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B • U • L • L • E • T • I • N

FORMULARY UPDATE

The Pharmacy and Therapeutics Committee met January 15, 2008. 6 drugs or dosage forms were added in the *Formulary*, and 1 dosage form was deleted. 4 drugs or dosage forms were designated nonformulary and not available. Criteria for use were changed for 1 drug.

◆ ADDED

Aripiprazole Orally-Disintegrating Tablet
(Abilify® Discmelt® by Bristol-Myers Squibb Company)*

**Restricted to Shands Vista. Nonformulary and Not Available at Shands at UF.*

Benzonatate
(Tessalon® Perles by Forest Pharmaceuticals and generics)

Buckberg Cardioplegia Solution
(compounded by Central Admixture Pharmacy Services)

Insulin Aspart
(NovoLog® Vials by Novo Nordisk)†

†Vials are restricted to use in insulin pumps.

Ropinirole
(Requip® by GlaxoSmithKline)

Sulfanilamide Vaginal Cream
(AVC® by Pharmelle LLC)

◆ DELETED

Colchicine Injection
(generic by Bedford)‡

‡Nonformulary and Not Available.

◆ NONFORMULARY AND NOT AVAILABLE

Alprazolam Extended-Release
(Xanax® XR by Pfizer and generics)§

§Automatically interchanged to immediate-release alprazolam.

(continued on next page)

POLICIES AND PROCEDURES

Joint Commission regulations mean changes to pre-printed PRN orders

The Joint Commission requires consistency in "as needed" (PRN) medications administered by nursing staff. Shands at UF requires an indication for all PRN medication orders appearing on pre-printed physician orders.

Developers of pre-printed physician orders routinely include multiple medications of the same therapeutic class to give the prescribing physician choices of different medications to select depending on the medical condition being treated. A negative consequence of having multiple choices is the routine selection of overlapping PRN medications with no guidance to the nursing staff regarding the sequence of administration. For example, it is common for physicians to prescribe multiple PRN pain medications including acetaminophen, combination products containing oxycodone, and morphine. In this case, the indication is usually written as "PRN pain" for each medication. Historically, clinical judgment of the nurse has been acceptable to guide administration. However, inconsistencies in nursing practice, based on differences in clinical judgment, have prompted tighter regulation.

The new policy allows global changes to pre-printed order sets (ie, modifications in pain, antiemetic, and antihypertensive PRN orders). Only order sets that have multiple drugs for the same indication and do not provide clear guidance on using 1 drug versus another are affected.

The lack of administration guidelines has the potential to cause patient harm. Examples of harm include additive respiratory depression, excessive daily doses of acetaminophen resulting in liver toxicity, and additive hypotensive effects from antihypertensive medications.

A policy has been developed to help with this challenging issue. The policy allows global changes to pre-printed order sets (ie, modifications in pain, antiemetic, and antihypertensive PRN orders). Only order sets that have multiple drugs for the same indication and do not provide clear guidance on using 1 drug versus another are affected.

These order sets will be modified so that guidance is given to nursing when to choose 1 drug versus another. Pain medications will be categorized into use for mild, moderate, or severe pain. Prescribers are instructed to choose only 1 drug from each category (eg, ibuprofen for mild pain, oxycodone for moderate pain, IV morphine for severe pain). As for antiemetic drugs, order sets would be changed to allow only 1 PRN agent unless specific instructions are given for use. Ondansetron is the preferred agent if multiple PRN antiemetics are listed, and all others will be deleted. PRN antihypertensives would be grouped together on order sets with directions to select only 1 medication. Multiple PRN antihypertensives would not be allowed on order sets unless explicit directions are given on using one medication over another.

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◆ Vitamin D supplementation

◆ New drugs in 2007

Formulary update, *from page 1*

◆ **NONFORMULARY AND NOT AVAILABLE** (cont.)

Dexrazoxane
(Totect® by TopoTarget)¶

¶Generic dexrazoxane remains in the Formulary.

