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2012 AGS Beers List Update

The Beers Criterion is an evidenced based resource used by healthcare personnel to prevent the use of potentially inappropriate medications (PIMs) in elderly patients as well as what to monitor for in those patients taking these PIMs. The most recent update of the Beers Criterion was developed in 2012 and is comprised of fifty-three medications or medication classes divided into three specific categories that are organized by therapeutic class and organ system. In most practices settings, elderly patients are on medications that are either currently on the Beers List or are older medications in which safer alternatives are available. The next few paragraphs will discuss some of the additions to the updated Beers List.

Some of the most notable updates to the Beers List medications regardless of diagnosis include stopping the use of sliding scale insulin in patients who have not received sufficient glycemic control due to its increased chance of causing hypoglycemia. Patients should not be using selective serotonin reuptake inhibitors due to the increased chance of a fall or fracture. Megestrol should not be used due to its increased risk of thrombotic events and possibly death in elderly patients. It is also recommended to avoid the use of benzodiazepines for the treatment of insomnia, agitation or delirium.

The Criterion also included a section for medications that are not recommended for patients that have been diagnosed with specific conditions. Patients who have a history of falls or fractures should avoid the use of nortriptyline and Desipramine due to their increased chance of mental confusion leading to avoidable falls. Heart failure patients should avoid using COX-2 inhibitors, non-DHP calcium channel blockers or TZD's as they can cause increased fluid retention and worsen heart failure. Finally, and perhaps most importantly, the use of antipsychotics, anticholinergics and benzodiazepines should be avoided in patients who have dementia or cognitive impairment. Antipsychotics in dementia patients have an increased chance of causing a stroke while the other two classes may increase mental confusion and lead to the patient harming themselves or others. These medications should only be used if there is no other alternative and non-pharmacologic alternatives have not worked and they pose a threat to themselves and others.

Lastly, the Beers Criterion lists potentially inappropriate medications that can be used but only with caution in elderly patients. The most notable being antipsychotics, mirtazapine and SNRI/SSRI's as the long term use of these medications can cause hyponatremia or even syndrome of inappropriate antidiuretic hormone. When starting or changing the dose for these medications, sodium levels need to be monitored. Lastly, the use of Aspirin as the primary means of prevention of cardiac events is discouraged due to the lack of evidence of benefits in elderly patients aged 80 or older.

It is currently recommended that all settings who care for patients aged 65 years or older follow the guidelines established in this evidence based criterion. However, this criterion is not meant to replace clinical judgment as patient care must be based off of the patient and should be individualized to meet their needs. With continued and regular updates to the criterion, the Beers List will be more regularly used when making medication decisions in the elderly population. The AGS 2012 update can be found in the April American Geriatrics Society Journal (vol. 60, no. 4).

Michael A Witherow, Geriatrics APPE

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Osteoporosis Prevention, Detection and Treatment

Osteoporosis Prevention

Recommendations for all ages and populations

- Maintain an adequate intake of vitamin D and calcium to help support bone formation during childhood and to prevent bone loss after the age of 20
- Perform weight bearing exercises on a regular basis to promote the body to continue maintaining bone structure and function
- Avoid tobacco use and limit alcohol consumption to a few drinks a week. Studies have shown that moderate alcohol intake can actually promote greater bone density. However 3 or more drinks a day has been proven detrimental to bone health.

Adequate Vitamin D and Calcium Supplementation Chart

Age/Gender	Daily Vitamin D Requirement	Daily Calcium Requirement
Children 1 - 3	400 IU	500 mg
Children 4 - 8	400 IU	800 mg
Children 9 - 18	400 IU	1300 mg
Men 19 and older	400 to 800 IU	1000 mg
Women Age 19 to 49	400 to 800 IU	1000 mg
Women Age 50 and older	800 to 1000 IU	1200 mg

Osteoporosis Detection

Bone Mineral Density

- Bone mineral density is measured on the T-Score using the DEXA scan
- The T-Score is a measurement of how dense a patients bones are compared to a healthy person of the gender at age 30
- The T-Score is reported in standard deviations from the baseline healthy patient
- Recommend yearly screenings for female patients 65 and older and male patients 70 and older and patients with risk factors

Signs and Symptoms of Osteoporosis

- Back pain
- Height Reduction over time
- Bone fractures that occur easily
- Bent over stature

Classification	T-Score Ranges
Normal	0 to -1
Osteopenia	-1 to -2.5
Osteoporosis	-2.5 and lower

Risk Factors for osteoporosis include:

- Postmenopausal women and men older than 50
- Endocrine disorders,
- Excessive alcohol intake and tobacco use
- Gastrointestinal diseases
- Low Vitamin D and calcium intake

Osteoporosis Treatment Options

Bisphosphonates

Bisphosphonates are first line treatment for osteoporosis and for the prevention of the progression from osteopenia to osteoporosis. Oral bisphosphonates must be taken 30 minutes or more before first food or drink in the morning with 8 ounces of water and the patient must remain upright for 30 minutes after administration. Side effects of bisphosphonates include hypocalcaemia, headache, constipation and esophageal erosion if patient does not remain upright after taking the medication. Patient calcium levels should be monitored.

