SCHOOL OF PHARMACY
UNIVERSITY of WASHINGTON

The Resident Star

By The University of Washington Community Pharmacy Residents

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Inside this issue:

Drug Information

Antibiotic Prophylaxis for Dental Procedures

By Shaelah Easterday, PharmD (Providence Pharmacy Monroe)

Prevention of Infective Endocarditis

The American Heart Association recommends antibiotic prophylaxis prior to dental procedures in 4 groups of patients who are at the highest risk of endocarditis:

1. History of endocarditis
2. Prosthetic cardiac valves or prosthetic material used to repair a valve
3. Cardiac transplant with cardiac valvulopathy
4. Certain congenital heart diseases:
   - Unrepaired cyanotic congenital heart disease, including palliative shunts and conduits
   - A completely repaired congenital heart defect with prosthetic material or device during the first six months after the procedure
   - Any repaired congenital heart defect with residual defect at the site or adjacent to the site of a prosthetic patch or a prosthetic device (that inhibit endothelialization)

Prevention of Prosthetic Joint Infections

The American Dental Association no longer recommends antibiotic prophylaxis prior to dental procedures for the prevention of prosthetic joint infections. This recommendation stems from the 2012 guidelines, "Prevention of Orthopaedic Implant Infection in Patients Undergoing Dental Procedures". The ADA also conducted a review of literature in 2014 that found no connection between dental procedures and prosthetic joint infections.

References

1. Sollecito, Thomas et al. "The Use of Prophylactic Antibiotics Prior to Dental Procedures in Patients with Prosthetic Joints." The Journal of the American Dental Association 146.1 (2015): 11-16. Web.
2. Wilson, Walter et al. "Prevention of Infective Endocarditis." Circulation 116 (2007): 1736-754. Web.
3. "Antibiotic Prophylaxis." Oral Health Topics. American Dental Association. Web. <http://www.ada.org/en/member-center/oral-health-topics/antibiotic-prophylaxis>.

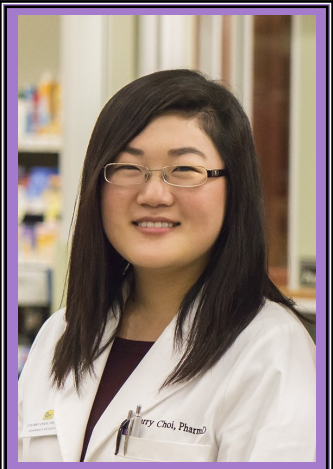
	Adult	Pediatrics
Amoxicillin	**2 grams PO**	**50mg/kg PO**
Ampicillin	**2 grams IM/IV**	**50mg/kg IM/IV**
Cefazolin	**1 gram IM/IV**	**50mg/kg IM/IV**
Ceftriaxone	**1 gram IM/IV**	**50mg/kg IM/IV**
Cephalexin	**2 grams PO**	**50mg/kg PO**
Clindamycin	**600mg PO**	**20mg/kg PO**
Azithromycin	**500mg PO**	**15mg/kg PO**
Clarithromycin	**500mg PO**	**15mg/kg PO**

Doses should be given 30-60 minutes prior to dental procedure. If this dose is missed, antibiotics can be given within 2 hours of the procedure being performed.

Resident Experience

APhA from the Other Side

By Cyurry Choi, PharmD (QFC Pharmacy)



Cyurry Choi, PharmD

APhA Annual as a Student

As a P3 student, I went to APhA Annual. I recall attending the general and regional sessions for ASP members, a few interesting-sounding CEs, a couple of student-oriented career development programs, and the residency showcase. More than the conference itself, I recall the time and experiences that I had outside of the conference, enjoying the Los Angeles sun and region.

APhA Annual as a Resident

Flash forward two years to present day. This year's APhA Annual was jam-packed and pre-planned with activities for me to fulfill as a resident, as a member of the pharmacy clinical team, and as a QFC employee. The general session focused on the vision for APhA this year, "Advancing as One," providing collaborative, team-based, patient-centered care. Speakers also provided updates on the provider status initiative, what is being down by APhA and by pharmacy organizations all across the country. Both missions seemed more relevant since I could see how they could impact or optimize the patient care that I provide on a daily basis.

