caused a decline in the use of pilocarpine, apraclonidine, dipivefrin, acetazolamide and epinephrine. If medications and/or laser trabeculoplasty cannot control pressures, then filter surgery to make a new drain may be warranted.

Treatment of Acute ACG uses beta-blockers, alpha agonists and carbonic anhydrase inhibitors to decrease the production of aqueous humor and decrease intraocular pressures. Also, pilocarpine may be used to constrict the pupil to pull the iris out of the drain to increase drainage of aqueous humor. If there are contraindications to beta-blocker use (asthma) or carbonic anhydrase inhibitor use (sulfur allergy) then paracentesis (incision in the eye) may be ordered to stop the attack. Once the acute attack has been treated, then a peripheral iridectomy is recommended.

Chronic ACG may be treated with all of the before mentioned medications used for acute ACG with the addition of the prostaglandin analogs.

Medication	Potential side effects
Beta blockers Timolol, Levobunolol (Timoptic®, Betagan®)	Burning, corneal irritation, asthma exacerbation, arrhythmia, change in mental status
Cholinergic Pilocarpine	Retinal detachment, diarrhea, cognitive dysfunction
Carbonic Anhydrase Inhibitors Dorzolamide, Brinzolamide (Trusopt®, Azopt®)	Allergy, red eye, bad taste in the mouth
Alpha Agonist Brimonidine (Alphagan®)	Red eye, drowsiness
Prostaglandin analogs Latanoprost, Travoprost, Bimatoprost (Xalatan®, Travatan®,Lumigan®)	Red eye – common in first 2-3 weeks
Combination drops Dorzolamide/Timolol (Cosopt®) Latanoprost/Timolol (Xalcom®) Brimonidine/Timolol (Combigan®)	

Article written by Traci Burge, Pharm.D.

Zinc Supplementation in Skin Healing

As we all know, a resident's nutritional status is an important factor when healing skin breakdown. Good protein stores are vital for the healing process. Vitamins A, B, C, E and the minerals copper, selenium and zinc also play a vital role in healing. Zinc serves as a cofactor for several enzymes that are important in cellular growth. A zinc deficiency seems to decrease protein and collagen synthesis, thus causing decreased wound healing.

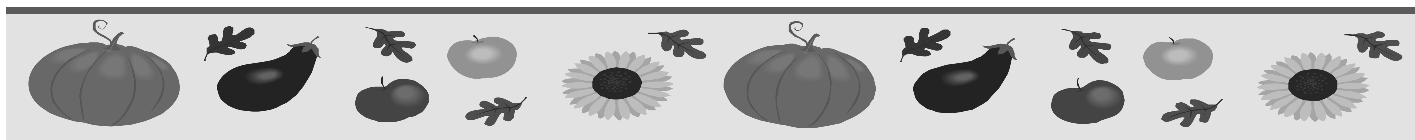
Several studies have looked at the use of zinc in wound healing. Researchers found that patients with low baseline zinc levels that were then supplemented with zinc, had a statistically significant improvement in healing as compared to those with normal zinc levels (70-130 mcg/dl). Convention suggests that residents with a zinc level of 100mcg/dl or less should receive zinc supplementation.

Side effects of zinc supplementation are most often gastrointestinal in nature (nausea, vomiting, and diarrhea). Also, excessive use of zinc has shown to have a negative affect on wound healing. It is thought to be due to zinc's impairment of neutrophil and lymphocyte function and its ability to compromise calcium and copper to access the wound. Zinc can also bind fluoroquinolone and tetracycline antibiotics if given with 2-4 hours which may be an issue for those residents on antibiotics for wound infection.

Zinc sulfate 220mg contains 50mg of elemental zinc and is suggested to be given once a day for 2-3 months. After three months, total body stores of zinc should be repleted. After stores are replete, zinc's half-life of 250 days should prevent acute-onset deficiency.

Most practitioners do not order zinc levels on residents due to cost. A good rule of thumb in a standard wound protocol is to order Zinc 220mg by mouth once a day for 60-90 days or until the wound heals—whichever comes first - to avoid possible negative effects on skin healing.

Article by Traci Burge, Pharm.D, Consultant Pharmacist



A Focus on Neil Medical Group Services

Neil Medical Group is open to serve our customers seven days a week – processing orders and delivering medications daily including holidays with the only exceptions being Thanksgiving Day and Christmas Day.

We stay open late – until 5pm weekdays and 4pm on weekends and holidays to give the facilities ample time to submit orders.