Bisphosphonate Dosing Chart for Osteoporosis Prevention and Treatment

Bisphosphonate	Prevention Dose	Treatment Dose
Alendronate	5 mg daily or 35 mg weekly	10 mg daily or 70 mg weekly
Ibandronate	2.5 mg daily or 150 mg monthly	Oral: 2.5 mg daily or 150 mg monthly
IV: 3 mg every 3 months		
Risedronate	5 mg daily or 35 mg monthly or one 75 mg tablet on two consecutive days monthly or 150 mg monthly	Females: Prevention Dose Males 35 mg weekly
Zoledronic Acid	IV: 5 mg infused over at least 15 minutes every 2 years	IV: 5 mg infused over at least 15 minutes every year

Selective Estrogen Receptor Modulators (SERMs)

SERMs are second line therapy for patients with osteoporosis and osteopenia that are refractory to bisphosphonate treatment. Currently raloxifene is used for the prevention and treatment of osteoporosis in postmenopausal females. It is given orally without regards to meals in a 60 mg dose. Side effects include cardiovascular events such as chest pain, venous thromboembolism, edema and neuromuscular events. Patients should be monitored for signs of clotting and cardiovascular problems.

Estrogen/hormone therapy

Estrogen or hormone therapy with hormones such as ethinyl estradiol, norethindrone, and norgestimate have been used for treatment of postmenopausal women with osteoporosis but it should only be considered after patients have failed other therapies or the patients need hormone therapy for other disease states. This is due to the increase risks associated with hormone therapy including breast cancer, heart disease, stroke, DVT's and venous thromboembolisms. Estrogen should not be unopposed in women with an intact uterus because it can lead to endometrial cancer.

Calcitonin

Calcitonin can be give I.M. or SubQ 100 units every other day or intranasally 200 units alternating nostrils daily. It is a 4th line treatment and patients require calcium and vitamin D supplementation and monitoring due to hypocalcaemia risks.

Parathyroid Hormone

Administered subQ 20 mcg once daily for women with a high fracture risk due to osteoporosis. Side effects include orthostatic hypotension so should be administered lying down at first and it shouldn't be used for more than 2 years.

Prolia

Generic name denosumab, monoclonal developed to treat osteoporosis

Indications: Treatment of osteoporosis in postmenopausal women at high risk for fracture; treatment of bone loss in men receiving androgen deprivation therapy (ADT) for nonmetastatic prostate cancer; treatment of bone loss in women receiving aromatase inhibitor (AI) therapy for breast cancer; prevention of skeletal-related events (eg, fracture, spinal cord compression, bone pain requiring surgery/radiation therapy) in patients with bone metastases from solid tumors (Lexi-Comp)

Currently not on guidelines for treating osteoporosis, but will most likely be soon. Different from other treatments in the fact that it is a monoclonal that attaches to the RANKL thus preventing osteoclast formation.

Cody Siebenaller, ONU, PharmD Candidate, ICP Clinical Pharmacy Student

References

Meunier, Pierre J. "Cyrus Cooper, Stephen Gehlbach and Robert Lindsay (eds): Prevention and Treatment of Osteoporosis: A Clinician's Guide." Osteoporosis International 16.10 (2005): 1306. Print.

"How Much Calcium to Take with Vitamin D?" LIVESTRONG.COM. Web. 28 Mar. 2012. <http://www.livestrong.com/article/407483-how-much-calcium-to-take-with-vitamin-d/>.

Staff, Mayo Clinic. "Definition." Mayo Clinic. Mayo Foundation for Medical Education and Research, 13 Dec. 2011. Web. 28 Mar. 2012. <http://www.mayoclinic.com/health/osteoporosis/DS00128/DSECTION=symptoms>.

Lexi-Comp OnlineTM , Osteoporosis Management Lexi-Drugs OnlineTM , Hudson, Ohio: Lexi-Comp, Inc.; March 28th 2012

International Osteoporosis Foundation Online. http://www.iofbonehealth.org/ ; March 28th 2012

Facts and Comparisons. Online Database. factsandcomparisons.com. Accessed March 28th 2012

Preparing for Influenza Season

According to the Centers for Disease Control and Prevention Survey, employee vaccination rates in long-term care facilities fell from 64% in the 2010-2011 flu seasons to 52% during the 2011-2012 flu seasons.