This time around, there were too many interesting CEs to attend. I had to pre-plan my schedule and refer with other pharmacists to make the best of our time. When there were multiple CEs that overlapped, we divided up the CEs, so that we could take advantage of all the information and content that was offered. At each CE, I considered how I could potentially use the knowledge and information in my current practice and what pearls would be relevant to my colleagues at QFC Pharmacy, like immunization updates, available forms of point-of-care testing, or value of medication therapy management outcomes. The mentality changed from just obtaining knowledge (as a student) to applying the knowledge (as a resident and pharmacist).

Multiple programs also allowed me to interact with fellow residents and pharmacy colleagues within the Kroger Company, of which QFC is one division. During the time spent at my poster, multiple Kroger Company pharmacists across various divisions stopped to discuss my research project. The Professional Opportunities Connection, or the Residency Showcase equivalent, meant an opportunity to promote communities residencies to pharmacy students early in their pharmacy career and to interact with other Kroger residents and clinical care coordinators. The networking did not stop there with the receptions hosted by the Maryland Pharmacists' Association and the University of Washington School of Pharmacy to attend.

Overall, APhA Annual felt different from the other side as a pharmacist as opposed to as a student. Not only was it mentally stimulating and practice-relevant, but it was also a reminder for me stay actively aware and involved in our pharmacy practice.

Kroger Company residents, clinical care coordinators, and pharmacists stop to take a group photo at the end of the Professional Connections session at APhA Annual 2015, San Diego, CA.

Steven Huang, PharmD

Resident Experience

Patient Case: Overmedicated

By Steven Huang, PharmD (University of Washington Pharmacy Cares)

Earlier in the year, I wrote about the appropriate uses of antipsychotic medications in older adults with dementia exhibiting problem behaviors. While the warnings against use of inappropriate use of this type of medication have been out for several years, the prevalence of psychotropic medications in the outpatient setting remains high. There has been research correlating the increase use of psychotropic medications for older adults in different care environments when staffing is low. In my experience working at assisted living communities, there seems to be a lack of awareness or education when it comes to appropriate use of psychotropic medications.

I recently encountered a case where a patient was overmedicated with psychotropic medications. When I first received the referral, it was reported that the patient was sleeping throughout the day and sufferance several falls. The patient had orders for risperidone and divalproex for problem behaviors/ aggression. Upon further investigation, the patient had no documented events of aggressive behavior. This was consistent after staff interview and physical assessment. To complicate the matter, this patient has been on the two medications for over a year from a previous provider. I had the pleasure of working with the patient's new provider in discontinuing the two psychotropic medications. After follow-up, the patient has not had an incident of falling and is now enjoying daytime activities. This experience has made me realize the importance of pharmacy services and medication education in the assisted living community environment.

Drug Information

REMS and White Papers *(continued on page 4)*

By Cyurry Choi, PharmD (QFC Pharmacy)

A combination of circumstances—a conference call mentioning barriers associated with REMS (risk evaluation and mitigation strategies), updated training for pharmacy staff for the TIRF (transmucosal immediate release fentanyl) REMS program, and recent enrollment of a new patient in the clozapine registry—prompted me to research REMS programs. We, as pharmacists, understand the purpose of REMS programs, but how frequently do we think about the ramifications of these programs on our patients, our pharmacies, and the prescribers?

Currently, the FDA has the authority to require REMS for medications or medication classes with known serious risks. However, each REMS is created independently by the manufacturer. As such, one of REMS' biggest barriers is the lack of standardization in program design and implementation, leading to silo programs. This inconsistency of program formats or components leads to provider confusion, administrative inefficiencies in implementation, workflow inefficiencies, and burdens on the health care system. This, in turn, could reduce patient access to medications if providers or pharmacies refuse to participate.

Table 1. Current Risk Management Strategies[1]

- Medication guides (MedGuides)
- Informed consent forms
- Laboratory monitoring for effective and safe use (e.g. clozapine, isotretinoin)
- Restricted distribution (e.g. alosetron, cisapride)
- Specialized training
- Specific ordering / inventory procedures
- Patient registries
- Prescription stickers

In recognition of these issues, the American Pharmacists Association (APhA) held stakeholder meetings to have honest communication about REMS programs. The goals of the meetings were to survey current experiences with risk management strategies and to discuss options for developing future programs, with the emphasis on standardized, system-based solutions that will be feasible for the health care system. Two white papers, published in 2009 and 2011 (referenced below), discuss the various types of REMS programs in place in the United States (refer to Table 1) and the associated barriers as perceived by patients, pharmacists, and prescribers. The stakeholders made a wide range of recommendations to address these barriers (refer to Table 2 for a summary of recommendations). The recommendations fall under four general categories of (1) effective provider interventions, (2) improving REMS standardization and communication models, (3) using existing technology in the provider workspace for REMS implementation, and (4) ensuring a sustainable business model for REMS-related provider activities.[2]

