January - March 2015
Spring Issue

Gulf Coast Society of Health-System Pharmacists (GCSHP)

Inside this issue

President's Report
Katy Toale, PharmD, BCPS

I hope everyone had a wonderful holiday season and is ready for an excellent 2015!

I want to thank everyone who was able to make it out to our two volunteer events at the Houston Food Bank. It was a great opportunity for us as a profession to give back to the community.

Officer elections are upon us and four positions are currently available.
Deadline to nominate is February 6, 2015. Please send nominations to gcshp.membership@gmail.com

- President Elect (2015-2018)
- Director (2015-2017)
- Membership Secretary (2015-2017)
- Recording Secretary (2015-2017)

Descriptions of each of these positions can be found in our bylaws
http://www.gcshptx.org/uploads/2/8/9/7/2897278/gcshp_constitution_and_bylaws.pdf

During my year as President I have had the honor and pleasure of working with an excellent Board of Directors. As their term comes to an end I want to thank them for their dedication and hard work. I hope to work with all of them again in the near future!

- Rich Cadle – Director
- Mallory Gessner – Recording secretary
- Avani Desai – Membership secretary

The Board of Directors is working hard to ensure that your membership is worthwhile. We would be happy to hear from our members so please send any comments/suggestions/feedback to gcshp.membership@gmail.com.

Katy Toale, PharmD, BCPS

2015 TSHP Annual Seminar

TSHP's 2015 Annual Seminar will be held in San Antonio, Texas! Join us for Fiesta! Mark your calendar now for April 24 - 26, 2015.

Pharmacy Fiesta:

Navigating the path toward enhanced patient care.

Event Location:
Henry B. Gonzalez Convention Center, San Antonio, Texas

Hotel: The Hilton Palacio Del Rio
200 S. Alamo, San Antonio, Texas 78205
http://www.palaciodelrio.com/

For more information
http://www.tshp.org/tshp-annual-seminar.html

WE NEED SILENT AUCTION DONATIONS!

The TSHP-PAC Silent Auction, which is held during TSHP's Annual Seminar, is the PAC's annual fund-raising event. Monies raised from this event help us ensure that our friends in the legislature know that we appreciate the efforts they have made, and continue to make, on behalf of the TSHP, the Texas Pharmacist community and YOUR patients.

What Can I Donate? You can share your hobby or a vacation; a timeshare or a day out on your boat; golf outings, sporting event tickets, gift certificates, art, china, laptops, iPods, iPad's!

Here are a few of the many wonderful items that have been donated:

- **Restaurants, food and regional items**: a variety of fantastic wines, cookbooks and gift certificates for restaurants statewide.
- **Travel and recreation**: week in a forest area cabin; timeshare weeks at various places; golf outings for two; 25 to 50K frequent flier miles.
- **Pharmacy collectibles**: mortars and pestles, antiques, china, barware, apothecary jars, pillboxes, signs, old prescriptions, and much more.
- **Sports tickets, equipment and memorabilia**: autographed jerseys, balls, pucks, and hockey sticks; passes and tickets to professional sporting events of all kinds.
- **Artwork and photography**: oil and watercolor paintings and special photographs.
- **Clothing and jewelry**: hand -made clothing and accessories, handcrafted and fine jewelry.
- **Education and training**: medical, pharmacy and health related reference books and subscriptions
- **Home and luxury items**: decorative baskets, hand-carved boxes, home design accessories.
- **Electronics:** iPad's, Tablets, Kindle, Nook, iPod's, etc.
- **Gift Baskets:** The sky is the limit!

When Can I Donate? You can start donating today! You can submit your donation form today by clicking here: Silent Auction Donation. So that we can be prepared for the Silent Auction we ask that you submit your donation forms by April 17th.

What Else Can I Do?

- You can support the Silent Auction by bidding on the many items that will be on display during the TSHP Annual Seminar. So remember to bring your cash, checks and credit cards!
- You can volunteer to help out at the Silent Auction.
- You can be a financial donor. Send your check to the TSHP-PAC today…or you can go straight to the TSHP Website to make your donation now.
- You can be proactive and contact your legislators and let them know TSHP's position on the issues.
- You can be visible when TSHP asks for volunteers to testify, or we just need pharmacist visibility at the Capital.

