#### ACCP EDTR PRN

#### OFFICIAL NEWSLETTER OF THE PRN

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## Education And Training Practice Research Network

#### EDTR PRN NEWSLETTER

#### FALL 2020

## Message from the Outgoing Chair



When I started my term as PRN Chair, I could have never imag-

ined what this year would turn out to be. COVID-19 has dramatically impacted every aspect of pharmacy education and practice. I've suddenly found myself using words like quarantine, asynchronous, hybrid or remote experiences far more often than I'd like to admit. While this time has caused dramatic changes to dayto-day life, it has also allowed us the opportunity to truly think outside the box and try new things. I have been amazed to witness our members rise up and support one another during this unprecedented time. I can honestly say I have never been more proud to be an educator then I have in the past six months.

Despite the significant impact that COVID placed on our day jobs, the commitment and collaboration of our members to serve and advance the PRN has been remarkable. I thank the nearly 80 members that served on a committee this past year and would like to take a moment to highlight a few of their achievements. The Professional Development committee was able to quickly collaborate with ACCP to develop a webinar in June entitled

"Teaching in a Time of COVID-19." It was an excellent opportunity to hear the successes and challenges that many of us have faced with the COVID transition. I'm looking forward to the publication of the PRN Opinion Paper on Letters of Reference for Residency which is the culmination of years of collaboration. All of the committees were able to meet their charges and while being flexible as many original plans required multiple adjustments.

With the transition to the virtual Annual Meeting, the Educational Programming and Networking committees had to adjust their plans to meet our member's needs. The livestreamed PRN's Focus Session entitled ""No Pain, No Gain: Helping Learners Unleash their Potential" provided very helpful strategies to engage your learners. I would encourage everyone who wasn't able to join the session live to listen to the recording. The Networking committee's virtual Networking Forum for the student mock interviews still allowed engagement

with our student and resident members. They also developed some very helpful resources including videos and tips sheets for our learners to as we move into this unique interviewing season.

As I reflect on all of these impressive accomplishments, I would be remiss to overlook the dedication and hard work of the 2019-2020 Executive Committee. Dr. Holly Gurgle (Past-Chair), Dr. Taylor Steuber (Chair-Elect), and Dr. Sarah Eudaley (Secretary/Treasurer) offered much needed support this past year, and I am truly grateful for their service. During the virtual Annual Meeting, we welcomed our two newly elected officers: Dr. Meredith Howard (Chair-Elect) and Dr. Alex Isaacs (Secretary/ Treasurer). I know that they will be a great addition to this year's **Executive Committee!** 

Thank you for this opportunity and it has been an honor to serve as your PRN Chair. I am looking forward to continuing to serve as the Past-Chair. I would like to personally thank all of our members for all that you do to make the EDTR PRN great! I'm looking forward to another memorable year!

Erica F. Crannage, Pharm.D., FCCP, BCPS, BCACP

## Thank You to our 2020 PRN Officers!

Educational Programming: Chair: Taylor Steuber Vice Chair: Evan Williams Communications: Chair: Takova Wallace Vice Chair: Renee Koski

Finance: Chair: Sarah Eudaley Vice Chair: Emily Christenberry

Networking: Chair: Elizabeth Englin Vice Chair: Meredith Howard

Student and Post-Graduate: Chair: Ashley Higbea Vice Chair: Sara Richter Membership: Chair: Alex Isaacs Vice Chair: Sarah Petite

Professional Development: Chair: Lynn Kassel Vice Chair: Pamela Stamm

Nominations: Chair: Holly Gurgle Vice Chair: Taylor Steuber These individuals were able to steer our committees into the proper direction to accomplish many endeavors. We look forward to our PRN continuing to evolve and promote our profession in education and training. Whether you are new to our PRN or have contributed in the past, we always welcome your efforts and support.

Please consider becoming involved and volunteering some of your time to foster and continue to develop the EDTR PRN.

### **President:** Taylor Stueber

## Chair Elect: Meredith Howard

Secretary-Treasurer: Alex Isaacs

Board Liaison: Leigh Ann Ross

# Congratulations to our Newly Elected 2021 PRN Officers!

Educational Programming: Chair: Meredith Howard Vice Chair: Ashley Crowl Sara Richter

Finance: Chair: Alex Isaacs Vice Chair: Jordan Masterson

Networking: Chair: Kristin Janzen Vice Chair: Elizabeth Englin

Student and Post-Graduate: Chair: Ginelle Bryant Vice Chair: Ashley Higbea Communications: Chair: Kevin Astle Vice Chair: Ellen Jones

Membership: Chair: Sarah Petite Vice Chair: Elizabeth Bald

#### **Professional Development:**

**Chair:** Sarah Vorrdenberg **Vice Chair:** Dan Majercyzk

Nominations: Chair: Erica Crannage Vice Chair: Meredith Howard



## **Annual Meeting PRN Programming**

No Pain, No Gain: Helping Learners Unleash Their Potential

## Tailored Precepting: Promoting Success Across the Spectrum of Learners



Andrea Franks, Pharm.D., BCPS

Professor, Dept. of Clinical Pharmacy & Translational Science University of Tennessee Health Science Center College of Pharmacy

## Coaching for Success: Practical Tips to Elevate Learners to the Next Level

Meredith Howard, Pharm.D.