Raising vaccination coverage of health care providers working in Long Term Care Facilities is especially important given that LTCF residents are at increased risk for serious influenza complications and that staff vaccination might reduce the risk for death among LTCF residents To increase vaccination coverage for staff, facility should develop a comprehensive intervention strategy that includes education and promotion to encourage vaccination and easy access to vaccine. Educational programs should include emphasis on vaccination effectiveness and its safety, knowledge of influenza transmission, and the benefits of vaccination for staff and family members visiting residents.

Tips of increasing influenza vaccine rate in your facility:

- Educate staff, families, and volunteers of the benefits of receiving the influenza vaccine
- Offer vaccine at no cost or reduced rate to all staff over a period of several days.
- Provide vaccine to newly hired employees during the influenza season.

Facilities that develop a comprehensive strategy of increasing employee vaccination rate will decrease transmission of influenza, decrease staff illness and absenteeism and influenza-related illness and death among residents at increased risk of severe influenza illness.

By; Irene Sours, RN, Nurse Consultant
http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6138a1.htm
http://www.cdc.gov/flu/about/season/

Web: www.icppharm.com
email: icp@icppharm.com

Tiffin Main Line: 800.228.8278

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Fax: 800.325.9826

Business Office: 800.252.1679
Fax: 800.338.8593

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ICP Southern Region: 866.544.5433
Fax: 513.573.9628

Mission Statement:
ICP is committed to exceeding our customers' and employees' expectations through quality health-care service, continuous education, and effective communication.

Medical Food

For many years patients have joked about taking so many medications that it feels like a meal. Now that Axona, a new prescription food, is available, that joke has now become a reality. Newly approved by the FDA, Axona is a prescription food that is used to help treat Alzheimer's. In an individual who is not suffering from Alzheimer's, glucose is the main energy source for the brain.[1] Patients who suffer from Alzheimer's have shown a decrease in the amount of glucose utilized by the brain. The change in glucose utilization occurs early in Alzheimer's, before symptoms appear. As the decrease in use of glucose continues, clinical symptoms begin to develop, and the glucose utilization decreases further. It was then demonstrated that increasing blood glucose in individuals could increase patient's recall. As increased blood glucose levels for long periods of time can demonstrate long term side effects another approach was needed.[1]

Axona provides unique ketone bodies that are metabolized by the liver to form -hydroxybutrate (BHB) which then can cross the blood brain barrier and be utilized as an alternative energy source.[1,2] BHB can provide up to 60% of the energy required by the brain.[2] In Alzheimer's a decrease ranging from 20% to 40% of glucose utilization can be observed.[3] The increase in levels of an alternative energy source led to an increase of memory recall.[3] BHB, when tested in rats, demonstrated the ability to maintain neurons during periods of hypoglycemia.[3] Axona demonstrated a significant improvement in The Alzheimer's Disease Assessment Scale-Cognition at one and a half months and three month time periods.[4] Axona is not for everyone. Axona is only approved in mild to moderate Alzheimer's disease and contains ingredients that are milk and soy based.[1] Patients who are allergic to milk or soy based products should not use Axona. Axona should not be used in patients who are at risk of ketoacidosis such as uncontrolled diabetics and those with a history of alcohol abuse.[1] Patients that should not take Axona also include those with a history of metabolic disorder, gastric inflammation, and renal disorders.[1] Side effects that may occur while taking Axona include: flatulence, diarrhea, indigestion, headache, abdominal pain, and dizziness.[1] Axona's side effects tend to be reduced if taken fifteen to thirty minutes after a meal. Most side effects were mild and gastrointestinal in nature.[1] Axona may be used as an add on therapy to other Alzheimer's disease medications.[1]

In summary, Axona can be beneficial to patients with mild to moderate Alzheimer's Disease. Axona is a prescription only food that is to be dispensed from a pharmacy after receiving a prescription from a doctor. Axona has shown improvements in Alzheimer's disease patients in as little as forty five days. Since Axona is a relatively new product no long term studies have been done at this point.

Scott Spitnale ONU Pharm D Candidate.

Citations
1. Axona [prescribing information]. Broomfield, CO: Accera, Inc.; May 2009. 2. Prins ML. Cerebral metabolic adaptation and ketone metabolism after brain injury. J Cereb Blood Flow Metab. 2008;28(1):1-16. 3. Reger MA, Henderson ST, Hale C, et al. Effects of β-hydroxybutyrate on cognition in memory-impaired adults. Neurobiol Aging. 2004;25(3):311-314. 4. Henderson ST, Vogel JL, Barr LJ, et al. Study of the ketogenic agent AC-1202 in mild to moderate Alzheimer's disease: a randomized, double-blind, placebo-controlled, multicenter trial. Nutr Metab (Lond). 2009;6:31.
Links: http://www.accerapharma.com/media/Sciencebrochure.pdf http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2857668/pdf/nihms188088.pdf http://w.numedica.net/literature/Reger%202004.pdf http://www.nutritionandmetabolism.com/content/pdf/1743-7075-6-31.pdf