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NYS-ACCP Insider

D'Youville College, School of Pharmacy

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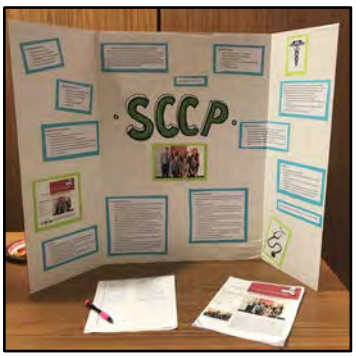
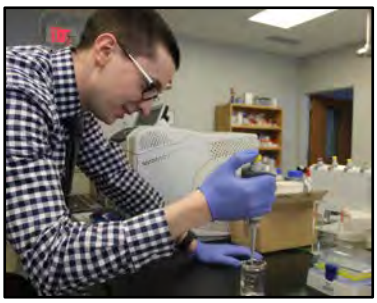
- Clinical Spotlight: Dr. Stacie Lampkin

Photographed Below: Student members who contributed to the Newsletter



Poster board for P1 orientation



Student, Ken Dill working on his research in the lab

D'Youville College, School of Pharmacy: ACCP Chapter Synopsis

Our chapter has worked to promote and uphold the core values of ACCP. Our chapter brings forth the opportunities ACCP provides student pharmacists and stresses the importance of being involved within ACCP while in pharmacy school and after graduating. The main goal of our organization is to expand students' knowledge on what being a clinical pharmacist entails. To do so, we have provided our members with information about careers and opportunities within the field of clinical pharmacy, promoted dedication to excellence in patient care, supported research and education, encouraged the development of skills necessary to function within an interdisciplinary team, and advocated for the role of clinical pharmacists within healthcare. To expand student involvement within our student chapter this year we worked diligently to incorporate students who had interest in not only clinical research, but benchtop research as well. In doing so, we gained roughly 10 more students. Our chapter has promoted both clinical and benchtop research this year by inviting clinical pharmacist guest speakers, offering the local clinical and research competition, collaborating with other pharmacy organizations, and holding a research networking event.

Inviting clinical pharmacist guest speakers to our college provides our students with the ability to learn about the different professional careers in clinical pharmacy, along with the specialties and requirements of becoming a clinical pharmacist. Our guest speaker in the fall semester, Dr. Robert Wahler, was from Niagara Hospice in Niagara County. He spoke to our students about his role as a clinical pharmacist, how he ended up where he is today, and advice to those with an interest in clinical pharmacy.

2017-2018 E-Board
- *President: Alayna Kehr*
- *President Elect: Sam Poblete*
- *Vice President: Sarah Hopseker*
- *Secretary: Chelsea Weselak*
- *Treasurer: Brittney Hannot*

Annually in the fall semester, our chapter works with the Student Societies of Health-System Pharmacy (SSHP) at D'Youville to organize a residency roundtable. At this event, multiple residents from local residences in Buffalo, NY were invited to come to our college and speak to our students. At this event, students are encouraged to openly ask questions and interact with the residents. This allowed students to have a better idea of what it is like to pursue a residency.

To further encourage clinical pharmacy, our chapter holds an annual clinical skills competition through ACCP, allowing students to test their current knowledge of clinical pharmacy. We also hold an annual clinical research challenge through ACCP to allow students to participate in the development of a clinical research trial. Our chapter holds these ACCP events to encourage students to become more active within their profession and to see how they can have an impact, even while being a student.

Student, Chris Ford checking on his cells in the lab

In February we organized our first-annual Research Gala. At this event, all faculty currently conducting clinical and benchtop research were invited to attend. Students had the ability to see what research was currently being conducted, network, and collaborate with the professors. This event was created to provide students with an opportunity to connect with faculty that are currently conducting research and provided many students with the chance to become involved in research with a professor. Those who attended were amazed at the research being done within our college.

