



December 2015 Issue

From the Front Lines

Alixarx Clinical Pharmacists Address Everyday Challenges in Long-Term Care

Winter Warfarin Warnings

Welcome winter! As the snow begins to fall and the temperatures get colder, the number of colds and respiratory infections begin to rise. An increase in respiratory infections ultimately results in an increase in the prescribing of antibiotics.

Although antibiotics can be helpful, they can also cause some unintended side effects and drug interactions.

Many of our residents receive warfarin (Coumadin). As we know, warfarin has many drug interactions. In fact, the popular website www.drugs.com reports that there are a total of 803 medications that interact with warfarin. Unfortunately, many of the most commonly used antibiotics are among those medications that cause problems with warfarin. Since nursing home residents often receive nine or more medications, they are at increased risk for drug interactions.

In 2001, AMDA (American Medical Directors Association) established a list of the Top 10 Particularly Dangerous Drug Interactions in Long Term Care. Three of these top 10 interactions involve warfarin and an antibiotic. These interactions and suggested management are listed below:

1. Coumadin and Macrolides

- Erythromycin, Clarithromycin, Azithromycin
- Potential increased effect of warfarin due to inhibition of warfarin metabolism
- Concomitant use should be avoided unless absolutely necessary
- INR should be monitored every other day
- Effect is unpredictable and may not occur in all individuals

2. Coumadin and Fluoroquinolones

- Although caution may be warranted when using warfarin with all quinolones, problems have been documented especially with ciprofloxacin, ofloxacin, and norfloxacin. In addition, some INR elevations with levofloxacin have been reported
- Potential increase effect due to a combination of inhibition of warfarin metabolism and decrease in Vitamin K producing intestinal flora
- INR should be monitored every other day during the use of the Fluoroquinolone antibiotics

3. Coumadin and Sulfa drugs

- Bactrim, Septra, Sulfamethoxazole/Trimethoprim
- Potential increased effect of warfarin due to inhibition of warfarin metabolism
- If use of sulfamethoxazole/trimethoprim is required, it is recommended to reduce the current dose of warfarin by 50% and monitor INR every other day during antibiotic treatment and for 7 days following completion of the antibiotic

Other antibiotics that may significantly interact with warfarin, but not listed in the AMDA top 10 interactions include:

1. Warfarin and Metronidazole

- Potential increased effect due to inhibition of warfarin metabolism
- If concomitant use cannot be avoided, a dose reduction of warfarin by 1/3 to 1/2 of the current dose is recommended
- INR should be monitored closely during metronidazole therapy

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2. Warfarin and Azole Antifungals (Fluconazole, Ketoconazole, Miconazole)

- Potential increased effect due to inhibition of warfarin metabolism
- INR monitoring every other day is recommended during azole antifungal therapy

Almost all antibiotics have the potential to interact with warfarin. Routine monitoring for signs and symptoms of active bleeding is recommended for any resident receiving warfarin and an antibiotic. Your AlixaRx Clinical Pharmacist can provide more information on drug interactions and the best antibiotics to use in residents receiving warfarin.

References:1. www.drugs.com 2. https://www.amda.com/tools/clinical/m3/topten.cfm 3. Rice, PJ, Perry, RJ, et al. Antibacterial prescribing and warfarin: A Review. British Dental Journal 2003; 194: 411-415. 4. Baillargeon, PJ; Holmes, Holly, et al. Concurrent use of Antibiotics and the Risk of Bleeding in Older Adults. Am J Med. 2012 February ; 125(2): 183-189.

Chronic Treatment with Proton Pump Inhibitors Rationale Therapy or Unnecessary Drugs?

Proton pump inhibitors (PPIs) constitute a class of drugs used short-term (4-8 weeks) to provide a pronounced and prolonged reduction in gastric acid production allowing gastric and duodenal ulcers to heal. They are also indicated for short-term management of non-erosive gastroesophageal reflux disease (GERD) and erosive esophagitis. They are also used for 10-14 days (or up to 32 days if ulcer present) in conjunction with antibiotics to eradicate Helicobacter pylori (H. pylori) infections. Finally PPIs may be indicated for long-term treatment is patients with refractory GERD and hypersecretory conditions including Zollinger-Ellison Syndrome.

PPI drugs include omeprazole (Pilosec, Prilosec-OTC), esomeprazole (Nexium), lansoprazole (Prevacid), pantoprazole (Protonix), rabeprazole (Aciphex), and deslansoprazole (Dexilant, Kapidex). PPIs should be dosed 30-60 minutes prior to breakfast to manage the gastric acid surge seen in the morning. These drugs are widely used and Prilosec and Prevacid are available without a prescription. Also, the use of PPIs has largely replaced surgery as the primary treatment for gastric and duodenal ulcers.