Peppermint Oil (generic)

◆ **CRITERIA-FOR-USE CHANGES**

Nesiritide (Natrecor® by Scios)**

***Restricted to approval by a clinical pharmacist.*

Aripiprazole orally-disintegrating tablets (ODT) were reviewed for addition in the *Formulary* at Shands Vista. Shands Vista currently has ODT formulations of risperidone (Risperdal®) and olanzapine (Zyprexa®). There is an effort to promote the use of oral agents over intramuscular agents for the treatment of agitation. Having an ODT formulation of aripiprazole available will help with this effort.

Aripiprazole ODT was added in the *Formulary* but restricted to Shands Vista. This dosage form is nonformulary and not available at Shands at UF.

Benzonatate was reviewed (due to continued nonformulary use) to determine whether it should be added in the *Formulary* or be designated nonformulary and not available.

Benzonatate is a local anesthetic and is considered a peripherally-acting antitussive. According to the most recent American College of Chest Physicians (ACCP) guidelines for the treatment of cough, peripherally acting cough suppressants are not recommended for cough due to upper respiratory tract infections because they have limited efficacy. Peripherally acting cough suppressants are also not recommended for chronic or acute cough requiring symptomatic relief. Most references discourage the use of benzonatate as an antitussive. The only recommended use for benzonatate in the most recent ACCP guidelines is for the treatment of cough in patients with lung cancer who do not respond to opioids.

There are no randomized, controlled studies that assess the efficacy of benzonatate compared to placebo or other drugs, and placebo has been shown to have a marked cough-suppressant effect. There are, however, a few publications supporting the use of benzonatate in the setting of pulmonary malignancies. In a case series, benzonatate effectively controlled cough in 80% of 21 patients with malignant pulmonary involvement, and it was effective for cough associated with lung cancer that was unresponsive to treatment with opioids in another small case series of 3 patients.

Benzonatate is usually given 100 mg to 200 mg 3 times a day. At this dosage benzonatate costs approximately the same as dextromethorphan or codeine; cost is not a reason for therapeutic or formulary decisions with benzonatate.

Benzonatate is usually well-tolerated but has been associated with sensitivity reactions associated with ester-type local anesthetics. It has also been associated with central nervous system toxicities (eg, mental confusion, visual hallucinations, and seizures), especially in overdoses. The most common reported adverse effects are sedation (drowsiness), mild dizziness, and headache. Mild gastrointestinal upset (eg, constipation or nausea/vomiting) also may occur.

Although the evidence supporting efficacy is sparse, benzonatate was added in the *Formulary* for the treatment of opioid-resistant cough in patients with lung cancer. Its use as a general antitussive is discouraged in favor of centrally acting antitussives (eg, codeine, dextromethorphan).

Buckberg Cardioplegia Solution contains amino acids (ie, glutamate and aspartate), which are Krebs cycle precursors. These agents can be metabolized under anaerobic conditions to enhance energy production and may also counteract the depletion of Krebs-cycle intermediates, which can occur during ischemia, to improve post-ischemic metabolism. Buckberg Cardioplegia Solution is used when weaning patients from cardiopulmonary bypass (ie, a "hot shot") in cardiac surgical cases because of its potential to decrease the incidence of ventricular arrhythmias and improve hemodynamics. Buckberg Cardioplegia Solution is administered with warm blood cardioplegia at the end of cardiopulmonary bypass.

This solution cannot be compounded at Shands at UF but will be supplied by Central Admixture Pharmacy Services (CAPS). The vials made by CAPS have only a 30-day shelf-life, which can lead to wastage. The current cardioplegia solution consists of potassium chloride, magnesium sulfate, sodium bicarbonate, and Plasmalyte®. Shands cannot compound this "high-risk" product (ie, producing a sterile product from nonsterile ingredients) because our IV Center does not conduct Level 3 (high-risk) compounding.

Most studies evaluating the use of cardioplegic solutions enriched with amino acids have been conducted in animals; there is 1 published study in humans. This was a retrospective study that evaluated 23 consecutive patients who underwent coronary revascularization for cardiogenic shock due to left ventricular failure. Patients receiving warm glutamate induction had a significantly faster recovery of ventricular performance and required a shorter period of intra-aortic balloon and inotropic drug support than patients receiving standard cardioplegia solution; however, there were no statistically significant differences in new arrhythmias, ST–T wave changes, myocardial infarction, or deaths between the 2 groups.