Associate Professor and Director of Hospital Practice University of North Texas System College of Pharmacy





## Mentorship for the ACCP Teaching and Learning Certificate Program

#### Daniel S Longyhore, Pharm.D., Ed.D., BCACP Director, ACCP Teaching & Learning Certificate Program Academy

If you are reading this as a member of the EDTR PRN, then you know what it means to be a mentor. We can all identify at least one person in our life, personal or professional, whose guidance has helped us be better than we were before; the person of whom we subconsciously ask, "what would [insert name] do?"

Dr. Daniel Longyhore

Mentorship is beautiful in that it does not require that you are older than the person you take on in mentorship, it does not require you have the same background, and it does not require you to be in the same place. Mentorship requires that you be there for someone when they need a guide or a partner in a special part of their transformation. At these crucial times in a person's development, being a mentor allows for you to create a lasting impression on their identity.

When an ACCP member takes on the challenge of enrolling in an Academy, they are placing themselves in a transformative state. They may be a junior faculty member searching for their professional identity. They may be an established member of a faculty, looking to refine and hone their skills to better serve learners. They may be a clinician and/or preceptor who desires to provide the best clinical learning environment for future pharmacists and clinical providers. Regardless of their identity when they enter the Academy, they are looking to transform in one way or another to be better than they were before.

Mentors in the ACCP academies are vital to success, both for the individual and the academy. The academy depends on skilled and invested mentors to help guide academy members in their transformation. As a mentor, you will be the academy enrollees' primary resource for feedback on their work. Additionally, below or some of the requests we make of all who participate.

- Agreed to be a champion for the person you are providing mentorship. Transformation is not easy and usually comes amidst many other aspects of a person's life: family, friends, and professional responsibilities. As a mentor, your involvement with the academy member is much more than providing feedback to their work. It is checking in on them to see how they are progressing and working through different barriers they may be facing. Your mentorship may not be solely in their work for the academy, but in the way they transform their being.
- Invest in yourself. Mentorship is a two-way street and as much as the person receiving mentorship benefits, so does the person who is providing mentorship. As you collaborate with your partner in mentorship in the academy, be willing to attempt something new for your professional growth. It does not have to be big or career-altering, but making an attempt to step outside your comfort zone. As an example, if you are the type of person who would prefer to send an email to check in on somebody, consider setting up a 15or 20-minute video chat with them instead. Diversify the way you communicate and provide mentorship.
- Make mentorship a community. The one-on-one relationship that is formed between a mentor and the person receiving their mentorship is invaluable. With this, be open to the idea that mentorship requires a community. The needs of the person requiring mentorship may extend beyond the mentor's knowledge or capabilities. This does not mean the mentor is inadequate. Rather, it means that the person receiving mentorship needs help navigating to find an additional partner in their growth. As a mentor, you are the perfect person to help them find who else needs to be part of their team. Your connections likely run deeper than theirs and your experiences serve as a compass to know who to include. Along the way, you will have the opportunity to grow and learn something that you previously didn't know.

Every year, the ACCP academies are looking for new mentors to take on the new learners in the program. To have members of the education and training PRN available to the TLCP Academy to be mentors would be an invaluable resource and one that could have a lasting impression on those enrolled in the academy. If you are contemplating being a mentor and want to learn more about the academy or it's requirements, please make sure to visit the academy website (<u>https://www.accp.com/academy/teachingAndLearning.aspx</u>) or reach out to have a conversation.



### Student Mental Health in Pharmacy School Highlighting the Importance to Check-in During the Pandemic and Beyond

#### Elsen C. Jacob, PharmD, BCPS, BCGP, CPPS

Assistant Professor, Department of Clinical Health Professions; St. John's University College of Pharmacy and Health Sciences, Queens, New York

#### Dr. Elsen Jacob

The COVID-19 pandemic has led to a collective grief related to the upheaval of daily routines, immense transformation in social interactions, the uncertainty of the future, economic losses, and even sickness and loss of loved ones.<sup>1</sup> These unforeseen experiences have also led to a general rise in anxiety, depression, post-traumatic stress disorder and other mental health concerns.<sup>2</sup> These mental health challenges are exacerbated with underlying mental health disorders, and pressure.<sup>3,4</sup> Unfortunately, even before the pandemic, health professional students including pharmacy students were recognized to have a high degree of academic stress.<sup>5</sup> In fact, pre-COVID-19 studies reveal that over 25% of PharmD students experienced mental health challenges including anxiety and depression.<sup>5</sup>