However, data suggests that up to two-thirds of PPI use may be inappropriate. PPIs are routinely used in hospitals for stress ulcer prophylaxis, but only one-third of hospitalized patients actually need them. Rebound acid hypersecretion is found in 60-90% of patients using a PPI for more than 2-3 weeks. Symptoms of rebound hypersecretion (dyspepsia, heartburn) may persist for 3 months or more and encourage the continued use of PPIs. Rebound hypersecretion may be reduced or eliminated by tapering the PPI dose slowly over 4-6 weeks

Drug Interactions

PPIs are implicated in a number of clinically significant drug interactions including a 20-40% reduction in antiplatelet activity when clopidogrel (Plavix) is used with omeprazole or esomeprazole. Use of these PPIs with clopidogrel is contraindicated per product labeling. Also, because they lower gastric pH (acidity) they may reduce the absorption of calcium, iron, magnesium, and Vitamin B-12. If calcium must be given with a PPI, the calcium citrate formulation is recommended as its absorption is less affected by the higher gastric pH produced by PPIs.

Safety Concerns

There is concern that PPIs may increase fracture risk in both men and women and one study showed a 25% increase in overall fractures and a 47% increase in spinal fractures in postmenopausal women. Any patient who must remain on long-term PPI therapy who is a risk for fractures (i.e. osteoporosis or osteopenia) should receive supplementation with adequate doses of calcium citrate and Vitamin D.

PPIs also increase the risk of infection with bacteria including Clostridium difficile and those causing pneumonia that tend to proliferate when gastric pH remains elevated. In fact, patients being treated for C. difficile infections while taking a PPI are at a 42% increased risk for recurrent infection within 90 days.

Regulatory Concerns in Nursing Home Patients

The 2015 Update of the Beer's Criteria for Potentially Inappropriate Medications (PIMs) in the elderly include the following caution:

Proton-pump inhibitors	Risk of Clostridium difficile infection and bone loss and fractures	Avoid scheduled use for >8 weeks unless for high-risk patients (e.g., oral corticosteroids or chronic NSAID use), erosive esophagitis, Barrett's esophagitis, pathological hypersecretory condition, or demonstrated need for maintenance treatment (e.g., due to failure of drug discontinuation trial or H ₂ blockers)
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While the Beer's Criteria are only recommendations to improve medication use in older adults, several classes of medications in the criteria have been incorporated into the State Operations Manual for surveyors under F329 Unnecessary Drugs, and we expect that high-dose, chronic use of PPIs may increase the risk for survey citation at F329 unless good documentation is provided to justify their use in selected patients.

References 1. Proton Pump Inhibitors: Appropriate Use and Safety Concerns. Pharmacist's Letter/Prescriber's Letter. May 2013 Detail Document 290510. 2. Proton Pump Inhibitors and Rebound Acid Hypersecretion. Pharmacist's Letter/Prescriber's Letter. 2009;25(9):250920. 3. American Geriatrics Society Updated 2015 Beer's Criteria for Potentially Inappropriate Medication Use in Older Adults

The Lowdown on Zyno Z800-F IV Pumps

Due to some recent issues with the Acclaim IV pumps, AlixaRx has begun the process of converting to the Zyno Z800-F IV pumps in many of our facilities. Facilities being serviced out of the Pittsburgh (PA, VA, WV, NJ and MD) and Minneapolis (MN and WI) hub pharmacies have already begun the conversion to the new IV pumps. Facilities served by the other AlixaRx pharmacies will be converting to the Zyno pumps soon.

Meet the Zyno Z800-F IV Pump

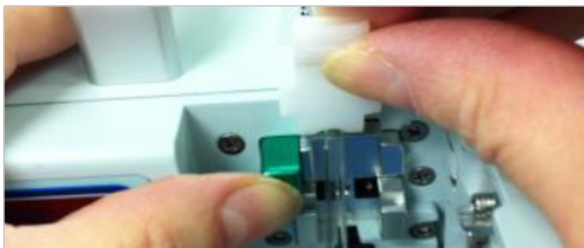


There should be at least one Zyno IV pump available in the medication room ready for use. Only Zyno IV sets should be used with the Zyno IV pump. Use of IV sets from other manufacturers may cause the pump to malfunction or to deliver medication at a faster or slower rate than expected. Zyno IV sets are available in the IV emergency kit. Additional sets will be sent from the pharmacy when the order for the IV medication is filled. Please remember to fax an order to the pharmacy for any flushes that will be needed during IV therapy.