There are no data that specifically report adverse events associated with cardioplegia enriched with amino acids; however, all cardioplegic solutions carry risks. These risks include myocardial infarction, ECG abnormalities, and arrhythmias.

The current evidence, including previous positive experiences with the product, along with the fact that future studies are unlikely in such a heterogeneous population, was sufficient justification to add this product in the *Formulary*.

NovoLog® vials (insulin aspart) were initially designated nonformulary and not available for safety reasons. NovoLog® Pens were considered safer to use, and the pens among the different insulin products prevented look-alike errors. However, some insulin pumps require the vials to refill the device.

Based on the recommendation of the Medication Safety Committee, NovoLog® vials were re-added in the *Formulary,* but they will be restricted to use in patients on insulin pumps.

Ropinirole was reviewed for possible addition in the *Formulary* due to its relatively high nonformulary use at Shands at UF. Ropinirole is an oral non-ergot alkaloid dopamine agonist with FDA labeled indications for both Parkinson's disease (PD) and Restless Leg Syndrome (RLS).

Ropinirole is an agonist at both dopamine D2- and D3-receptors (D3 > D2). Dosages are titrated to clinical effect. PD treatment starts at 0.25 mg TID and can be gradually increased to up to 8 mg TID. RLS treatment begins at 0.25 mg 1 to 3 hour before bedtime and can be increased up to 4 mg.

Head-to-head studies of ropinirole versus levodopa for PD have been conducted. The results of these studies are reflected in current PD guidelines. Guidelines from the American Academy of Neurology recommend that levodopa or a dopamine agonist may be used and that the choice depends on the relative impact of improving motor disability (better with levodopa) compared to the lessening

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Formulary update, *from page 2*
of motor complications (better with dopamine agonists) for each individual patient. No meaningful head-to-head trials of dopamine agonists are published for treatment of RLS or PD. Ropinirole and pramipexole are the only drugs with an FDA-labeled indication for RLS. (Pramipexole [Mirapex®] is currently not listed in the *Formulary.)* Many studies support the efficacy of ropinirole for RLS (both objectively and subjectively) and guidelines consider dopamine agonists first-line therapy.

The most common adverse effects associated with ropinirole use include nausea/vomiting, dizziness, syncope, fatigue, peripheral edema, and sweating. There are other more serious effects, such as hallucinations and falling asleep abruptly, that need to be monitored carefully.

Clinical evidence supports the use of ropinirole for both PD and RLS; therefore, ropinirole was added in the *Formulary.* Due to levodopa's lower cost, it should be considered initially for PD and as a possible option for RLS.

Sulfanilamide vaginal cream was reviewed for possible addition in the *Formulary* for use during intracavitary radiation implant procedures for the treatment of cervical cancer. During this procedure, gauze packing is placed behind cervical implants to stabilize the applicator position and to displace the rectum and bladder to protect them from irradiation. The gauze is typically moistened with an agent such as povidone-iodine (Betadine®) solution or sulfanilamide cream to prevent potential infectious complications associated with implanted gauze, which may be left in for 1 to 3 days, depending on the procedure. Povidone-iodine solution has historically been used at Shands at UF to moisten the gauze.

Sulfanilamide cream reportedly imparts better mechanical properties to the gauze packing when compared to the povidone-iodine solution, and the cream may be more comfortable for the patient. Other institutions that conduct these procedures use sulfanilamide vaginal cream.

There is no published literature to support the use of either povidone-iodine solution or sulfanilamide cream for this practice. No studies have been conducted comparing povidone-iodine solution to sulfanilamide cream. However, since sulfanilamide vaginal cream may improve patient comfort, it was added in the *Formulary.*

Colchicine injection was designated nonformulary and not available because of safety concerns about its continued use. Oral colchicine remains listed in the *Formulary.*

There have been many warnings regarding the use of intravenous (IV) colchicine, including from the Institute for Safe Medication Practices (ISMP). Overdoses can occur as the maximum dose is only 4 mg IV per week. Higher doses have led to severe bone marrow suppression and death. Because the risks of IV colchicine do not justify its use, IV colchicine was deleted from the *Formulary* and designated nonformulary and not available. The FDA recently announced that colchicine injection will be removed from the market because it puts patients at risk.