Chapter Advisors:
- *Dr. Adinoyi Garba (left)*
- *Dr. Aubrey Gawron (right)*

Our chapter has worked diligently to renew and restore the meaning of ACCP at D'Youville. It has been and remains our goal to expand the clinical knowledge of our student members and to encourage involvement in clinical research and publication. Our chapter may not be large in number, but it is filled with devotion and perseverance. We look forward to what the future holds for ACCP at D'Youville School of Pharmacy.

-Alayna Kehr, D'Youville School of Pharmacy
Pharm D. Candidate of 2019

Biosimilars:
The "generics" of biologics

Biological drugs, also known simply as "biologics" are a growing class of pharmaceuticals designed to manage and treat several diseases. Biologics are defined as a substance made or derived from a living organism and is used in the prevention, diagnosis, or treatment of other disease states. Most examples of biologics are proteins or their derivatives that modulate pathways involved in the immune system and other body systems (like antibodies, interleukins, and vaccines).[1] In 1897 the magic bullet theory was developed, which theorized a compound could be created that could selectively target a disease causing organism, and a toxin for that organism could be distributed with the selective agent.[2] This development was later followed by the creation of hybridoma technology which was a process that allowed for the production of cell lines that provide unlimited source of identical cells that secreted a single type of monoclonal antibody to a specific antigen.[3]

Monoclonal antibodies revolutionized the pharmaceutical development of many drugs. The first antibodies created were chimeric antibodies, such as rituximab, which are also known as the first generation of antibodies. These antibodies combine mouse DNA for the variable region and human DNA for the constant region.[3] Soon after, the first humanized antibody was created in daclizumab, these types of antibodies have a smaller risk for immunogenicity. Finally, fully human monoclonal antibodies were created such as adalimumab which have the least risk for immunogenecity.[4] Unlike other drugs, biologics are chemically synthesized into large complex molecules which takes the newest technology and extensive research. Although biologics are front line treatment for complicated disease states such as cancers and immune complications, it comes with a large price tag. A recent study, looked at the price of some common biologics. It determined that the average annual cost of three common biologics were $24,859 for etanercept, $26,537 for adalimumab, and $26,468 for infliximab.[5] Due to these high cost of biologics, the FDA has allowed for the development of biosimilars. An example of a biosimilar is Inflectra® which is a biosimilar of infliximab.

Biologic drugs are composed of complex sugar molecules located on the outside of surface proteins which makes these molecules extremely hard to reproduce.[6] Furthermore, manufactures are not obliged to release the production and purification process before or after patent protection. After a biologics patent is expired a biopharmaceutical company can create a similar molecule to a biologic in clinical potency and toxicity.

These analogous drugs are called biosimilars which are slightly different molecules but have similar efficacy and toxicity to the original biologic.[7] These molecules differ from generics which are bioequivalent to the branded drug in every aspect including strength, dosage form, safety, quality, route of administration, performance characteristics and intended use.[8] Biosimilars do not have to meet the bioequivalent standard but instead must display total evidence of its pharmacodynamic equivalence.[9] For example a common brand name drug Zetia®, owned by Merck, recently lost its patent. Therefore, Endo Pharmaceuticals was granted FDA approval to sell a generic Zetia® using the drugs actual name of ezetimibe. This generic is much cheaper than the brand name because the generic manufactures do not have to conduct the research and development to create the novel drug. Most non-biologic medications are smaller chemically and relatively easy to reproduce after patent protection is over and bring down costs thereby "forcing" a reduction in the price of the brand name.

Unfortunately, because biologics are more complex and harder to reproduce, extra steps are needed to display similarity to the parent compound. Biosimilar drugs have to go through an extensive process starting with molecular characterization and demonstration of in vitro biosimilarity before they have to go through most of the trial phases required for new drug development to determine the pharmacokinetics and pharmacodynamic parameters.[10] This higher level of regulation makes biosimilars more costly to develop than non-biologic generics. Once a biosimilar is created it can obtain patent protection which lasts for 20 years from the filling date with a 12 year market exclusivity agreement.[11] Biosimilars are thought to bring cost reduction to the consumer by about 20% to 40% compared to the reference agent.[12] This may not be as significant a cost reduction as compared to generics, but considering that biosimilars cost roughly $200 million dollars to bring to market compared to around 4 million dollars for generics, it could be a significant reduction in price.[12]