If you have any questions email AReich@trinu.com

Gulf Coast Society of Health Systems Pharmacists

SAVE THE DATE

- Law continuing education event. Speaker Brad Shields. Date: **Feb 18th at 6pm.** Location: MD Anderson Cancer Center, Hickey Auditorium. To RSVP go to http://gcshptx.org/upcoming-events.html. **Deadline to register is Feb 12, 2015**
- TSHP Annual Seminar. Date: **April 24-26**. Location: The Henry B. Gonzalez Convention Center, San Antonio, TX.
- Preceptor CE: **May 2015**

GCSHP Supported Activities

Support for UH/TSU student to attend ASHP Summer Annual Meeting

Student Membership Drive

Annual Residency Workshop

Support to send winning team from clinical skills competition to ASHP Midyear

Residency Mentoring Social

Gulf Coast Society of Health Systems Pharmacists

Houston Food Bank Volunteer Activity
November 22, 2014 &
January 10, 2015

STUDENT SECTION

UH SSHP Winter 2015 Chapter Report

Meghann Davis, Chapter President & P3 Student

Greetings from UHSSHP! After enjoying a much-needed holiday, our chapter collaborated with the TSU SSHP chapter to co-host the 10th Annual UH/TSU Residency Mentoring Social on January 27, 2015 at the UH Main Campus. This event serves as a professional networking opportunity where, this year, over 100 UH and TSU students were able to interact with 20 of the top residency programs throughout the Texas Medical Center and the greater Houston/Galveston area. We were honored to have Dr. Doina Dumitru, Director of Pharmacy at Memorial Hermann The Woodlands, as our guest speaker this year. We also sincerely appreciate the commitment demonstrated by all practitioners who attended and continue to serve as our mentors and leaders at this annual event. We would like to express our gratitude to GCSHP for helping to make this annual event a reality through their generous sponsorship.

In addition to the Residency Mentoring Social, our chapter has a full schedule lined up for this semester. Our students will be participating in a variety of community outreach events, including brown bag medication reviews and medication safety and antibiotic awareness presentations. On February 11, we look forward to having Dr. Anne Nguyen, PGY-2/MS Pharmacy Administration Resident at MEDVAMC, speak to our chapter about the topics of PPMI and the TSHP New Practitioner Section. We also will continue to host journal clubs and residents meetings at our TMC campus for P3 members as APPE rotations approach. Before the TSHP Annual Seminar takes place in April, we will hold officer elections in order to introduce our new leadership for the coming year. We wish you our very best from UHSSHP and hope to see many of you throughout the semester!