Xanax® XR (alprazolam extended-release) has recently been requested for inpatient use through the nonformulary request process. The use of nonformulary controlled substances is particularly problematic. Obtaining and stocking controlled substances is extremely difficult, and patients cannot use their own supply from home. Patients' home medications that are controlled substances are sent home with family members or stored with their valuables until discharge. Alprazolam is a Schedule IV controlled substance.

Xanax® XR was designated nonformulary and not available. The dosage conversion chart below allows for automatic interchange of generic immediate-release alprazolam for Xanax® XR orders.

XANAX® XR DOSAGE..... AUTOMATIC ORDER CHANGE TO

Xanax® XR 0.5 mg daily.....Alprazolam 0.125 mg QID
Xanax® XR 1 mg daily.....Alprazolam 0.25mg QID
Xanax® XR 2 mg daily.....Alprazolam 0.5 mg QID
Xanax® XR 3 mg daily.....Alprazolam 1 mg TID

The **Totect®** brand of dexrazoxane was designated nonformulary and not available. It was evaluated for possible addition in the *Formulary* after its manufacturer marketed its brand specifically for the treatment of anthracycline extravasation. Generic dexrazoxane has a labeled indication for the prevention of anthracycline-associated cardiomyopathy. Use of generic dexrazoxane for anthracycline extravasation is an off-labeled use. The manufacturer has a use-patent for the intravenous use of dexrazoxane for anthracycline extravasation and has threatened to sue hospitals and physicians who use generic dexrazoxane off-label for this use.

Totect® is being marketed at a much higher price than generic dexrazoxane. A "Kit" that is stocked in anticipation of an extravasation costs around $15,000. These $15,000 kits will often go out-of-date before they are used.

Generic dexrazoxane can be used for the treatment of anthracycline extravasation, and it is believed that the brand manufacturer would likely have no legal recourse. If a manufacturer marketed their product for this off-label use, there could be patent-infringement issues. Therefore, Totect® was designated nonformulary and not available.

Peppermint oil has been used as a room deodorizer. It routinely appeared on the Nonformulary Drug Use Report. Peppermint oil was designated nonformulary and not available. Alternative room deodorizer products can be obtained through Materials Management.

Nesiritide was restricted to approval by a clinical pharmacist prior to dispensing because of a high rate of noncompliance with existing criteria-for-use. An ongoing medication use evaluation (MUE) showed that 30% of use did not match the acceptable indications for use (using liberal interpretation of the previously established criteria-for-use).

Nesiritide is a recombinant form of B-type naturetic peptide. It has a labeled indication for the treatment of acute decompensated fluid-overloaded congestive heart failure. The labeling specifically states that Natrecor® is indicated for the intravenous treatment of patients with acutely decompensated congestive heart failure who have dyspnea at rest or minimal activity. The dosage is usually administered for 48 hours or less.

Nesiritide's pharmacology has led to its use for various off-labeled uses. At Shands at UF, it has been used for its renal-sparing effects in the post-cardiac surgery patient population and as a bridge to transplant in patients with refractory heart failure.

The use of nesiritide has required the use of the Nesiritide Order Form. This requirement remains. However, before nesiritide will be dispensed, a clinical pharmacist will compare the indication for use with the previously approved criteria. If the proposed use does not meet the criteria, nesiritide will be stopped per P&T-Approved protocol. A discontinuation order will be written and documentation of this change will be placed in the Progress Notes section of the chart.

This restriction was implemented February 1, 2008. Notification of all services was done before the implementation.

Vitamin D-ficiencies and D-velopments

Vitamin D is a fat-soluble vitamin that can come from the diet, dietary supplements, and/or sunlight exposure. Very few foods naturally contain vitamin D and are limited mostly to certain fish (eg, salmon, tuna). A small number of foods are fortified with vitamin D, including milk, yogurt, margarine, cheese, and cereals. The milk fortification program (100 IU of vitamin D per 8-ounce cup) was implemented in the 1930s to combat rickets. Various nonprescription dietary supplement strengths, ranging from 200 IU to 5000 IU per capsule, are available. Prescription-strength formulations of 50,000 IU (1.25 mg) per capsule are also available. As for sun exposure, UVB rays penetrate the skin and convert 7-dehydrocholesterol to previtamin D_3, which is then rapidly converted to vitamin D_3 in the body. Exposure of the arms and legs to sunlight for 5 to 30 minutes between 10 am and 3 pm twice a week is adequate.