With many Schools of Pharmacy transitioning to remote, virtual or hybrid classrooms and experiences to adequately deal with the pandemic, students have had to acclimate to new ways of learning, all while compartmentalizing the ongoing chaos of the world.<sup>6</sup> This model is not sustainable in high pressured learning environments without adequate psychosocial safeguards. The pandemic has led to a rise in stress, anxiety, loneliness, depression and suicide risk, with 80% of students reporting a negative impact on mental health <sup>7,8</sup>. Thus, it is imperative that faculty and preceptors become educated on challenges that students may face and regulary check-in with students to provide support. The following are some strategies that faculty and preceptors may implement:

#### Validate trauma

In addition to the daily challenges brought on by the COVID-19 pandemic, students may have contracted COVID-19, may be serving as caregivers for sick family members, may be dealing with the loss of loved ones, or may be facing anticipatory grief.<sup>1</sup> Vulnerable student populations, including LGBTQIA+, low-income, international, and first-generation students may face additional financial struggles, housing and food insecurity, and safety concerns.<sup>6,9</sup> Also, minority students may be experiencing the rise in xenophobia targeted at Asians and increased COVID-19 mortality and racism faced by Black, Indigenous, and Persons of Color (BIPOC).<sup>10,11</sup> It is important that faculty and preceptors acknowledge the emotional stress and trauma that students face, especially the unique struggles that students from vulnerable populations and BIPOC students face during this unprecedented time. A validation by faculty and preceptors of the trauma that students endure can provide support and initiate healing.<sup>9</sup>

#### Provide reassurance

It is important for students to know that faculty and preceptors place their mental health and wellbeing above their academic performance.<sup>6</sup> Thus, before delving into the nuances of coursework, it would be advisable for educators to de-stigmatize emotional stress and mental health challenges that students may face. It would also be important to inform students that faculty and advisors are available and want to help them in dealing with loss, stress, trauma, or mental health challenges.<sup>1</sup> Additionally, faculty can highlight public and university resources that are available to assist students with their academic and emotional needs.<sup>9</sup> This will indicate to students that faculty want to support students. In fact, a recent national survey of college students revealed that communication

## Student Mental Health article continued...

that is clear, compassionate, and consistent can relieve some of the uncertainty and stress that students are feeling.<sup>9</sup>

#### Safe space

Providing a virtual or physical safe space for students to confidentially share the challenges they are experiencing is important.<sup>9</sup> These check-ins can allow faculty and preceptors to serve as an additional support system for students during this challenging time. Scheduling mentorship sessions and virtual office hours may especially be helpful for students, including rotation students, who are struggling emotionally or academically. While faculty may not be trained mental health professionals, even lending a listening ear can be helpful in alleviating some of the stress that students may be dealing with.

#### Flexibility

The challenges brought on by the COVID-19 pandemic and it's aftermath have made regularly checking-in with students a vital strategy for student success.<sup>9</sup> It would be helpful for faculty and preceptors to inform students that they are willing to be flexible to accommodate student needs. Flexibility can reduce student stress and allow educators to determine the best meeting times and feasible deadlines for assignments.<sup>9</sup> Students may have to work to support their family, attend medical appointments for their family members or themselves, have poor access to the internet or live in a different time zone, among many possible circumstances. Thus, providing equitable adjustments to assignments and deadlines for students with challenging circumstances can reduce the burden that students may feel. Furthermore, as the pandemic continues to evolve, it is vital for faculty and preceptors to listen to student concerns and make changes accordingly. A curriculum tailored to the times that we live in, will enable educators to best support students living and learning in this unexpected and extraordinary time.

#### Mental health services

Faculty and preceptors should seek to actively listen for signs of distress and unhealthy coping mechanisms. As appropriate, it would be crucial to refer students to available university resources, counseling and telehealth services.<sup>9</sup> Educators should also consider referring students who actively seek mental health assistance, those struggling academically, or those dealing with loss. Unfortunately, recent surveys of college students reveal that 60% of students have noted challenges in accessing mental health care during the pandemic, providing a more compelling reason for educators to inform students about available resources.<sup>7</sup>

In summary, it is imperative that faculty and preceptors receive training to address mental health of students during the COVID-19 pandemic. This is especially important as pharmacy students are at an elevated risk for mental health challenges. Some important steps include validating the trauma that students are experiencing, providing reassurance to students, creating a safe space where students can confidentially share their concerns, maintaining a more flexible approach, and connecting students to mental health services. Ultimately, it is paramount that schools of pharmacy, faculty, and preceptors recognize the need to check -in with pharmacy students and provide additional support during the COVID-19 pandemic and beyond.

#### Helpful links:

- Being Antiracist: https://nmaahc.si.edu/learn/talking-about-race/topics/being-antiracist
- LGBTQIAI+ awareness and ally training: https://thesafezoneproject.com/curriculum/
- Trauma-informed teaching and learning: https://www.youtube.com/watch?v=AuRxxPK9Hyc&feature=youtube

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## Gamification: An interactive activity to assess the effect of game-based learning in the area of drug card

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Pharmacy students memorize heavy amounts of material every day. It is imperative for them to develop a strong foundation of drug knowledge to grasp more complex concepts through the progression of pharmacy school. Beyond graduation, pharmacists encounter a variety of complex patients that require a knowledgeable pharmacist to ensure that they are receiving the correct drug therapy. Faculty must ensure students retain a strong base of drug knowledge to fulfill a higher level of critical thinking skills to utilize during patient interactions. We developed an escape room experience to improve short- and long-term knowledge in selected topic areas such as drug indication, dosage form, schedule, therapeutic class, and brand/generic of a drug.