Biosimilars could be beneficial in reducing the costs of biologics, however more efforts must be made to increase the awareness on the efficacy and availability of these agents. Prescribers and patients should be made aware of the benefits of biosimilars and the cost benefit of using them over their novel drug. Insurance companies and other third-party payers may have a role in promoting the use of these drugs whenever possible by offering incentives to patients similar to the rebates offered for placing biologics on formulary. This could level the playing field and encourage more companies to introduce more biosimilars into the market.[13]

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-Kenneth Dill, D'Youville School of Pharmacy
Pharm D. Candidate of 2019

New classifications for hypertension:
A commentary on key changes in the 2017 hypertension clinical practice guideline

Hypertension is the most common modifiable risk factor for cardiovascular disease, which can ultimately lead to heart attack, stroke, or death if left untreated or uncontrolled. The prevention and management of hypertension is essential in preserving overall cardiovascular health. For many years, a normal blood pressure was classified as a reading of less than 130/80 mmHg, while hypertension was defined as a blood pressure of 140/90 mmHg or higher, and prehypertension being anything in between 130-139/80-89 mmHg.[1] The purpose of this review is to evaluate and discuss our perspective on some of the changes in the new guideline for *The Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults.*

The major focus of the guideline update is the reclassification of hypertension categories and blood pressure classification (Table 1). The new guidelines eliminated the category of prehypertension and replaced it with either Elevated or Stage 1 hypertension. Evidence has shown that early intervention with more aggressive treatment goals is key in the prevention of further increase in blood pressure and complications of hypertension, especially in high-risk patients.[2] Patients at high risk are those who have risk factors that can make it more likely for them to develop cardiovascular disease and related complications. These risk factors include, but are not limited to, family history, tobacco use, obesity, diabetes, dyslipidemias, hypertension, and previous myocardial infarction or stroke. The Systolic Blood Pressure Intervention Trial (SPRINT) published in November 2015, demonstrated that targeting a lower blood pressure with intensive treatment led to a reduction in cardiovascular morbidity and mortality in nondiabetic adults with hypertension.[3]

Table 1: Changes in Blood Pressure Classification

Previous Blood Pressure Categories (adapted from the 2014 Evidence-Based Guidelines for the Management of High Blood Pressure in Adults)	**Systolic BP (mmHg)**		**Diastolic BP (mmHg)**	**2017 ACC/AHA Blood Pressure Categories** (adapted from *Table 6* in the ACC/AHA 2017 High Blood Pressure Clinical Practice Guideline)
Normal	< 120	**and**	< 80	Normal
Prehypertension	120 – 129	**and**	< 80	Elevated
Prehypertension	130 – 139	**or**	80 – 90	Stage 1 Hypertension
Stage 1 Hypertension	140 – 159	**or**	90 – 99	Stage 2 Hypertension
Stage 2 Hypertension	≥ 160	**or**	≥ 100	Stage 2 Hypertension

The new guideline has created strong debate and areas of concern among health care professionals. With a lowered threshold for blood pressure, the number of Americans diagnosed with hypertension is estimated to increase by more than 10%, which is the main area of controversy.[4] Many believe that lowering the blood pressure threshold in all categories could also drastically increase the overall number of patients diagnosed with hypertension but the ACC/AHA writing committee estimates that the number of these patients requiring pharmacologic therapy would only increase by about 1.9%.[5] It is important to recognize that although the new guidelines decrease the blood pressure required to diagnose hypertension, it is not requiring that pharmacologic therapy be included with this lower threshold. The exception to this would be if they have a 10-year cardiovascular risk greater than 10%, in which case, a single antihypertensive agent is recommended in combination with lifestyle changes.[2] In addition to lifestyle modifications, Table 2 shows a summary of pharmacologic treatments for each blood pressure category, comparing the previous guideline with the updates in the new guideline.