The various forms of vitamin D are often confused. There are 2 primary forms: cholecalciferol (vitamin D_3), synthesized from UV light, and ergocalciferol (vitamin D_2), produced from plant sterols.[1] Structural differences affect metabolism, and D_3 has been shown to be 3 times more potent than D_2 based on ability to increase 25-hydroxyvitamin D levels.[2] Both forms are metabolized in the liver to 25-hydroxyvitamin D (calcidiol), the major circulating metabolite and what is measured in serum, by the enzyme vitamin D-25 hydroxylase. 25-hydroxyvitamin D is biologically inactive and must be converted to the biologically active form 1,25-dihydroxyvitamin D (calcitriol). 1,25-dihydroxyvitamin D is finally catabolized to inactive calcitroic acid, which is excreted in the bile. The major functions of vitamin D are to promote renal reabsorption of calcium and increase intestinal absorption of calcium and phosphorus.

HOW MUCH VITAMIN D SHOULD NORMALLY BE TAKEN?

The recommended intake of vitamin D is provided by the Dietary Reference Intake (RDI) from the Institute of Medicine (IOM) of the National Academy of Sciences. The RDI is a general term for a set of reference values that include Recommended Dietary Allowances (RDA), Adequate Intakes (AI), and Tolerable Upper Intake Levels (UL). The RDA is an intake amount that meets the nutrient needs of about 97% of healthy individuals. AIs are set when there is inadequate evidence to set a RDA. Only AIs have been established for vitamin D, and this value varies depending on age.

The daily intakes are 200 IU (5 mcg) for birth to 50 years, 400 IU (10 mcg) for 51 to 70 years, and 600 IU (15 mcg) for 71+ years. Interestingly, many experts now believe that without adequate sunlight exposure individuals may require 800 to 1000 IU per day. One study has suggested that African-American patients, due to darker skin pigmentation, may require even higher intake amounts, possibly as high as 4000 IU daily.[3] The only definitive way to ensure an appropriate dosage for an individual would be to monitor 25-hydroxyvitamin D levels; however, this is not usually practical.

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Recent evidence suggests that 800 IU or higher of vitamin D may be a more appropriate intake amount than 400 IU for many patients, especially for those without adequate sunlight exposure. It also appears that adequate vitamin D levels may have numerous significant health benefits that have not been previously appreciated.

HOW MUCH IS TOO MUCH VITAMIN D?

Vitamin D intoxication is very rare but can occur from ingesting extreme quantities, usually from supplements. Vitamin D intoxication is NOT possible from extreme sunlight exposure, as excess skin levels of vitamin D_3 are destroyed by sunlight. Symptoms of acute intoxication can include nausea, vomiting, poor appetite, constipation, weakness, and weight loss. In addition, continual ingestion of high levels may lead to hypocalcemia and hyperphosphatemia, which can cause mental status changes, heart rhythm abnormalities, and calcium deposition. The UL for vitamin D is set at 2000 IU (50 mcg) per day for children and adults; however, one study has shown that intake of 10,000 IU of vitamin D_3 per day up to 5 months did not cause toxicity.[1] 25-hydroxyvitamin D levels greater than 150 ng/mL are considered toxic by most experts (>50,000 IU daily have been shown to cause levels this high). There are certain medical conditions, however, that may require doses higher than 50,000 IU daily (eg, familial hypophosphatemia).

HOW MUCH VITAMIN D IS NOT ENOUGH?

Vitamin D deficiency has multiple etiologies including dietary inadequacy, impaired absorption and utilization, increased requirement, or increased excretion. Currently there is no consensus on the optimal serum levels of 25-hydroxyvitamin D; however, most experts define a deficiency as a level <20 ng/mL (50 nmol/L) and levels of 20 ng/mL to 30 ng/mL are considered insufficient. Levels >30 ng/mL generally indicate sufficient vitamin D stores.[1] Using these definitions, it has been estimated that about 1 billion people worldwide do not have adequate vitamin D stores.