Escape rooms are action centric teambased games where players discover clues, solve puzzles, and accomplish tasks in one or more rooms to accomplish a specific goal by using critical thinking skills in a limited amount of time<sup>1</sup>. Escape rooms are collaborative, problem-based, time constrained and active, which align with the design of activities that educators want to emulate in the classroom to promote learning<sup>2</sup>. Tactile experiences, such as the escape room, have the potential to alleviate two concerning issues at the forefront of pharmacy education: teaching critical thinking skills and preventing "downloading and dumping" of information for assessment purposes. Moreover, critical thinking is one of the upmost desired skill sets of a pharmacy graduate because pharmacists need to think for themselves, question claims, utilize good judgment,

and make decisions<sup>6</sup>. It is needed in almost every facet of pharmacy practice as pharmacists manage and resolve patient medication problems and assess treatment outcomes<sup>7</sup>. Wanting to promote new teaching techniques to optimize long-term retention, the American Association of Colleges of Pharmacy (AACP) Academic Affairs Committee report promoted the use of gamebased learning in the development of future pharmacists.<sup>1</sup> Compared to traditional classroom learning, game-based learning is an innovative tool for students to use for learning and retaining assigned material.<sup>2</sup> Thus, implementation of an escape room can actively engage pharmacy students in a way of learning that promotes critical thinking and aids in long-term knowledge retention.

Multiple approaches of gamification have been implemented within pharmacy education with the overarching goal to fully engage learners in learning by doing.<sup>9, 10</sup> A recent study titled "Educational Gaming for Pharmacy Students- Design and Evaluation of Diabetes-themed Escape Room" found that 83 students showed statistically significant increases in knowledge after completion of the five-puzzle game. Student perception was also higher than the mean value on the evaluation scale. This strong impact of the game base learning strategy on students' perceptions suggests a potential instructional benefit of this activity beyond the mere novelty factor.<sup>4</sup>

Subsequently, a faculty-led student research team developed a Top 200 drug information escape room based on five separate domains : Brand/Generic, Dosage Forms, Indications, Schedule, and

## Gamification article continued...

and Therapeutic Category of drugs. The overall goal of this activity is to provide a tactile learning experience that will improve academic performance pertaining to drug information.

The escape room is designed to heighten students' critical thinking ability and recollection of the top 200 drugs as they progress through the challenge points planted throughout the room. The students are divided into groups of four and begin the exercise. Throughout the entirety of the exercise, the students are timed for 21 minutes and monitored by the investigators of the study through the audio and visual surveillance system built into the rooms.

Upon entering the room, the four students will simulate a team-building activity to attain all four keys to lock up the pharmacy. There

Obstacle	Educational Topic	Skill Demonstration	Gaming Task	a C
1	Brand/generic names of top 200 drug cards; Drug Indications	Identify drug indications Match brand and generic	Decipher a given code;	k i c s F
		names of drugs		s
2	Brand/generic names of top 200 drug cards; Brand/Generic	Demonstrate the ability to match brand and generic drugs	Trivia; Combination lock decoding.	
3	Brand/generic names of top 200 drug cards; Therapeutic Category	Classify drugs Identify controlled sub- stance medications Identify drug dosage forms	Trivia; Coded message; Combination lock decoding.	L L a L i v
4	Brand/generic names of top 200 drug cards; Dosage Form	Identify drug dosage forms	Coded message; Data hunt.	t c t c t
5	Brand/generic of top 200 drug cards; Therapeutic category	Classify drugs	Puzzle; Coded message;	le t s li

re nine groups of four stuents undergoing the teamuilding activity in separate dentical rooms. As the exerise begins, the participating tudents are given a sheet of aper orientating them to the etting of the room, their final bjective, and initial clue. lues, decoding charts, locked oxes, and puzzles are availale in the Escape room. Within ach challenge, the particiants will attempt to solve uzzles, decipher codes, and omplete matching activities. Ipon completion of each chalenge, the students will obtain key that aids them in locking p the pharmacy. After obtainng all four keys, the students ill continue to work together o solve the final puzzle and btain the final key to release hem from the room and conude the team-building activiy. The following section outnes the tasks of each chalenge point as well as the eaching points within each tage.

In summary, we hope the escape room gaming concept

can be adapted to other topics or disease states at this and other institutions. The intangible skills of self-confidence, critical thinking, problem solving, and teamwork are critical developmental skills that could be enhanced or brought to light from this activity and cannot always be observed or taught during traditional classroom settings, yet are necessary for becoming a successful pharmacist.