Table 2: Blood Pressure Categories with Corresponding Initial Treatment			
Recommended Initial Drug Therapy	**JNC 8 Blood Pressure Categories**	**ACC/AHA 2017 Blood Pressure Categories**	**Recommended Initial Drug Therapy**
No antihypertensive therapy indicated	Normal	Normal	No antihypertensive therapy indicated
No antihypertensive therapy indicated	Prehypertension	Elevated or Stage 1 Hypertension without further risk	No antihypertensive therapy indicated
Thiazide, ACEi, ARB, BB, CCB alone or a combination	Stage 1 Hypertension	Stage 1 Hypertension with clinical ASCVD or estimated 10-year CVD risk > 10%	Reasonable to initiate single first line agent (thiazide, ACEi, ARB, BB, CCB)
Addition of another first line therapy from a different class (Two-drug combination)	Stage 2 Hypertension	Stage 2 Hypertension (and > 20/10 mmHg higher than target)	Initiate two first line agents of different classes

First line agents: ACEi=angiotensin converting enzyme inhibitor; ARB=angiotensin receptor blocker; BB=beta blocker; CCB=calcium channel blocker; ASCVD= atherosclerotic cardiovascular disease

The authors of the guidelines encourage providers to abide by the new recommendations citing studies shown that having blood pressures between 130-139/80-89 mmHg could double the risk of cardiovascular complications. With that said, it needs to be emphasized that this does not mean pharmacotherapy needs to be initiated.[2] Patients and healthcare providers should be aware of these risks and begin with non-pharmacologic approaches to lower blood pressure as early as possible. With more patients being made cognizant of the risks of hypertension and the benefits of earlier recognition, we may see an improvement in adherence to lifestyle changes, less patients on medication, and reduced cardiovascular complications associated with elevated blood pressure.

One area of contention that is important to address is the new blood pressure goals for elderly patients and their potential risk for falls.[5] For patients in the general population who are 60 years and older, without diabetes or chronic kidney disease (CKD), the JNC 8 recommendation was a blood pressure goal of less than 150/90 mmHg. In comparison, the new guidelines recommend a lowered systolic blood pressure goal of less than 130 mmHg for adults 65 years or older.[2] Although, treatment of elevated blood pressure in older patients may be challenging, the benefit of a 21% reduction in mortality could make targeting a lower blood pressure in this population more worthwhile.[6] More recently, there are trials that have included independently living, elderly patients in their study populations and have used more intensive goals and treatments. Evidence from both HYVET (Hypertension in the Very Elderly Trial) and SPRINT

demonstrate that targeting a lower blood pressure threshold, was shown to safely reduce the risk of cardiovascular disease in patients up to 80 years old.[3,6] In this patient population it is important to apply caution when initiating or titrating blood pressure lowering agents. Vigilant blood pressure monitoring is also necessary in order to avoid hypotensive episodes and risk of falls.

From my perspective as a pharmacy student, I believe that identifying hypertension earlier, especially in high risk patients, will help prevent further cardiovascular complications and reduce mortality. In addition, it is essential that each patient is evaluated individually for overall cardiovascular risk and other comorbidities to allow for appropriate goals and treatment regimens. One way to approach this in elderly patients with risk of falls will be to carefully titrate medications and lower blood pressure slowly to obtain a goal of less than 130/80 mmHg, with the expectation of reducing cardiovascular morbidity and mortality. Conversely, in younger patients without risk of falls who are at a higher risk of cardiovascular disease, it may be appropriate to treat more aggressively to reach a target blood pressure. There is an argument to be made that the new blood pressure targets will place more burden on the primary healthcare system and increase costs due to the increase in diagnoses of hypertension.[7] In my opinion, this potential downfall should not interfere with our responsibility to promote beneficial and favorable long-term outcomes and increase the quality of life of our patients.