References:

1. American Pharmacists Association. White paper on designing a risk evaluation and mitigation strategies (REMS) system to optimize the balance of patient access, medication safety, and impact on the health care system. *J Am Pharm Assoc.* 2009;49:729-743. doi: 10.1331/JAPhA.2009.09541
2. American Pharmacists Association. APhA 2011 REMS white paper: summary of the REMS stakeholder meeting on improving program design and implementation. *J Am Pharm Assoc.* 2011;51:340-358. doi: 10.1331/JAPhA.2011.11519

Drug Information

REMS and White Papers *(continued from page 3)*

By Cyurry Choi, PharmD (QFC Pharmacy)

REMS stakeholders, the FDA, and APhA continue to work toward the improvement of REMS programs. The ultimate goal being the development and implementation oForcuf a dynamic REMS system that would facilitate health care delivery, decrease burden on the health care system, increase patient safety, and improve patient access for optimal treatment. APhA's longstanding goals related to REMS are to be a resource for FDA and manufacturers in helping REMS programs to be effective and to achieve their intended outcomes without being overly burdensome on the health care system and to ensure REMS are implemented to have limited financial or administrative impact on the practice of pharmacy. APhA's REMS-related statements and comments are available on APhA's website at www.pharmacist.com/GA, and both white papers are easily available for more detailed information. Especially for students on rotations who may know general information about REMS but have not practical knowledge or experience, these white papers may be valuable resources to initiate discussion of REMS now and what may be needed in the future.

Table 2. Summary of Recommendations (reproduced from 2011 white paper)[2]
Standardize design and implementation • Work together (all stakeholders) collaboratively to improve REMS processes and limit burden on the health care system • Standardize REMS programs, components and processes • Contribute to efforts of FDA to standardize REMS programs based on the spectrum of risk of a medication • Include input from front-line providers early in REMS design and development process • Test logistics of REMS programs with multiple elements prior to implementation • Provide adequate timelines for notification of health care providers and other stakeholders of requirements in new REMS programs
Maximize effectiveness • Focus on REMS effectiveness in minimizing patient risk as a primary marker of successful programs • Encourage flexibility as REMS programs evolve over time in response to outcomes or changing needs • Engage in continuous improvement of REMS programs, modifying the program to ensure maximum effectiveness in reducing patient risk
Optimize interventions • Focus interventions on minimizing patient risk while minimizing burden on the health care system • Consider the utility and benefits of provider interventions as key elements of a REMS program • Incorporate pharmacist-provided MTM services as a component of a REMS program when appropriate • Promote open dialogue between providers and patients
Leverage technology solutions • Leverage existing technology solutions in medical and pharmacy practice settings to improve implementation and operational efficiencies in the administration of REMS programs • Ensure interoperable electronic access to HER systems with the exchange of relevant data among all providers and practice settings
Centralize information • Establish a central repository or clearinghouse of all REMS-related information • Establish mechanism for the electronic exchange of REMS information via diverse practice settings and electronic infrastructures while ensuring patient privacy
Facilitate communication • Identify and clearly communicate REMS program information to providers • Establish effective communication strategies to health care providers and patients • Establish standardized strategies to increase REMS awareness and communicate REMS program requirements
Utilize continuing education • Integrate REMS-related education into professional CE programs to facilitate participation and maximize compliance
Establish adequate resources and compensation • Consider resources required for all stakeholders to implement and comply with REMS programs • Establish compensation models for individuals REMS for prescriber and pharmacist interventions that facilitate participation and minimize burden on practice settings

Drug Information

A New Parkinson's Medication: Rytary®

By Steven Huang, PharmD (University of Washington Pharmacy Cares)

Earlier this year, FDA granted full approval of a new dopamine formulation, Rytary. This formulation is an extended release carbidopa/levodopa marketed as being different than its predecessors, containing special beads designed to dissolve at different rates within the stomach and the intestines. The medication capsule is also designed to provide longer lasting benefit comparatively speaking to previous carbidopa/levodopa formulations.[1]

There are currently no head to head comparisons between Rytary and other long-acting levodopa/carbidopa formulations. Patients may benefit from a long acting levodopa formulation by decreasing severe on-off medication fluctuation periods ("cycling"), decreasing wearing off symptoms, or decreasing pill burden. Improvement in such issues will be addressing some frequently cited medication related problems from patients with Parkinson's disease.[2] A randomized control study, which included 393 patients with Parkinson's disease, compared Rytary to standard formulation carbidopa/levodopa. The study found a reduction in medication dosages (3.6 versus 5 doses per day) and an improvement in "off-time" by over an hour each day. The new formulation also increased the total blood-stream levodopa exposure by 30-40% as compared to conventional release levodopa.