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Dr. Meredith Howard

### Core Principles of Curricular Adaptability and Agility During Times of Significant Change

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Dr. Marian Gaviola The COVID-19 pandemic has enacted far reaching changes for higher education, including pharmacy education. Colleges and schools of pharmacy were challenged to implement swift curricular transitions, modify assessments, and adapt experiential rotations in spring 2020. During normal times, quick changes to curriculum are challenging, but moving forward, we know to expect the unknown. This may include further changes to how students learn in this environment or how we pharmacists practice. As a traditional 4-year program, we encountered numerous challenges during the spring semester and continue to remain adaptable. We identified four core principles from a faculty and curriculum administration standpoint that helped us stay nimble and pivot our curriculum to meet the needs of our students, faculty, staff, and preceptors: 1) inclusive bi-directional communication; 2) goal-oriented learning; 3) mindfulness of the spectrum of flexibility; and 4) wellbeing at all levels.

#### Inclusive Bi-directional Communication

In the early stages of the pandemic, it was imperative to

develop communication lines that were inclusive and effective. With email communication being the default for most, we deviated from the norm and aimed for easily read, readily available information for all. We partnered with student leaders to identify what obstacles they were facing. With transparency as a focus, we used cohort-specific dashboards that collected and shared curricular and student assessment information in real -time. One important tool during this transition was a cloudbased comprehensive calendar view of all course meetings, assignments, and high-stakes assessments. Both student leaders and our course directors could edit this document to capture most recent changes. This provided access to the information and allowed faculty to identify busy weeks needing adjustment. In combination with reports on student performance, we were able to disseminate information on upcoming obstacles students may face. While high stakes assessments are preplanned intentionally prior to the semester, COVID-19 brought about change requests, and shifts in low stakes homework assignments or other activities.

This tool was useful refereeing requests from students to alter scheduled activities and communicating why changes could or could not be made.

#### **Goal-oriented Learning**

With a didactic curriculum heavily focused on active learning, consisting of didactic sessions blended with case studies and other active learning activities such as minidebates, learning games, etc., it was especially challenging as faculty to wrap our minds around limiting activities. Considering two main goals of focusing on competence and looking towards graduating practice ready pharmacists with the requisite knowledge, skills, and experiences, it was important to streamline learning activities to those mapped to essential competencies. We focused on the fact that competency expectations remain the same but how we get to them may look different. Course directors were encouraged to reassess essential activities that meet the objectives of their courses. Intentional changes that still achieved overarching goals allowed us to optimize time without lowering standards. One such example includes the

1

## Curricular Adaptability article continued...

APPE boot camp which typically takes place as a live, two-day session on clinical and skills-based topics. It was converted to a 4-hour online session that prioritized core information necessary for APPEs including an orientation to key resources and skills. Ideally, students would have been able to practice clinical skill-building activities, however, obtaining the knowledge and building blocks to succeed on rotations was sufficient.

This same goal-oriented learning concept rings true for experiential rotations. Can students truly learn all that they need to in a rotation that has shifted virtually? Through working closely with preceptors to review rotations goals and objectives, some rotations could be redesigned to ensure safety of students, preceptors, and patients in the virtual realm. While virtual rotations may not always be ideal, it is also important to expose students to the reality that many pharmacists had to shift to remote telepharmacy practice in various settings.

#### Spectrum of Flexibility

As we collected information and identified specific short-term goals, we also had to be mindful of what realistic changes could be made and what portions of our curriculum were inflexible. We conducted a survey of unfinished activities, mapped each to a specific goal, and graded its feasibility given the current atmosphere. We found that courses could pivot quickly, albeit not always easily, to meet the needs of students as public health guidelines limited in-person sessions. Faculty and students were willing to adapt to new modalities of teaching and learning, but we had to communicate available resources effectively to all stakeholders.

While some activities could be accommodated, such as shifting the third year capstone Objective Structured Clinical Examination to an entirely virtual format, some could not. For activities that could not be accommodated, some shifts were made, including postponing in-person skills lab assessments to the fall semester. Conversely, we found that some changes were outside of our control, especially when some experiential sites were unable to precept students. Effective communication along with goal-oriented planning bolstered resilience. With flexibility, we maximized the utility of new activities we developed or adjusted in order to achieve specific competencies. Finally, knowing what could be changed versus what could not allowed us to make quick decisions as the pandemic progressed.

#### Wellbeing at all Levels

The final principle we found governed most of our decisions at the beginning of the pandemic and moving forward was a 360-degree approach to wellbeing. Pandemic aside, stress and uncertainty may become overwhelming with any significant change. Through open lines of communication with students, faculty, and staff, it was vital to keep a pulse on stress levels and curricular changes which may be overwhelming. One approach is providing different levels of support to students depending on needs, whether through open office hours, optional assignments focused on stress relief or happy reflections, lending a listening ear, or checking in on individual students. These concepts have helped shape the structure of our curriculum in the fall, when and how assignments are due, and extra wellbeing initiatives to support students.