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- Chelsea Weselak, D'Youville School of Pharmacy Pharm D. Candidate of 2019

Amazon:
Making Strides into Pharmaceuticals

Amazon has become one of the biggest companies in the world, with its business reaching a variety of different services, from household items to vacations. Recently Amazon has been discussed among healthcare service providers because of the impact the company could have on the current pharmaceutical industry. Such a large company entering the pharmaceutical industry gives Amazon the ability to venture into many different areas of the pharmaceutical market. The start of Amazon's entry has begun with the company acquiring a pharmaceutical distribution license in several states including Michigan, New Jersey, and Connecticut, to name a few.[1]

The size of Amazon, gives it a lot of power within any market. Amazon, with its current buying power, can purchase large quantities of pharmaceuticals at a price much lower than many other retail companies. In turn, it can offer its customers a cheaper price on many medications. It can incorporate medicine into its current ecommerce structure; patients can receive medication at their doorsteps by using a system that many are already accustomed to. Currently 4.5 billion prescriptions are dispensed within the United States and of those, 90% are picked up at a local pharmacy.[2] The online purchasing of medication for patients can be very easy. While there has not been much information about how insurers would fit in, it can be assumed that Amazon would try to incorporate insurers. Another option would be to bypass the hassle and regulatory issues of insurers and offer cash-prices to customers who are uninsured or require a medication that is not covered by their insurer. Lastly, the recent purchase of Whole Foods gives Amazon the added potential of opening up physical pharmacies for patients to interact with if they desire a pharmacist's attention. [3]

Amazon can also utilize its already existing technologies to make its transition into the pharmacy market very smooth. With the widespread use of apps and mobile devices, Amazon can set up multiple ways to connect to patients. Whether its daily reminders to take medications, notifying patients their medication is ready to be refilled or that their online prescription order has been shipped. Apps and other services Amazon provides for anyone's mobile device can be used to accomplish this. This won't just be limited to smart phones, even computers, and smart TVs utilize apps nowadays. For example, Amazon Subscribe and Save lets shoppers automate delivery of frequently purchased items like toothpaste and tissues.

Amazon Dash Buttons let shoppers summon more paper towels and dog food with the push of a small internet-connected device. Prescription drugs, especially for people on a medication regimen, fit perfectly into Amazon's convenient household replenishment strategies. Medications are also lightweight making delivery costs less than that of bottled water.[4] Amazon can also use current technology such as Alexa to aid in its pharmaceutical ventures. Alexa is an intelligent personal assistant used by Amazon on many of its smart devices. Alexa is capable of voice interaction, music playback, setting alarms, providing real time information such as weather, traffic, news along with many other functions. Amazon can easily utilize this technology to do all the activities that were mentioned earlier with relative ease. [3]

Through some of these methods, Amazon can easily transition into the field of health care, and pharmaceuticals. With its massive buying power, along with being one of the largest Internet retailers in the world, Amazon may influence the way patients receive their medications. Whether it's through a physical pharmacy, which can be set up through its ownership of Whole Foods, purchasing generic medications in massive bulk to provide cheaper prices for patients, or through mail order, Amazon has various avenues of delivering medications to patients. Additionally, integration of its already existing technology, Alexa, can improve factors like patient adherence by reminding patients when they are due for a refill or when it is time to take their medication. There are issues that Amazon may face if they move forward with this venture, such as the difficulty of counseling patients who receive their medications in the mail or how they will incorporate insurers. If Amazon were to overcome hurdles such as these it may create a huge shift in the pharmaceutical and health care industry.

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- Yousef Kassem and Akash Patel,
D'Youville School of Pharmacy
Pharm D. Candidates of 2019

Radicava®:
Hope for ALS patients

What is amyotrophic lateral sclerosis (ALS)?

ALS, also known as Lou Gehrig's disease, is a progressive neurodegenerative disease that affects muscle movement.[1] In this disease state, upper and lower motor neurons in the body deteriorate and eventually die, leading to muscle weakness, fasciculations, and muscle atrophy. As a result, the brain is unable to initiate or control voluntary muscle motions. Patients with this severely debilitating illness lose the ability to engage in normal, everyday movements such as chewing, walking, talking, and eventually even breathing. ALS is rare, with approximately 5,000 people diagnosed annually and it is most commonly seen in patients between the ages of 40 and 60 years old.[2] A majority of patients die of respiratory failure secondary to ALS, which generally occurs within 5 years of symptom onset.[1]

How is ALS treated?