Increasing the levodopa concentration in the blood-stream is thought to decrease the threshold for dyskinesia. This has been observed with other Parkinson's medications, such as the administration of COM-T inhibitors with levodopa and the combination product, Stalevo (carbidopa/levodopa/entacapone).[1,3]

Table 1. Clinical Considerations for Switching to Rytary[2,3]

Suspected that patients with bothersome motor fluctuations and patients taking a minimum of four 25/100 Sinemet regular or extended release may be reasonable candidates
Patients with motor fluctuations on three doses of Sinemet or Madopar could benefit, but a satisfactory benefit could possibly be obtained by adding a dose of Sinemet or Madopar rather than switching to Rytary
Dosages of Rytary are not interchangeable with other levodopa (Sinemet or Madopar) products
Rytary capsules can be opened and the contents sprinkled onto foods such as apple sauce, if swallowing problems are present
Further dose adjustments will be likely after the initial switch. If patient/family decides to switch, it is important to educate against any magical thinking with use of Rytary

Parkinson's treatment is individualized. Currently, with no head to head comparisons between Rytary and other extended or controlled release formulations of carbidopa/levodopa, clinical benefit and cost must be evaluated.

Table 2. Conversion from Immediate-Release Carbidopa-Levodopa to RYTARY[4]

Total Daily Dose of Levodopa in Immediate-Release Carbidopa Levodopa	Total Daily Dose of Levodopa in Rytary	RYTARY Dosing Regimen*
400 – 549 mg	855 mg	3 capsules RYTARY 23.75 mg/95 mg taken TID**
550 – 749 mg	1140 mg	4 capsules RYTARY 23.75 mg/95 mg taken TID
750 – 949 mg	1305 mg	3 capsules RYTARY 36.25 mg/145 mg taken TID
950 – 1249 mg	1755 mg	3 capsules RYTARY 48.75 mg/195 mg taken TID
Equal to or greater than 1250 mg	2340 or 2205 mg	4 capsules RYTARY 48.75 mg/195 mg taken TID OR 3 capsules RYTARY 61.25 mg/245 mg taken TID

* Recommended starting dosage of RYTARY
** TID: three times a day

References:
1. Hauser RA, Hsu A, Kell S, et al. IPX066 ADVANCE-PD investigators. Extended-release carbidopa-levodopa (IPX066) compared with immediate-release carbidopa-levodopa in patients with Parkinson's disease and motor fluctuations: a phase 3 randomized, double-blind trial. *Lancet Neurol* 2013 Apr;12(4)346-56.
2. Information for Patients. National Parkinson Foundation Website. Available at http://parkinson.org/Patients. Accessed April 2, 2015.
3. Pahwa R, Lyons KE, Hauser RA, et al. Randomized trial of IPX066, carbidopa/levodopa extended release, in early Parkinson's disease. *Parkinsonism Relat Disord* 2014 Feb;20(2):142-8.
4. RYTARY Package Insert. Available at http://www.accessdata.fda.gov/drugsatfda_docs/label/2015/203312s000lbl.pdf. Accessed April 2, 2015

Drug Information

Antidepressants: A Patient Specific Approach

By Shaelah Easterday, PharmD (Providence Pharmacy Monroe)

Depression is a common yet debilitating disorder. An estimated 15% of Americans will suffer from depression at some point during their lifetime. While a comprehensive treatment plan for depression involves more than a pharmacologic approach, pharmacists are uniquely trained to assist patients and other health care providers in this specific aspect of care.

Choosing an antidepressant may sometimes feel like a random decision, but there are many things to consider in order to make this process more patient specific. In general, considering side-effect profile can yield a more appropriate treatment option for a lot of patients.