On-call pharmacists are available to help you 365 days a year! Just dial your regular pharmacy phone number and the pharmacist will be paged to return your call.

Our goal is to be a daily partner with you to provide the most efficient care for the residents!

Reminder about Re-Admitted Residents

Please be reminded that when a resident is discharged from your facility, the pharmacy should be notified.

If the same resident is then readmitted, remember that Neil Medical has erased the file out of the computer system. We need all medication orders written on the physician orders ALONG with all the information normally found on the right side of the orders.

"Right-sided" information might include: a message to crush meds, supplement orders, code status, fingerstick schedules, routine labs, restraints, OT, PT, ST orders, and treatments (including skin assessments, special foot care, wound care, etc.)

This will ensure complete orders for the next month!

Important Tips/Reminders for Accurate Blood Pressure Monitoring

Blood pressure (BP) readings are often incorrect or obtained inaccurately by both health care providers and patients. This is an important finding because 33% of Americans have hypertension and another 25% have "prehypertension". Listed below are ways to help ensure accurate measurements of this vital sign.

Choose a Proper Monitor

- Utilize monitors that go around the arm
- Avoid using wrist and finger monitors (not as accurate)
- Suggest digital monitors when appropriate (inflate automatically and are easier to read)
- Use appropriate cuff size (too large or too small can affect BP as much as 30mmHg)

Proper Technique

- Have the arm RESTED and SUPPORTED and at HEART LEVEL (Diastolic BP can increase by up to 10% if the arm is not supported and having the arm above or below the heart can alter readings by 10mmHg)
- Sit with back supported, feet on floor if possible
- Upper arm should be bare (remove clothing, gowns, etc)

Proper Timing

- Patients should rest at least 5 minutes prior to reading
- Wait 30 minutes to check BP after exercise
- Caffeine and Nicotine can affect BP – check BP prior to intake or wait 30 minutes after nicotine use or 2-3 hours after caffeine intake

Other Tips

- Avoid talking while taking BP reading
- Try to consistently use the same arm (some patients experience a 10mmHg difference in each arm)
- Calibrate monitors periodically

Orthostatic Blood Pressures

- MD may order "orthostatic blood pressures" which typically includes blood pressures of the patient lying, sitting and standing.
- The pressures should be completed in the order listed and in quick succession (within 1 to 3 minutes after the change of position to check the pressure).
  Have the patient lying in bed—take blood pressure.
  Instruct the patient to sit up—take the blood pressure.
  Next have patient stand up—take the blood pressure.
- Strict adherence to the timing is necessary for the physician to assess the patient's autonomic responses and to screen for possible medication side effects.

****Always use good nursing judgment—report high pressures, low pressures, or orthostatic differences of 20 points SBP or 10 points DBP to the attending physician immediately****

Article written by Bobbie Hall, Pharm.D., CGP Neil Medical Education Coordinator

Meet the Staff: The Neil Medical Western-Region Quality Assurance Representative!

Sonja Suddreth, CPhT, is a recent addition to the Neil Medical Group team – joining the company in June 2008 to assume the Quality Assurance Representative position for the (Western) portion of Neil Medical facilities serviced by the Mooresville pharmacy.

Sonja grew up in Huntsville, Alabama with much of her time spent in the country with her grandmothers in Florence and Hodges, Alabama. She attended Evangel Christian Academy where she was named Valedictorian and then proceeded to Caldwell Community College and Catawba Valley Community College to earn her Pharmacy Technician Certification. She also has a national certification as a CPhT that she obtained in 1996.

Her pharmacy experience includes working for Hudson Drug Company for 5 years and 18 years at Medipack which was eventually bought out by Omnicare – another long-term care pharmacy.

Sonja has two adult daughters, Rachel and Rebecca, three grandchildren (Christian - 5, Pyper - 3 and Kolby - 3 months), three dogs (Taylor, Lilly and Haley) and one cat, Simba. She states that Simba thinks he is "King of the House"!

In her "spare" time she enjoys photography, needlework, camping and living green (organic gardening, recycling, conserving energy, etc.). She also likes tutoring elementary students. She volunteers with ALFA (AIDS Alliance) and Bethel Colony (a Christian based rehab program for men with addictions) and is active in her church and community.

When asked what she would like the facilities to know about her she stated: "I have a special love for Geriatrics and Long-Term Care – I respect and have learned so much from the older generations." Her oldest grandson, which she refers to as "her joy" has Down's syndrome. So in a very personal way, Sonja understands the need for the best and special care for the elderly and the developmentally delayed communities.