There is currently no cure for the disease state and treatment options have been limited thus far. In the past, riluzole, a glutamate inhibitor, has been used in order to slow progression of the disease.[1] Glutamate, in excess, can cause the excitotoxicity seen in neurodegenerative diseases, such as ALS.[3] Riluzole is mainly used as symptomatic treatment; however, its effects are often times insignificant as it only prolongs survival by a few months.[1] A number of other drugs are used to manage symptoms of the disease, such as muscle cramps, stiffness, excess saliva, uncontrollable emotions, pain, depression, sleep disturbances or constipation. Some of these drugs include baclofen, diazepam, gabapentin, trihexyphenidyl, and amitriptyline.[2] Physical therapy, speech therapy, nutritional support, and breathing support are also pivotal to the treatment of ALS.[1] Due to the lack of treatment options for ALS patients, a new therapeutic agent, edaravone (Radicava®), has been studied in order to optimize patient outcomes. This is the first drug to be FDA approved for the treatment of ALS in the past twenty-two years and was first offered in the United States at the Dent Neurologic Institute in Amherst, NY.[4]

What is edaravone?

The exact mechanism that slows the progression of ALS is unknown.[5] Edaravone works as a free radical scavenger that facilitates the prevention of oxidative damage to cell membranes, thereby potentially contributing to slowing the progression of ALS. Edaravone is administered via an intravenous route and has a specific dosing schedule. During the initial cycle, 60 mg is administered once daily for 14 days, followed by a 14-day drug-free period. Then, during the subsequent cycles, 60 mg is administered once daily for 10 days within a 14-day period, followed by a 14-day drug-free period. This medication is available as 30 mg intravenous bags and must be administered as two consecutive 30 mg infusions. It is infused over 60 minutes at a rate of 1mg/min. There are no dosage adjustments for renal or hepatic impairment. Edaravone has minimal adverse effects, including abnormal gait, headache, and bruising. It should be used with caution in patients with asthma or a sulfite allergy because the drug contains sodium bisulfite. Patients should be monitored for possible hypersensitivity or anaphylactic reactions.[5,6]

What did the clinical trial show?

The FDA expedited the approval of edaravone for ALS by granting it an orphan drug designation due to the efficacy and safety seen in the clinical trial conducted in Japan.[6] The trial was a phase 3 multi-centered randomized, double-blinded study. There were 137 patients between the ages of 20-75 years old with a diagnosis of ALS that were included in the study, with power being set and met. According to the Japanese ALS Severity Classification, the patients had to have a grade 1 or 2 on a scale of 1 to 5, signifying earlier disease progression. The study had 1:1 randomization, with patients receiving either intravenous edaravone 60mg (69 patients) or saline placebo (68 patients) for 24 weeks. For the initial cycle, patients received study medication once daily for 14 days, followed by a 14-day observation period. The subsequent cycles included administration of edaravone for 10 of the 14 days (with no mention of which 10 days in the 14 day span), followed by a 2-week drug-free period. This study did allow concurrent drug use and more than 90% of the patients (including treatment and placebo group) were additionally using riluzole. The primary endpoint of the study was to see a significantly smaller decrease in the mean change in the ALSFRS-R score. The ALSFRS-R score is a composite of a questionnaire assessing 12 aspects of physical function. Each function is given a score from 4 (normal) to zero (no ability), with a maximum total score of 48 (normal function). The least squares mean change in ALSFRS-R score from baseline to week 24 was −5.01 with edaravone compared to −7.5 with placebo, with a significant p-value of 0.0013.

Overall, the difference in ALSFRS-R score between the edaravone and placebo groups amounted to approximately 33%, with a difference of 20% deemed as clinically meaningful. Adverse effects were found to be very similar with no significant differences between groups.[7]

What does this mean for ALS patients?

