Formulary Changes

Additions:
• Dextran 40 – plasma expander

Deletions:
• Tobramycin nebulization solution (Tobi®)
• Lansoprazole Solutab

Drug Use Issues:
• Intravenous Immune Globulin (IVIG) dosing — IVIG will be dosed by ideal body weight instead of actual body weight
• Levothyroxine intravenous (IV) — intravenous levothyroxine will be held until five days after the last oral dose
• Fluoroquinolone eye drops — moxifloxacin ophthalmic drops (Vigamox®) is restricted to Ophthalmology

Medication Matters is published by the Medication Use Clinical Practice Team at Carroll Hospital to inform physicians and other clinical staff about safety issues regarding medications. We welcome your thoughts on topics for future publications. Please contact Larry Siegel at x6910 or submit information by email to lsiegel@CarrollHospitalCenter.org.

Pharmacist Interventions We Can Learn From

These are actual interventions made by our pharmacists

• Nonsteroids, i.e., ibuprofen and ketorolac are cross-sensitive with aspirin allergy: A physician entered an order for ketorolac for a patient who was allergic to aspirin as documented in her chart. A pharmacist spoke to the patient about her allergy to aspirin and she said she gets a rash when she takes aspirin and instead only uses Tylenol®. The prescribing physician was informed of this and the order for ketorolac was cancelled.

• If INR is in range, patient is already anticoagulated: Lovenox® was ordered for a patient with deep vein thrombosis (DVT) prophylaxis. A pharmacist noted the patient’s international normalized ratio (INR) was 2.5 and found out the patient was on warfarin. As a result, the pharmacist was able to get the Lovenox order canceled.

• Heparin should not be given to a patient with low platelets: A physician ordered heparin 5000 units SQ q12h for a patient with a platelet count of 29, which could cause thrombocytopenia. The pharmacist was able to get the heparin order discontinued.

• Antibiotics are often involved in QT prolongation:
  o A patient on high dose seroquel (500 mg) and citalopram (20 mg) daily was given new orders for ciprofloxacin (Cipro) and flagyl. Seroquel + citalopram + Cipro can increase the risk of QT prolongation. The pharmacist was able to get the Cipro order changed to ceftriaxone.
  o A patient who was taking ziprasidone was prescribed azithromycin. Both drugs have the potential to prolong the QTc interval. After being contacted by a pharmacist, the physician agreed to change the azithromycin order to doxycycline which would not have this interaction.

• Multiple beta blockers shouldn’t be given together (they end in “lol”): A patient was given orders for both metoprolol and carvedilol (Coreg®). These duplicate beta-blockers can increase hypotension or lower one’s heart rate. After being contacted by a pharmacist, the doctor discontinued the Coreg order.

• 2 mg of Dilaudid is too much for opioid-naïve patients: A pharmacist called the nurse questioning an order for Dilaudid 2 mg IV. The patient had not received any narcotics and was not on any at home. The nurse had entered the order for an incorrect patient.

Tetanus-diphtheria-acellular pertussis (Tdap) or Tetanus-diphtheria (Td): Which Vaccine to Use in an Emergency

Multiple formulations of vaccines containing tetanus toxoid are available in the United States. Each has specific targeted populations for use—they are not interchangeable and prescribing errors happen frequently. Pertussis vaccine is only available in combination with certain tetanus-containing vaccines and is given as a series to infants, young children and adolescents. In adults, pertussis vaccination is only needed once, except in pregnant women who should receive a dose of the pertussis vaccine during each pregnancy.

Confusion occurs particularly when an ADULT patient presents with a wound requiring tetanus protection. According to the Advisory Committee on Immunization Practices (ACIP), when a tetanus toxoid-containing vaccine is needed for wound management in a person who has not previously received Tdap, the use of Tdap is preferred over Td. Tdap can be given again if Td is unavailable. Thus, Tdap is given in place of Td as a public health initiative to prevent pertussis.

At Carroll Hospital, order sets in Paragon have been implemented to assist prescribers with choosing the appropriate tetanus vaccine for adults.

For further information on the tetanus vaccine, please visit www.immunize.org/askexperts
Food and Drug Administration
Safety Alerts

DPP-4 Inhibitors May Cause Severe Joint Pain. The U.S. Food and Drug Administration (FDA) recently issued a warning that the Type 2 diabetes medicines sitagliptin, saxagliptin, linagliptin and alogliptin may cause severe and disabling joint pain. They recommend patients notify their health care professional right away if they develop these symptoms. Prescribers should also consider these agents as a possible cause of severe joint pain and discontinue the drug if appropriate.