These same concepts should extend to faculty, whether it be check-ins, non-work related virtual gatherings, and allowing a bit of grace during uncertain times.

#### Summary

Like all pharmacy educators across the country, we faced changes and obstacles within a very short period of time. We also learned a great deal from both our successes and failures. As we transition to alternate teaching and learning modalities this fall, it is important to reflect upon what we were able to accomplish this past semester and identify specific tools and grains of wisdom that would be important to carry-forward in the future. While we listed principles that were extremely helpful during a high-stress, everchanging environment, these principles still hold true, especially as we try to find our footing in a new normal for pharmacy education during pandemic times.



### **Development of Medical Writing Skills in Pharmacy Learners:** A Student and Faculty Perspective



Dr. Renad Abu-Sawwa Renad Abu-Sawwa, PharmD, BCPS Clinical Assistant Professor, University of Georgia College of Pharmacy; Augusta, GA

Pharmacists are one of the most versatile healthcare professionals with training to practice in a variety of clinical and non-clinical settings. Pharmacy educators focus on the development of patient care, or clinical skills. One of the strongest assets of pharmacists is their non-clinical skills, including drug information, literature evaluation and medical writing, further enhancing clinical skills. Given the breadth of career opportunities within the profession, it is imperative that pharmacy students develop a strong foundation of both skill sets. Medical writing is a symbiotic intermingling of clinical and non-clinical skills. It is an all-encompassing term that includes writing pertaining to medical journalism, education, marketing, publications, and other research and regulatory documents1. Requirements for medical writers include strong written communication skills in addition to domain knowledge, which includes knowledge of medicine and pharmacotherapy, drug development process, pharmacology and drug safety, statistics and technical guidelines1. Pharmacists have a unique role in the realm of medical writing regardless of setting, as their training includes a strong foundation in the aforementioned domain knowledge. In addition to the strong foundation in domain knowledge, pharmacy education accrediting bodies emphasize the importance of developing communication, critical thinking, and literature evaluation skills per the 2016 American Council for Pharmacy Education (ACPE) standards and 2018 American Association of Colleges of Pharmacy (AACP) Academic Affairs Committee's published fifteen core entrustable professional activities (EPAs), which assess students' level of "practice readiness" upon graduation 2-4. Despite this, it has been reported that pharmacy learners not only need further development of research and writing skills but also perceive research and medical writing skills as not very important.

#### **Faculty Reflection**

As a pharmacy educator, it became evident that students would benefit from supplemental activities that focused on the development of medical writing skills. Reflecting back to my training as a pharmacy student and resident, it became apparent that my medical writing skills were cultivated through a variety of deliberate, hands-on opportunities throughout my pharmacy education, training and career. I set out to develop a variety of opportunities for pharmacy students to cultivate these medical writing skills both as extra-curricular activities and embedded in their didactic and experiential education. The objective was to develop strong written communication skills and simultaneously enhance other professional skills including but not limited to literature evaluation skills, critical thinking, verbal communication, metacognition and self-reflection. Students were provided with a variety of medical writing activities including institutional newsletters, review articles, case series, and self-reflection writing activities . Many of these aforementioned activities were opportunities to incorporate proactive students into my scholarship endeavors as extracurricular opportunities. As a preceptor for these activities, it is important to gauge baseline skills for each student in order to align their strengths and areas requiring improvement with an appropriate activity. Lessons learned from this experience, students improved their (1) medical writing skills (2) synthesis of their clinical and non-clinical skills (3) self-reflection. Having had several students participate in various individualized medical writing activities with me and the overwhelmingly growing interest from incoming students, I formalized these activities into their didactic curriculum, including offering an elective focusing on research and medical writing, incorporating medical writing activities in a pediatric pharmacotherapy elective and incorporating at least one medical writing activity in my APPE rotation, including but not limited to institution-

## Medical Writing article continued...

institutional newsletters, case series, review articles in addition to a required self-reflection exercise after reading a book on the suggested reading list.

#### **Student Testimonials**

"My extra-curricular writing experience was deeply educational, allowing me to expand my primary literature evaluation and editorial skills. Within our curriculum, we were taught basic primary literature evaluation with regard to statistical evaluations and reporter bias. This provided a basis for students to comprehend the basics of evidence-based medicine and the implementation of primary literature evaluation into our practice. However, in order to draw a well-rounded ...conclusion that impacts patient care, a deeper understanding of the literature is required. I was able to critically analyze various studies, utilize multiple sources to form a conclusion, and suggest additional areas of research to expand our understanding of the specific therapy we evaluated. Additionally, understanding the editorial process and requirements of publication was such a valuable and unique skill to gain as a student. This process is not typically discussed within the curriculum and is something that I will be able to carry into my profession. Lastly, my experience in medical writing has made me not only appreciate the current literature but also become more a critical practitioner through my primary literature evaluations. I believe that this experience is something that all pharmacy students should complete to not only enhance our clinical knowledge, but to enhance their understanding of the medical writing and editorial process. "