Meghann Davis
Chapter President & P3 Student

STUDENT SECTION

TSU-SSHP Winter 2015 Chapter Report

Hongmei Wang, Chapter President

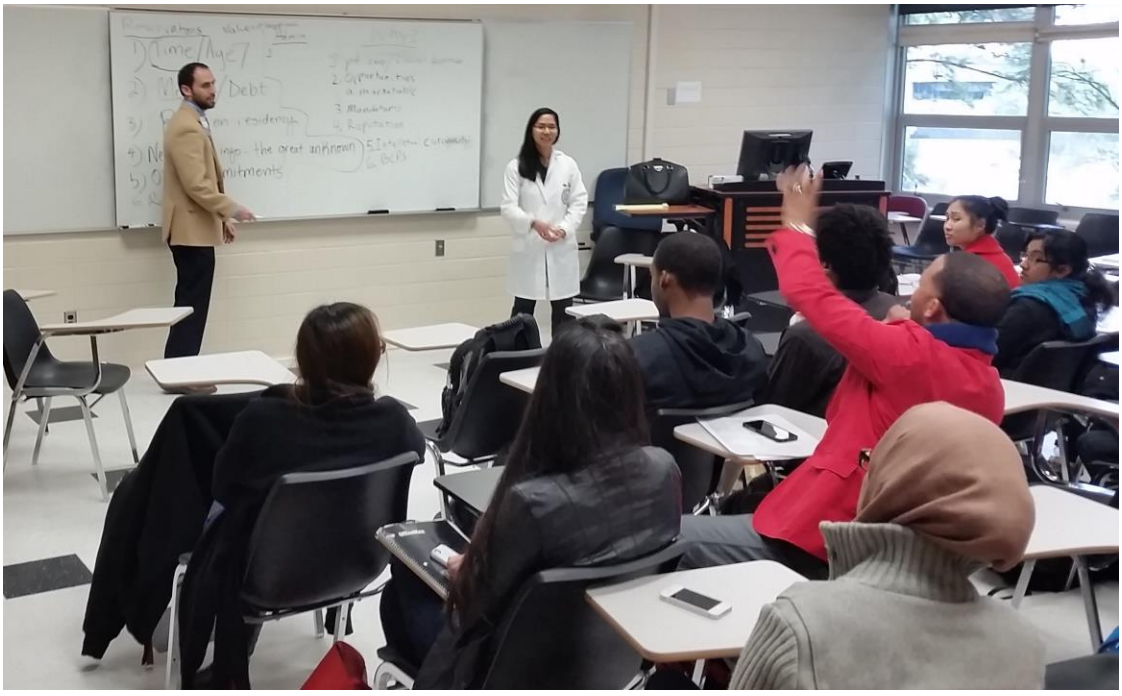
Happy New Year 2015! I hope everyone enjoyed the holiday season.

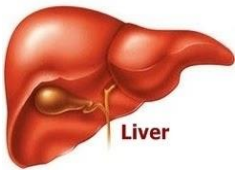
TSU-SSHP held the 3rd Annual Residency Showcase Panel on November and it turned out to be a huge success. Speakers were Dr. Anthony Colavecchia from Houston Methodist Hospital and Dr. Phuoc Nguyen from Michael E. Debakey VA Medical Center. Faculties from TSU were Dr. Uche Ndefo (Associate Professor of Pharmacy Practice) and Dr. Flora Estes (Assistant Dean of Practice Programs). They were able to provide a more recent and updated view towards the benefits and reasons for pursuing a residency by sharing their experience. They also provided students with the true outcome and advantages available for pharmacists who completed residency down the line. The students were very grateful for the opportunity to be able to get a lot of their questions answered and clear the air on any confusion they may have had towards residency programs prior to the showcase. We were proud of the efforts our faculty advisors and chapter leaders had put for the ASHP midyear, and 50 students from our chapter attended the meeting.

In the new semester, we will have more events coming. Our chapter is partnered with UH to put on the 10th Annual UH/TSU Residency Mentoring Social which be on Jan 27th, 2015. Dr. Richard Cadle and his Colleagues will come to our chapter to discuss residency program. We will invite speakers to provide support for the TSHP Annual Seminar Clinical Skills & Disease State Management Competition. We will continue to assisting our members gain more knowledge on residency from current residents and pharmacists. We will also encourage more students attend TSHP's 2015 Annual Seminar and actively participate GCSHP events as well.

On behalf of the TSU SSHP officers, we appreciate all of the support from GCSHP.

Hongmei Wang
TSU-SSHP President





Gulf Coast Society of Health Systems Pharmacists

Sulfamethoxazole/trimethoprim (SMX/TMP) induced hepatotoxicity

Alex Ng, 2015 PharmD Candidate; Kathleen Morneau, PharmD, BCPS

SMX/TMP is indicated for the treatment of various infections, including urinary tract infections, acute otitis media, acute exacerbations of chronic bronchitis in adults, shigellosis, *pneumocystis jiroveci* pneumonia, and traveler's diarrhea in adults. Hepatic adverse reactions have been reported by the manufacturer on the package insert, including hepatitis, elevation of serum transaminase and bilirubin, hepatic necrosis, and fulminant hepatic failure.[1]