Using the Zyno Z800-F IV Pump

To start using the IV pump, first turn the pump on. The pump must be turned on before the IV tubing is inserted into the pump. Prime the set via gravity before inserting the tubing into the pump. DO NOT use the prime button on the pump to prime tubing!

To load the set, open the door and push in the green button.



Load the anti-free flow clamp on the IV set, with the handle in the front, into the loading module.



Gently push the tubing into the guides, and into the black "air in line" sensor, aligning tubing on top of the pump-based free flow clamp at the bottom. DO NOT force tubing into the clamp. The clamp will be activated when the door is closed.

Close the door on the pump and secure the door by pushing down on the handle.

Choose "New Infusion" by highlighting it using the Arrow key, then press OK.

Continuous mode R/V is highlighted. This selection is the most common setting used. This setting allows the user to input the rate of infusion and the total volume of infusion. Press SELECT.

Enter the rate of the Primary infusion. The 100-10-1 keys should be used to enter the rate of infusion. For example, if a rate of 166ml/hr is needed, press the 100 key once, the 10 key 6 times and the 1 key 6 times.

Highlight Primary VTBI (Volume to be Infused) by pressing the arrow key. Enter the volume to be infused by using the 100-10-1 keys. For example, if the total volume of the infusion is 250ml, press the 100 key twice and the 10 key 5 times.



Press the Run/Stop key.

To unload the tubing from the pump, start from the bottom and work towards the top. Press in the green button and lift the IV set anti-free flow clip out of the loading module. Close the door and turn the IV pump off.

When the IV therapy is finished and the pump is no longer needed, the pharmacy should be notified. The used IV pump should be returned to the pharmacy for cleaning and maintenance. The facility will continue to be billed a daily rental fee for the IV pump until the pharmacy is notified that the pump is no longer in use, so prompt notification of therapy completion is essential. Please also remember to fill out an IV E-Kit usage form for any and all supplies removed from the IV E-Kit. If the pharmacy is not notified for which resident the supplies were used, the facility will be billed for the cost of the IV supplies removed from the E-Kit.

Additional information on the Zyno IV pumps and training videos are available at <http://www.zynomed.com/resources/z-800f-training-videos/>.

2015 Beers Criteria (List) Update on Non-benzodiazepine Sleeping Medications

Non-benzodiazepine hypnotics are used to treat insomnia and include zolpidem (Ambien), zaleplon (Sonata) and eszopiclone (Lunesta). These medications are often prescribed for elderly patients because they are commonly thought to be safer and lack the adverse effects of traditional benzodiazepine medications such as alprazolam (Xanax), lorazepam (Ativan) and temazepam (Restoril). Recent updates to the Beers Criteria indicate these medications should be avoided in older adults.

The prior Beers Criteria updated in 2012 recommended avoiding chronic use of non-benzodiazepine hypnotics, defined as use greater than 90 days. The 2015 update, modifies and strengthens this warning to avoid these medications in the older adult without regard to duration of use. The Beers Criteria states the non-benzodiazepine hypnotics [eszopiclone (Lunesta), zaleplon (Sonata), and zolpidem (Ambien)] "are to be avoided without consideration of duration of use because of their association with harms balanced with their minimal efficacy in treating insomnia."

In addition the non-benzodiazepine hypnotics are not recommended for patients with dementia or cognitive impairment as they have similar adverse risks to benzodiazepines including delirium and worsening cognition. Elderly patients with a history of falls or fractures should also avoid these medications as they increase the risk of future falls, fractures, hospitalizations, and motor vehicle accidents. A meta-analysis cited in the Beers article reviewed 24 studies looking at hypnotic use in older people and concluded that the use of hypnotics resulted in a small benefit to sleep with increased risk for adverse events especially in our elderly LTC population at increased risk for cognitive and psychomotor side effects.

The Beers panel recommends non-pharmacological approaches to treating insomnia as an alternative to medications. Sleep hygiene and behavioral interventions should be completed prior to the use of medications. CMS guidelines require quarterly dose reduction attempts for all hypnotics suggesting sleep assessments be completed quarterly to determine effectiveness and continued need.

Do you have additional questions? Your AlixaRx Clinical Pharmacist is reviewing the use of non-benzodiazepine hypnotics in accordance with recent clinical updates. They are a great resource for additional information regarding this topic and your other medication inquiries.

References: 1. J Am Geriatr Soc. 2015 Nov;63(11):2227-2246 2. J Am Geriatr Soc. 2012 Apr;60(4):616-31 3. BMJ, doi:10.1136/bmj.38623.768588.47 (published 11 November 2005)

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