We welcome Sonja to Neil Medical Group – feel free to call her for any concerns you may have regarding our service!

Sonja may reached at 1-800-862-4533 x 3491

Article written by Traci Burge, Pharm.D.

What Does a BNP Lab Value Mean?

Brain natriuretic peptide (BNP) is a lab that is being ordered more frequently in long-term care facilities. But are you familiar with what a BNP value tells the healthcare professional? A BNP is ordered to help diagnose congestive heart failure (CHF) and to grade the severity of the heart failure. As we know, the signs of an acute exacerbation of CHF often mimic those of lung disease with symptoms of difficulty breathing, shortness of breath and fatigue. Performing this lab test will help to differentiate the diagnosis for the resident to receive the appropriate treatment.

Another reason to use the BNP is in residents complaining of chest pain. A high BNP predicts increased risk of death or heart attack in patients experiencing acute coronary syndrome.

The normal range for BNP is 0-100. Higher values are directly related to the severity of the disease (the higher the BNP, the worse the CHF and prognosis). Thus, BNP may also be drawn to assess the benefit of therapy. With the correct therapy, the prescriber should see a BNP value decrease.

Article written by Traci Burge, Pharm.D.

A New Monitoring Parameter for Diabetics: eAg levels

The American Diabetes Association and others will now be encouraging clinicians to speak in terms of eAg levels vs. hemoglobin A1c (HbA1c) levels in regards to monitoring diabetes. Most type 1 and type 2 diabetics can have their HbA1c levels expressed as eAg levels, and results do not differ based on based on age, sex, diabetes type, race/ethnicity, or smoking status.

HbA1c, expressed as the percentage of adult hemoglobin that is glycated (sugar build-up in the blood which combines with hemoglobin), is the most widely used measure to determine how well a patient's diabetes is being controlled. HbA1c levels provide an average of blood glucose control over a six to twelve week period and it used in combination with daily blood glucose monitoring with glucometers to help clinicians evaluate and assess control and make adjustments to medication. Therefore, the average amount of sugar in a patient's blood can be determined by measuring HbA1c levels. The higher the HbA1c level, the higher the average amount of sugar in the blood.

The normal range HbA1c levels for patients without diabetes is 4-6%. In diabetics, the goal is maintain levels < 7% for optimal control. Testing should be performed every 3-6 months, depending on the control levels of the serum glucose. Experts recommend checks for HbA1c at least twice a year. Achieving and maintaining HbA1c or eAg levels to near goal has been shown to reduce long-term complications associated with poor glycemic control such as diabetic neuropathy, nephropathy, and retinopathy, to name a few.

The push to report eAg levels is to make results easier for patients to understand since it will be in mg/dl like their blood sugar values and referred to as "Average" glucose. Patients should be told that eAg is a running average of all their glucose levels for the past 3 months. Therefore, patients can now be told to aim for eAg levels < 154 mg/dl, which equates to A1c levels of 7%. The equation for converting HgA1c levels to eAg levels is below:

$$eAg = 28.7 \times A1c - 46.7$$

Also the following table can be used as a quick reference:

A1c %	eAg (mg/dl)
5	97
6	126
7	154
8	183
9	212
10	240
11	269
12	298

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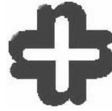

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The Fifth Annual Educational Summit!

Provided by:

Neil Medical Group: The Leading Pharmacy Provider in the Southeast

October 21-22, 2008

Embassy Suites, Concord, NC

Contact Glenda Oliver for more registration forms 1-800-735-9111 x 3222

Continuing education credits will be provided.

IV Supplies: Who Supplies?

Kinston and Mooresville pharmacies send admixed IV bags and IV pumps to facilities.

Plain IV bags (example: NS, 1/2NS, NS with 20meq KCL) and IV tubing are ordered from the facility's contacted medical supplier. It can be very confusing—especially for weekend staff or agency staff.

Please educate all staff for the most efficient IV care for the residents!

Answers to the quiz:

1. E
2. D
3. E
4. False
5. True
6. False
7. B
8. True

Pharm Notes is a bimonthly publication by Neil Medical Group Pharmacy Services Division. Articles from all health care disciplines pertinent to long-term care are welcome. References for articles in Pharm Notes are available upon request. Your comments and suggestions are appreciated. Contact:

Traci Burge

1-800-862-4533 ext. 3444

Note: Periodically, we are asked to add a name to our distribution list. At this time, copies of Pharm Notes newsletters are distributed in bulk to Neil Medical Group customers only.