The Japanese study showed significant and promising results, with some limitations. This study was only performed on Japanese patients with a relatively small sample size and strict inclusion criteria. Additionally, this study focused on the maintenance of function and quality of life for the patients in the early stages of their disease, so this study did not address the use of this drug to prolong survival. [7]

Due to the quick FDA approval process after being categorized as an orphan drug, edaravone is now available for public use and we can begin to see how this drug can make an impact on ALS patients here in the United States. Any drug that can enhance the quality of life for an ALS patient is a huge step in the right direction. The approval of edaravone brings hope to patients and their families throughout the country.

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- Michaela Coventry and Sarah Hopseker,
D'Youville School of Pharmacy
Pharm D. Candidates of 2019

D'Youville:
Making a Difference

"We were not all born to be doctors and nurses but we were all born to be healers."

D'Youville School of Pharmacy (DYSoP) offers students the opportunity to participate in a medical service brigade to Chontapunta, Ecuador each spring semester. This past medical brigade, in the Spring of 2017, six members of the DYSoP American College of Clinical Pharmacy's chapter were able to be a part of this team. D'Youville is a college chapter of an organization known as Timmy Global Health (TGH). Timmy global health strives to expand health care to parts of the world that lack adequate access and resources. Volunteers range from health care professionals such as physicians, nurses, pharmacists, physical therapists, occupational therapists, health care orientated students and even paramedics. All people deserve to have access to healthcare. Timmy Global health inspires healthcare professionals and students to give back and help to make a difference on a global scale. As pharmacy students we are able to volunteer our time and abilities in order to help make a difference for people who truly need access to healthcare.

Each brigade sees an average of 70 patients per day. During the last brigade, 360 patients were seen over the course of the five clinic days and 948 prescriptions were dispensed. These patients travel from all over the area to be seen at the clinic. Patients ranged in age from < 1year to 98 years old during the last brigade! Patients are seen in order of severity of their diseases throughout the day. Infants and children are normally the first patients of the day followed by patients with less severe conditions. During our last brigade there was a diverse amount of medical conditions diagnosed and treated. We had patients with severe infections, respiratory diseases, chronic back pain, elevated blood pressures, and scabies.

A typical clinic day ran about 8 hours. Each morning began bright and early with a fresh bowl of fruit and warm cup of coffee. Once all of the supplies were packed up and ready to go it was time to travel to the remote villages where clinic was to be held that day. Clinic sites ranged anywhere from a 30-minute bus drive to 2-hour canoe ride down the river. Once the team arrived to the clinic site everyone coordinated and prepared the supplies for the day. All volunteers were broken up into 5 different stations: registration/history, crowd control, vital signs/labs, scribes for the providers, or pharmacy/ dispensing.

The pharmacy at clinic was not your typical retail pharmacy. Everything that we needed for the pharmacy we would pack up that morning and carry with us. Tables and chairs were provided for us on site where we were able to set up laptops, printers and fill stations. The pharmacy locations ranged from community huts, large outdoor spaces, and even children's classrooms. Timmy Global Health utilizes its own EMR system known as TimmyCare where patient's information was accessible to the providers and pharmacists. This information included past visits to the TGH clinic sites. This EMR system was run by a generator and was utilized by the providers to input the prescriptions ordered for each patient. This system allowed for communication between the providers and the pharmacy: scripts were sent to the pharmacy, filled and checked by our pharmacists. As students we were then able to record any interventions made by the pharmacy, translate label instructions to Spanish and work with the translators to ensure patients were counselled on their medications correctly. Recorded interventions were classified using eight different categories: pharmacy to dose, dosing change/clarification, counseling, order change/clarification, therapeutic substitution, pediatric dosing, medication recommendation, and 'other'. Medications were sorted into different buckets and categorized by indication. Every patient who came to clinic received some sort of multivitamin depending on their gender and age. There was a very limited formulary given to the providers at the start of each clinic day. The supplies that went quickly were permethrin lotion, indomethacin, and sunglasses. Other medications that were dispensed frequently included analgesics/antipyretics (27 percent) and systemic anti-infective agents (25 percent).