Populations that are at increased risk of deficiency include, exclusively breastfed infants, older adults, persons with limited sun exposure, liver and renal disease patients, darker skinned persons, and persons with fat malabsorption (eg, Crohn's disease). Several European studies show that more than 40% of elderly men and women in the community have inadequate levels.[1] Additionally, other studies have demonstrated that more than 50% of postmenopausal women taking medication for osteoporosis had inadequate levels.

WHY IS THIS IMPORTANT?

Numerous observational trials have associated decreased cancer risk with higher vitamin D intake.[1] A large cohort study examined data from the Third National Health and Nutrition Examination Survey (NHANES) involving 16,818 adults who had 25-hydroxyvitamin D levels measured.[4] In this study patients with vitamin D levels >32 ng/mL had a 72% (95% CI, 32% to 89%) lower risk of colorectal cancer compared to patients with levels <20 ng/mL. A recent randomized controlled trial in 1179 post menopausal women in Nebraska showed that 1100 IU per day of vitamin D_3 reduced "all-cancer" risk by 60% to 77%.[1]

A meta-analysis of 5 randomized clinical trials revealed that increased vitamin D intake reduced the risk of falls by 22% as compared to only calcium or placebo.[1] This meta-analysis showed that 400 IU was not effective in preventing falls, but 800 IU was effective. In addition, the same meta-analysis showed mixed results for the effects of vitamin D on fracture risk. While there was no benefit in patients taking

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New drugs approved in 2007

Again in 2007, as in 2006, the number of new drugs (ie, new molecular entities or NMEs) approved by the FDA was very low (see table below). The most new drugs approved in 1 year occurred in 1996 when 53 new drugs were approved. The 16 new drugs approved this year are consistent with a downward trend. In the last 3 years, only 60 new drugs were approved, which is only slightly more than what was approved at the 1996 peak.

Several new biological "drugs" were approved, but the number of biologics approved in 2007 is also down compared with the previous 2 years. Most of the new biologics will not be widely marketed. The avian influenza vaccine is being stockpiled at the Centers for Disease Control (CDC); it will be distributed by public-health officials if needed for an outbreak of the "bird flu." Micera® is a long-acting erythropoiesis-stimulating agent (ESA) for treatment of anemia associated with chronic renal failure, including patients on dialysis and patients not on dialysis. The marketing of this product has been delayed because of a court ruling that it infringes on Amgen's Epogen® and Aranesp® patents. For completeness, the table includes selected new biologicals and some new dosage forms.

The growing arsenal of generics makes it easier to find a less expensive option in many therapeutic categories.

Experts predict the number of new drugs approved each year will remain low over the next few years. The decrease is attributed to the relative poor success of the research "pipelines" of pharmaceutical companies. Some critics attribute the decrease in the number of new drug approvals to increased vigilance by the FDA since the rofecoxib (Vioxx®) withdrawal from the market. They claim that the FDA has essentially changed the standard for what is "safe" and effective. Examples of drugs not approved because of safety concerns include the COX-2 inhibitor lumiracoxib (Prexige®) for osteoarthritis and the anti-obesity drug rimonabant (Zimulti®).

However, 2007 was another big year for first-time generic approvals. Generic versions of drugs continue to be marketed as patents expire. Many third-party payers, including Medicare Part D plans, encourage the use of generics by assessing much lower co-pays for patients. The annual inflation rate for pharmaceuticals was lower than usual (ie, 1%), which has been attributed to the increasing use of generic drugs.