"Medical writing skills are a critical component in the professional development of pharmacy learners. Although pharmacy school didactic curricula do not place a large emphasis on the development of medical writing skills, said skills allow students to develop mentoring relationships with faculty and preceptors, enhance their written communication skills, and become published. Because medical writing skills are taught in very few courses, I gained most of my experience through extracurricular involvement and seeking opportunities with college of pharmacy faculty and preceptors. I gained my first faculty mentor at the end of my second year of pharmacy school through a writing project for an institutional primary care newsletter. At the time medical writing proved to be a more different and challenging experience than what I was familiar with in writing as an undergraduate student. Establishing a flow, analyzing and drawing conclusions from primary literature, and appropriately referencing and citing sources is something I often struggled with in the beginning. Feedback from my mentor was extremely valuable throughout the entire process and allowed me to become comfortable with medical writing. Since then, she has gone on to serve as my preceptor for multiple writing and research projects. Developing medical writing skills has allowed me to express myself more efficiently in essays and become a more competitive candidate for internships, scholarships, and awards.

Additionally, publication experience is also beneficial to any student interested in pursuing a residency or a career in academia. I believe that the development of medical writing skills has allowed me to become a more well-rounded student and improve upon my communication skills ."

#### Lessons Learned

Medical writing is a not only a fundamental skill but a duty of any academic clinician in the healthcare industry. As healthcare educators it is our duty to participate not only in the dissemination of medical writing but to teach it our learners, the next generation of clinicians. Structuring deliberate medical writing activities should not just be afforded to the proactive learner seeking extra-curricular activities but should be embedded into the didactic and experiential education to develop this skill in order to

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- 1. Sharma S. How to become a competent medical writer? Perspect Clin Res. 2010;1(1):33-37.
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#### **Delivering an Online APPE Rotation in the United** Arab Emirates

#### Jumana Al-Salloum, Pharm D, R.Ph., M.CP-ID, Clinical Preceptor, College of Pharmacy, Gulf Medical University, U.A.E.

The year 2020 has been unique for many students as the COVID-19 pandemic drastically changed the teaching method for nearly all students. In United Arab Emirates, all schools and universities have turned to distance learning for both didactic education and clinical training. At our college of Pharmacy, which is part of other medical colleges at Gulf Medical University, we followed the same in all areas of teaching including the final year of Advanced Pharmacy Practice Experiences (APPE) within the Pharm.D. program.

It was a big challenge to transform the on-site acute conditions such as status epilepticus or APPE training into virtual rotations and ensure acute kidney injury management), cases with fulfilling rotation outcomes. We started with the Adult Acute Care rotation as the first man- tation, and instructions for the interns to datory clinical rotation to be delivered online. guide daily preparation. A sample of instruc-Preceptors conducted the sessions remotely tions and plan for the selected tasks is shown through the GotoMeeting platform following in Figure 2. During the online meeting time, a scheduled meeting times which were previ- fruitful discussion among the interns was initiously shared with the interns. Usually this rotation covers three clinical sites in the hospital, starting with the emergency department, intensive care unit, and postoperative care seen during a sepsis case discussion; interns unit. By the end of the rotation, APPE interns were asked to choose the best treatment opare exposed to various experiences shadowing tion among given vasopressors and fluids the clinical pharmacist in the selected areas to design acute care plans following the Pharmacists' Patient Care Process (PPCP) and focus on the management of different types of patients.

This rotation is considered to be a core rotation of the APPE year. The experience has a very rich syllabus and daily plan to expose the intern to the intended objectives of the rotation, such as assessing patient medical/ medication history and medical records in order to identify drug therapy problems, formulating pharmacotherapeutic and discharge plans to include drug, route, dose, interval, therapeutic endpoint and monitoring parameters, and interpreting medical literature, etc. As a lead preceptor of this rotation, it was a challenge to transform the well-designed clinical rotation into a virtual one, delivered through distance learning technology. With the help of lead faculty, we were able to rede-

sign a new plan with specific tasks and topics to be discussed on a daily basis covering all the aspects of the acute care rotation.

We utilized many valuable resources, including the recommended ones in the course syllabi (e.g. pharmacotherapy casebook by Joseph T. DiPiro and ASHP Critical Care cases that were available for free during the pandemic) to build up the needed daily topics and tasks. An illustrated daily plan (Figure 1) was designed to include topic discussions in selected areas (e.g. emergency toxicities management, clinical questions on alternate days of the roated by the clinical questions designed to trigger critical thinking on the most appropriate management strategy. A good example was (0.9% NS / Dobutamine / Noepinephrine) to increase the mean arterial blood pressure (MAP) of a particular patient to a goal of 60 mmHg. Interns were asked to not only give the right answer, but to justify their selection based on the case scenario and according to the Surviving Sepsis Campaign (SSC) guidelines.

The other main challenge we faced was providing the "real patient" experience. We utilized SkillGym, an online subscription platform provided by our university, for patient interviewing and Cyberpatient, a free online platform, for patient assessment. These online platforms actually allowed for more time spent interviewing patients than may have been possible during face to face interactions.