Name confusion: Brilinta® (vortioxetine) and Brintellix® (ticagrelor). Brintellix® (vortioxetine) is a selective serotonin reuptake inhibitor (SSRI) antidepressant. Brilinta® (ticagrelor) is an antiplatelet, anti-blood clotting medication used to lower the risk of having another heart attack or dying from a heart problem after a heart attack or severe chest pain. The FDA recommends health care professionals include the generic name of the medication, in addition to the brand name, and the indication for use when prescribing these medications.

Treatment of Recurrent C. difficile Infection

Recurrent infections with Clostridium difficile (C. diff) can be challenging to treat. Due to the risk of cumulative neurotoxicity, metronidazole cannot be used as therapy for treatment beyond the first recurrence of C. diff. Treatment of C. diff for the second or later recurrences should be with oral vancomycin, using a tapered and/or pulse regimen. The Clinical Practice Guidelines for Clostridium difficile Infection in Adults (2010 update by the Society for Healthcare Epidemiology of America [SHEA] and the Infectious Diseases Society of America [IDSA]) provide an appropriate regimen for vancomycin tapering. After the usual dose of vancomycin 125 mg orally four times per day for 10 to 14 days, vancomycin is administered at 125 mg orally two times a day for one week. Then, 125 mg once a day for one week, followed by 125 mg every two to three days for a two-to-eight-week duration.

The goal of this treatment regimen is to keep C. diff under control while allowing time for normal flora to restore. Patients who do not respond to this treatment can be difficult to manage. Further treatment should be determined based on a patient’s specific factors, but may include rifaximin, fidaxomicin, and/or fecal transplantation.

For more information, visit ncbi.nlm.nih.gov/pubmed

Calcium gluconate or sterile water?

The Institute for Safe Medication Practices (ISMP) has received numerous reports involving close calls and errors with look-alike 10 mL plastic vials of calcium gluconate 1 g/10 mL and sterile water for injection (see left). Barcode scanning, increased awareness of the risk and storing these products far apart have been recommended to help prevent errors. Manufacturer Fresenius Kabi is aware of the reports and has made label changes to reduce vial similarities. The company anticipates release of calcium gluconate 10 mL vials with the new label and cap color soon.

Xarelto® (rivaroxaban)
Drug Interactions

Xarelto® (rivaroxaban) is an oral anticoagulant used for a variety of conditions such as deep vein thrombosis and pulmonary embolism (DVT/PE) and atrial fibrillation. It comes in 10 mg, 15 mg and 20 mg tablets and dosage adjustments are required for renal impairment. While rivaroxaban does not have as many drug interactions as warfarin, it does have some significant drugs interactions. Rivaroxaban is a substrate of certain CYP450 enzymes, so medications that inhibit or induce these enzymes may affect rivaroxaban levels. Since we don’t measure rivaroxaban levels or coagulation tests like the INR, there is no way to quantify an interaction with rivaroxaban on patients. Alternatives should be considered—either changing the interacting medication or picking a different anticoagulant. Significant rivaroxaban interactions include:

• St. John’s wort (decreased levels) — AVOID
• Fluconazole, ketoconazole, erythromycin, clarithromycin and ritonavir — AVOID
• Carbamazepine, phenytoin and rifampin (decreased levels) — AVOID
• Clarithromycin, diltiazem, dronedarone, erythromycin and verapamil — AVOID in patients with a creatinine clearance of less than 80 ml/min (most middle age to older patients, and renal patients)
• Anticoagulants like warfarin, apixaban, dabigatran, edoxaban, heparin or enoxaparin. Please consult the Pharmacy Department at 410-871-6907 or the package insert for specific transition instructions.

Revised Severe Sepsis Antibiotics Guidelines

The Carroll Hospital Emporic Antibiotics For Severe Sepsis Requiring Early Goal Directed Therapy Guidelines were revised to reflect the change from moxifloxacin to levofloxacin on formulary. In addition, the section for neutropenic fever has aztreonam in place of ciprofloxacin, in light of our inadequate gram-negative susceptibility pattern of ciprofloxacin.

These guidelines are available on the Carroll Hospital Pharmacy Services intranet page in the Antimicrobial Resources section.