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NEW DRUGS & SELECTED BIOLOGICALS APPROVED BY THE FDA IN 2007

GENERIC NAME	TRADE NAME	INDICATION
Aliskiren‡	Tekturna®	Hypertension
Ambrisentan*‡	Letairis®	Pulmonary Arterial Hypertension
Ammonia N-13	Ammonia N-13	Contrast Agent Used for Myocardial PET Scans
Armodafanil	Nuvigil®	Sleep Apnea, Narcolepsy, Shift Work Sleep Disorder
Avian Influenza Virus Vaccine†§	H5N1 Vaccine	Bird Flu Immunization
Doripenem	Doribax®	Antibiotic
Eculizumab†	Soliris®	Paroxysmal Nocturnal Hemoglobinuria
Hepatitis B Immune Globulin†	HepaGam® B	Hepatitis B Prevention (post liver transplant) and Treatment
Influenza Virus Vaccine†	Afluria®	Influenza Immunization
Ixabepilone‡	Ixempra®	Breast Cancer
Lanreotide	Somatuline® Depot	Acromegaly
Lapatinib‡	Tykerb®	Breast Cancer
Levocetirizine	Xyzal®	Antihistamine
Lisdexamfetamine	Vyvanse®	Attention Deficit Hyperactivity Disorder
Maraviroc‡	Selzentry®	HIV Infection
Methoxy Polyethylene Glycol-Epoetin Beta†¶	Micera®	Anemia
Nebivolol	Bystolic®	Hypertension
Nilotinib	Tasigna®	Chronic Myelogenous Leukemia
Protein C Concentrate, Human†	Ceprotin®	Congenital Protein C Deficiency
Raltegravir‡	Isentress®	HIV Infection
Retapamulin	Altabax®	Topical Antibiotic for Impetigo
Rotigotine	Neupro®	Parkinson's Disease
Sapropterin‡	Kuvan®	Phenylketonuria
Small Pox Vaccine†§	ACAM2000®	Smallpox Immunization
Temsirolimus‡	Torisel®	Renal Cell Carcinoma
Thrombin, Human†	Evithrom®	Hemostasis During Surgery

16 New Molecular Entities (NMEs) shown in bold
*Listed in the Shands at UF *Formulary*
†Biological
‡Priority Review
§Only available through the CDC's Strategic National Stockpile and military personnel.
¶Not currently being marketed for legal reasons.

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Prescribing, *from page 4*

400 IU of vitamin D daily, there was a 26% reduction in fractures in patients taking 700 IU or 800 IU daily who had low baseline vitamin D levels. A recent Women's Health Initiative study indicated that vitamin D intake above 800 IU and calcium above 1200 mg per day was associated with a 33% reduction in the development of type 2 diabetes mellitus in women.[1] Another study found that diabetic patients with vitamin D levels <20 ng/mL had significantly increased hemoglobin A1C levels, triglycerides, C-reactive protein, insulin requirements, and cardiovascular disease.[5]

Most recent evidence suggests that 800 IU or higher of vitamin D may be a more appropriate intake amount than 400 IU for many patients, especially for those without adequate sunlight exposure. It also appears that adequate vitamin D levels may have numerous significant health benefits that have not been previously appreciated. A large body of developing research on vitamin D should provide more definitive answers on the role of vitamin D in patient care and disease prevention.

By Russell McKelvey, PharmD

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News, *from page 5*

Important first-time generic version of brand name drugs approved in 2007 include generic versions of Ambien® (zolpidem), Coreg® (carvedilol), Lamisil® (terbinafine), Norvasc® (amlodipine), Protonix® (pantoprazole), Wellbutrin® XL (buproprion ER), and Zyrtec® (cetirizine).

Patent challenges by brand name companies and pediatric 6-month exclusivity extensions often make it difficult to determine exactly when patents will expire. However, several important drugs are poised for generic alternatives in 2008. There are already several generic versions of once-weekly strengths of Fosamax® (alendronate), and generic versions of Fosamax® Plus D are expected later this year. These are the first generics available in the bisphosphonate class and should offer less expensive alternatives to Actonel® (risedronate) and Boniva® (ibandronate)."Since multiple alendronate generics will be marketed, the price of generic is expected to be 30% (or less) of the cost of brand name alternatives, which will save patients or their 3rd-party payor at least $60 per month (ie, over $700 per year). Elderly patients with Medicare Part D who use generic drugs are less likely to reach the doughnut hole, where they have to pay for all their medications out of their own pocket. If they do reach the doughnut hole, generics minimize the financial stress of paying out of pocket. The growing arsenal of generics makes it easier to find less expensive options in many therapeutic categories.