The American College of Clinical Pharmacy's purpose is to improve human health by extending the frontiers of clinical pharmacy. This medical mission has given students this opportunity and much more. Taking a blood pressure, assisting in crowd control, filling a medication, and scribing for physicians all seem like small tasks, but made huge impacts in the lives of these underserved Ecuadorian communities. As students we were exposed to situations where we learned cultural awareness and acceptance. We were provided opportunity to be leaders, advocate for those who are underserved and use clinical knowledge in order to develop successful practice models and advance access to patient care. This trip teaches students and fellow healthcare professionals about giving back to the community and to lead with honesty, reliability, and compassion.

- Laura Wilkinson, D'Youville School of Pharmacy
Pharm D. Candidate of 2019

Clinical Faculty Spotlight:

Dr. Stacie Lampkin, PharmD, BCPPS, BCACP, AE-C

Please explain the path that lead you to where you are currently.

Dr. Lampkin states that her passion for pediatric pharmacy stemmed from when she learned pediatrics in her pharmacy curriculum, towards the end of her didactic series. She then set up her APPE rotations accordingly, with one being at Children & Women's Hospital in Buffalo, New York, where she later completed her PGY1 residency.

Current roles and responsibilities?

Dr. Lampkin has a consistent schedule with half of her time being at the Pediatric Primary Care Clinic she currently practices at and the other half of her time being devoted to D'Youville School of Pharmacy and her students.

"Don't expect others to hand success to you. Create it."
– Rasheed Ogunlaru

Why did you decide to pursue a residency?

She decided to pursue a residency because she knew she wanted to achieve a future career focused in pediatrics once she graduated pharmacy school in 2009 from LECOM School of Pharmacy in Erie, Pennsylvania.

Are you involved in any research? If so, please describe.

In regards to research, Dr. Lampkin is currently working with the lead physician at the Asthma Clinic within the Primary Care Clinic. Spirometry is the basis of her current research, as she is currently working towards determining if added spirometry time makes an impact on clinical management and the patient's outcome. Dr. Lampkin is also currently working with students on a student-led project for diazepam rectal gel prescribing and medication errors upon hospital discharge. In addition, Dr. Lampkin co-authored a recently published article titled, "Considerations for providing ambulatory pharmacy services for pediatric patients". This article was published in the Journal of Pediatric Pharmacology and Therapeutics (JPPT).

Have you faced any barriers when pursuing your career? How did you overcome them?

When facing any barriers through her career, Dr. Lampkin's open mindedness allowed her to persevere. Through her open mindedness she was able to network and develop life-long connections. It has been her openness and the connections that she has made that have led her to every opportunity she has encountered.

Why did you initially get involved with American College of Clinical Pharmacy (ACCP) in your career and how did it help you achieve your goals?

Dr. Lampkin originally became an ACCP member a few years ago to become a mentor to students. Once becoming a member, she liked being a part of ACCP so much that she continued on with it. She enjoys being able to support her students on a larger level and have a higher role within pharmacy.

How do you personally stay up-to-date within the world of clinical pharmacy?

Dr. Lampkin states that she stays up-to-date within the world of clinical pharmacy through reading, CE's, board reviews, BCPPS, being a professor, and reviewing the information she presents to her students, as well as the information her students present to her.

What advice would you give to any current pharmacy students who are interested in pursuing a career in clinical pharmacy?

To any current pharmacy students interested in pursuing a career in clinical pharmacy, Dr. Lampkin advises students to not be scared to pave their own path and to justify where they may see opportunities as a pharmacist or to try something new. She advises students to work hard for what they want. She states, "Pharmacy is continually changing, and you should be ready for that and be able to justify what you are doing and be able to prove your worth."

Conclusion:

Dr. Lampkin thanks her residency preceptors and pharmacy mentors for pushing her, having consistently high expectations, and the feedback she received from them. It was all of this that made her push herself even harder to achieve her goals.

-Alayna Kehr, D'Youville School of Pharmacy
Pharm D. Candidate of 2019

Questions? Please contact: Amanda Engle, Pharm D @ Amanda.Engle@acphs.edu