Selective Serotonin Reuptake Inhibitors:

Side effects:

- Sexual side effects
- Somnolence OR insomnia
- Weight gain
- Nausea
- Xerostomia
- Diaphoresis (dose related)
- Headache
- Tremor
- Increased bleeding risk
- SIADH/hyponatremia

Fluoxetine (Prozac)	• Least weight gain • Very activating (ALWAYS dose in the morning) • Can be dosed once weekly
Sertraline (Zoloft)	• Best option for pregnancy • Best option for cardiac patients • Very activating
Paroxetine (Paxil)	• Most weight gain • Most sedative • Worst option for pregnancy • Brisdelle for hot flashes
Citalopram (Celexa)	• QT prolongation (worst option for cardiac patients)
Escitalopram (Lexapro)	

Serotonin and Norepinephrine Reuptake Inhibitors:

Side effects:

- Similar to SSRIs
- Increased blood pressure and pulse
- Dilated pupils

Consider for:

- Neuropathic pain

Avoid use:

- Hypertension
- Agitation or insomnia

Venlafaxine (Effexor) IR and XR	• <150mg/day → serotonergic • >150mg/day → serotonergic/noradrenergic • >300mg/day → serotonergic/noradrenergic/ dopaminergic
Desvenlafaxine (Pristiq)	• Active metabolite of venlafaxine • "Ghost tablet"
Duloxetine (Cymbalta)	

Other antidepressants

Bupropion (Wellbutrin/Zyban): IR, SR, XL

Consider for:

- Smokers
- Fatigue or sleepiness
- Sexual dysfunction concerns
- Overweight patients

Avoid use:

- Seizure disorders (max dose 450 mg/day)
- Hypertension
- Agitation or insomnia
- Eating disorders
- Bipolar disorder

Mirtazapine

Consider for:

- Agitation or insomnia
- Sexual dysfunction concerns
- Underweight patients

Avoid use:

- Hyperlipidemia
- Overweight patients

** Lower doses are more sedating **

Course of therapy:

Timeline:

0-2 weeks — improvement in the physical symptoms of depression (e.g. increased appetite, increased energy)
4-8 weeks — improvement in mood

Duration of therapy:

1st episode — 6-12 months
2nd episode — 3 years
3rd episode or complicating factors — lifelong

References

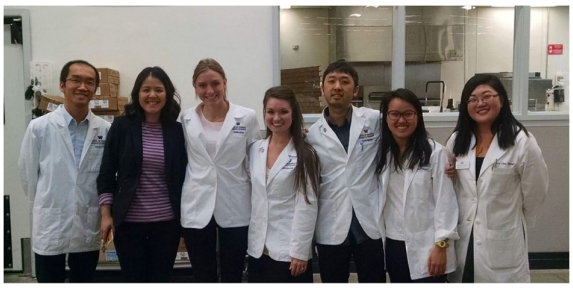
1. PL Detail-Document, *Choosing and Switching Antidepressants.* Pharmacist's Letter. July 2014
2. Shapiro, K. *RxPrep Course Book*. 2014.
3. Washington Health Alliance: Depression Clinical Improvement Team Final Report 2007. http://wahealthalliance.org/wp-content/uploads/2013/12/FINAL_DepressionCITReport_Jan_07.pdf

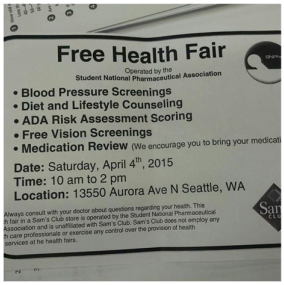
Resident Experience

Precepting for University of Washington

By Cyurry Choi, PharmD (QFC Pharmacy)

As pharmacy residents, we all get the opportunity to precept, specifically APPE students at our respective practice sites. In addition, pharmacy student organizations frequently reach out to us about helping to precept their community health events. It does not always work with our busy schedules, but QFC's clinical pharmacist Yushi Li and I were recently able to help University of Washington School of Pharmacy's SNPhA at their health fair event. We, as preceptors, were basically on standby for questions and for any patient education or counseling that was beyond the students' scopes of knowledge.





Practice Site Update

Pharmacist-Involved Clinical Services Offered at Providence Medical Group Monroe

By Shaelah Easterday, PharmD (Providence Pharmacy Monroe)

Refill authorization

Therapeutic substitution

Diabetes management

Chronic pain—shared medical appointments (SMAs)

Anticoagulation management

Depression follow-up

Transitions of care

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