Sulfonamides have also demonstrated reversible hepatic damage and jaundice after withdrawal of the offending agent, evidenced by needle biopsy of the liver.[2] A case report of a previously healthy 22 year old female who started SMX/TMP for a presumed urinary tract infection presented to the hospital with yellow discoloration of the sclera on day 6 of SMX/TMP treatment. Following discontinuation of SMX/TMP, her previous elevations in AST/ALT (> 50x upper limit of normal) and other liver function tests showed a downward trend with no other interventions.[3]

From 1966-2002, SMX/TMP were associated with over 200 reports of liver injury to the Swedish Adverse Drug Reactions Advisory Committee. Of those, 6 reports were associated with a fatal outcome.[4] Case reports of hepatic necrosis have been associated with sulfonamide use as early as the 1940s.[5] A case report of a 23 year old, previously healthy male presented with complaints of "flu-like" symptoms after taking SMX/TMP for 7 days. Past medical history was unremarkable except for an appendectomy, with no family history of liver disease or malignancies. The patient eventually presented with respiratory failure, fulminant hepatic failure, acute renal failure, coagulopathy, and hepatic encephalopathy. On day 8 post-admission, the patient received a successful orthotopic liver transplant after induction therapy. At 6 months post follow-up, patient had normal liver and renal function.[6]

A pediatric case report of vanishing bile duct syndrome (VBDS) was the first case report of SMX/TMP induced VBDS in a child. Previous case reports were only in the adult population. VBDS is characterized by progressive disappearance of intrahepatic interlobular bile ducts in the absence of underlying liver or biliary tract disease, indicated by an increase in bilirubin within 5-90 days after exposure to a drug and a decrease in cholestasis by 50% within 180 days. The patient recovered upon discontinuation of SMX/TMP and administration of ursodiol. Although most of the drug-induces VBDS cases recover spontaneously, secondary biliary cirrhosis or liver failure may occur.[7]

A case report indicated successful liver dialysis for the treatment of SMX/TMP induced fulminant hepatic failure. A 17 year old male presented to the emergency department with drug rash with eosinophilia and systemic symptoms. After discontinuation of SMX/TMP, elevation of liver enzymes continued. The patient was in grade III hepatic encephalopathy and was placed on the liver transplant waiting list. Following listing as a liver transplant candidate, the patient underwent two cycles of molecular adsorbent recirculating system (MARS) extracorporeal liver dialysis which resolved the patient's hepatic encephalopathy and allowed the patient to be removed off the liver transplant waiting list. The rash completely resolved and liver function tests returned to normal after two months.[8]

Based on literature review, SMX/TMP has been reported to cause hepatotoxicity which may be as severe as fulminant liver failure, however, less severe insults may be reversible after discontinuation. Although generally considered to be a benign agent, SMX/TMP may pose severe risks, may need to be considered as a causative agent in the setting of hepatic injury, and should be discontinued with signs of severe adverse reactions. Populations at increased risk have yet to be elucidated.

References:

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2. Espiritu CR, Kim TS, Levine RA. Granulomatous hepatitis associated with sulfadimethoxine hypersensitivity. *JAMA*. 1967;202(10):161-164.
3. Abusin S, Johnson S. Sulfamethoxazole/Trimethoprim induced liver failure: a case report. *Cases Journal*. 2008;1:44.
4. Bjornsson E, Jerlstad P, Bergqvist A, et al. Fulminant drug-induced hepatic failure leading to death or liver transplantation in Sweden. *Scand J Gastroentero*. 2005;40:1095-1101.
5. More RH, McMillan GC, Duff GL. The pathology of sulfonamide allergy in man. *Am J Pathol*. 1946;22(4):703-735.
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8. Ng CT, Tan CK, Oh CC, et al. Successful extracorporeal liver dialysis for the treatment of trimethoprim-sulfamethoxazole-induced fulminant hepatic failure. *Singapore Med J*. 2013;54(5):e113-e116.

Alex Ng is a 2015 PharmD Candidate from the University of Texas at Austin College of Pharmacy
Kathleen Morneau is the current Clinical Pharmacy Specialist in Solid Organ Transplant at the Michael E. DeBakey VA Medical Center

Gulf Coast Society of Health Systems Pharmacists

The Differences in Pharmacokinetics of Insulin U500

Shane Tolleson, PGY1 Pharmacy Practice Resident

Insulin U500 is regular insulin that is concentrated to five times the concentration of other insulin preparations; each mL of insulin U500 contains 500 units of regular insulin, whereas other preparations of insulin contain 100 units of insulin per mL. For patients who require higher doses of insulin, the volume of the injection to administer the necessary amount of insulin increases. The maximum volume that can be injected subcutaneously is 2 mLs, which would translate to 200 units of insulin with standard concentrations. Some patients require large doses of insulin, which may be more painful to inject due to volume, in order to maintain glycemic control. Insulin U500 is usually reserved for patients requiring more than 200 units daily and allows for the injection of large amounts of insulin, while maintaining a small enough volume to inject subcutaneously.[3] Due to rising rates of obesity, increasing insulin resistance, tighter glucose control regimens, and the use of insulin pumps, the use of insulin U500 is becoming increasingly common.[1]

There have been many safety issues surrounding the use of insulin U500 that are based on the dosing calculations using the higher concentration and the use of syringes that are not properly marked for the concentration. However, more recently, the safety of insulin U500 has been evaluated in regards to its pharmacokinetic (PK) profile. Though insulin U500 is only the more concentrated formulation of regular insulin, its pharmacokinetic properties differ from those of insulin U100. Pharmacokinetic and pharmacodynamic (PD) studies have revealed that insulin U500 has a similar overall exposure when compared to insulin U100. However, the peak concentration of insulin U500 has shown to be significantly less than that of insulin U100, with a significantly prolonged time to peak concentration at the same dose.[2] The half-life of insulin U500 also appears to be prolonged when compared to insulin U100.[2] The prolonged absorption of insulin U500 compared to insulin U100 may be beneficial when considering the adverse effect of hypoglycemia, but this may cause other safety concerns.

Regular insulin is usually dosed 3 times daily, before meals, but this regimen may not be the ideal for insulin U500. Given the delayed peak and lengthened half-life, insulin U500 behaves between regular insulin U100 and insulin NPH. The PK/PD profile of insulin U500 allows it to be administered twice daily, because doses are usually active for up to 24 hours.[1, 5] The frequency of administration can vary, depending on the total daily dose (TDD) of insulin. When the TDD is 200-299 units, the frequency can be two to three times daily; as the TDD increases, so does the frequency of administration, up to four times daily. If converting from insulin U100, the conversion may not be direct. The new regimen of insulin U500 may need to involve lower doses and/or lengthened frequencies. One approach suggested when converting from insulin U100 to U500 is to decrease the total daily dose of insulin by 20% and divide the difference into 2-3 doses per day, depending on the total number of units needed (Fig. 1).[1,4,5] A reduced dose may help to avoid prolonged periods of hypoglycemia and will allow for further titration of the dose. If a patient is converted while in the hospital, it would be appropriate to monitor the point of care blood glucose more closely to avoid adverse events.

Fig. 1 Conversion of Insulin from U100 to U500

1) Calculate total daily dose (TDD) of insulin
   Insulin NPH: 120 units every morning and 125 units every evening
   Insulin aspart: 15 units before breakfast, 10 units before lunch, 20 units before dinner
   TDD=290 units of insulin daily
2) Decrease TDD by 20%
   290 units – (0.2 x 290 units) = 232 units; OR
   290 units x 0.8 = 232 units
3) Divide among 2 doses per day
   232 units / 2 = 116 units of insulin U500 twice daily

All types of insulin are considered high alert medications when used in the hospital setting.[6] The risk of adverse events is high when used improperly, and can be exaggerated and prolonged with the use of insulin U500. Hypoglycemia has been associated with increased mortality and length of stay. The clinical pharmacist is in a prime position to help reduce the risk and occurrence of errors that lead to adverse events. When entering or verifying orders for insulin U500, it is imperative to monitor a patient's blood glucose trends to decrease the risk of hypoglycemia. Pharmacists can also decrease the chances of an error with the use of insulin U500 by using the Administration Comments during order entry and verification. A simple reminder to the nurse administering the insulin to double check the latest blood glucose could help prevent hypoglycemia. Since the standard insulin syringe is calibrated for U100 insulin, another important reminder to include in the administration instructions is to type the volume of insulin to draw into a syringe along with the total number of units. This could prevent the nurse from drawing up the volume needed if the insulin were U500 and prevent accidental overdosing.

Currently, there are two new insulin formulations in development and clinical trials. Sanofi has developed a new formulation of insulin glargine as U300, which is still in phase III trials. Novo Nordisk developed a completely new formulation, insulin degludec, which is U200 and ultra-long lasting (half-life > 24 hours), for which the FDA has requested more trials. Every healthcare provider should be aware of the new safety issues these two new insulin formulations will pose. Similarly to regular insulin, insulin glargine U300 may have different PK parameters than those of its U100 counterpart. Close monitoring will be necessary as these two new formulations come to market.

Insulin U500 has long been a high alert medication in regards to safety; often, preventable events occur related to its concentration and its proper administration. Understanding the PK characteristics of this insulin formulation will help us to more completely understand the safety issues that surround it. With a better understanding of insulin U500, we will be more capable of preventing the adverse events that come with its use.

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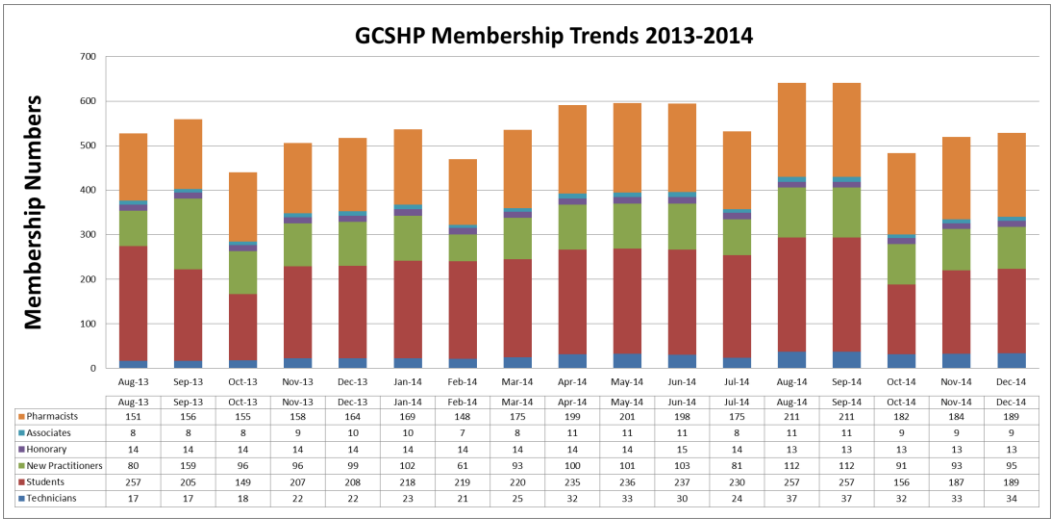
MEMBERSHIP REPORT



	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14
Pharmacists	151	156	155	158	164	169	148	175	199	201	198	175	211	211	182	184	189
Associates	8	8	8	9	10	10	7	8	11	11	11	8	11	11	9	9	9
Honorary	14	14	14	14	14	14	14	14	14	14	15	14	13	13	13	13	13
New Practitioners	80	159	96	96	99	102	61	93	100	101	103	81	112	112	91	93	95
Students	257	205	149	207	208	218	219	220	235	236	237	230	257	257	156	187	189
Technicians	17	17	18	22	22	23	21	25	32	33	30	24	37	37	32	33	34

GCSHP MERCHANDISE

Keep an eye out at our future events for our GCSHP merchandise. Support the organization and look stylish at the same time!

Gulf Coast Society of Health Systems Pharmacists

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