Patient counseling and communication with health care professionals were other



Dr. Jumana Al-Salloum

## **Online APPE article continued...**

other challenges confronted during the distance learning rotation. To address this, we had to set appointments with a volunteer physician or nurse to participate in sessions on effective communication. This was challenging as doctors and nurses were busy during the COVID-19 pandemic, and having one session with more than 3 interns at a time made it more time consuming for the preceptor to give individualized training. For example, the preceptor would give the intern a case and request the intern determine the drug related problems through creating an individualized care plan and convey the problem with a recommendation to the healthcare professional utilizing effective communication skills.

The rotation assessment tool remained the same, but the assessment approach was different as delivery mode changed. Traditionally, the onsite student would be assigned one task to perform on the spot while being observed by the preceptor. However, to accommodate distance learning, we prepared an Objective Structured Clinical Examination (OSCE) to assess some of the clinical skills on an individual basis, including medication history, patient education and counseling, identifying drug related problems, and communicating drug information to a healthcare provider. Observing interns' online interactions along with the OSCE allowed preceptors to assess individual learners utilizing the 'Center for the Advancement of Pharmaceutical Education' (CAPE-

based) APPE assessment tool.

Days	Topic Discussions / Cases	1001.	
1	Topics: 1- Role of Pharmacist in Emergency Department 2- Triaging System in Emergency Department	In my point of view, on- site training in the hospi- tal is still the best option, as APPE interns encoun- ter a variety of patients in this setting, which may be compromised with distance learning. Addi- tionally, university sup- port is required to supply necessary learning re- sources. However, we can consider that despite	
2	Virtual - Emergency Cases (GIT+RT+CVS for history)		
3	Topic: 1- Storage and distribution of medication in acute settings 2- Rational use of Intravenous medications & IV to Oral switch 3- WHO pain ladder and Principles of Pain Management		
4	BCCCP- Sepsis in Critical Care		
5	Topics: 1- Principles of Nebulization - pediatric and adults 2- Black box Warning and recent FDA approved drugs		
6	Virtual - Pediatric + CNS case for history	the encountered	

#### Figure 1

challenges during the COVID-19 pandemic and the increased efforts required in preparation and delivery of a virtual rotation, interns were able to achieve the intended learning outcomes.

#### TASK-B (Day3+4)

Learning Objectives (Moodle) | Instructions (Moodle)

#### **Topics Provided for daily discussion**

Preparation for Day-3: Interns must read the topic and prepare for it via reading

#### Day-3 — [Topics Discussion]

Preparation for Day-4: Interns must read the case and prepare for it via PPCP or reading

#### Day-4 — [Sepsis Case Discussion]

Interns should perform PPCP for the case + Daily log + Topic reflection in Lesson activity

## Member Spotlight

#### Eliza Dy-Boarman, PharmD, BCPS

Dr. Eliza Dy-Boarman is an Associate Professor of Pharmacy Practice at Drake University. She received her Doctor of Pharmacy degree from Butler University in 2011 and completed a co-funded 24-month pharmacotherapy residency with Indiana University Health and Butler University. She is a Board Certified Pharmacotherapy Specialist and maintains a practice with the inpatient family medicine team at UnityPoint Health-Iowa Lutheran Hospital. In addition to teaching students at her clinical site, Dr. Dy-Boarman teaches a continuing professional development course and a variety of topics in a lab-based skills course. She is also the Advanced Pharmacy Practice Experience and P2 Introductory Pharmacy Practice Experience coordinator for her institution. Dr. Dy-Boarman has been an active member of the Education and Training PRN since 2012 and served as the PRN's Chair from 2017-2018. She is also engaged in the American Association of Colleges of Pharmacy (AACP) and just recently joined the Currents in Pharmacy Teaching and Learning Editorial Board. Her research interests are focused on the scholarship of teaching and learning, and she was recognized by AACP for her scholarly accomplishments with the Emerging Teaching Scholar Award in 2019. Dr. Dy-Boarman lives in Des Moines, Iowa with her husband, Robert, and two children, Ezra (3) and Leah (5 months). In her limited free time, she enjoys doing CrossFit, practicing her calligraphy skills, and baking.

#### What inspired you to be a pharmacist?

I decided that I wanted to become a pharmacist when I was only 16 years old. I attended a science career fair at my high school and had the opportunity to speak with a pharmacist. I was attracted to all of the different career pathways that she described, and I enjoyed hearing about how she utilized her knowledge and skills to positively impact patient care. After shadowing a hospital pharmacist later that year, I was confident that this was the profession for me!

#### What drew you to your area of practice?

I was fortunate enough to have great mentors throughout school and residency who identified and fostered skills that led to my pursuit of a career in academia. Based off of a recommendation from a mentor, I completed an academia rotation during my APPE year. That APPE prompted me to seek out residencies that would provide more training and exposure to teaching and mentoring students. My two years of residency offered me a number of opportunities to precept, lecture, and mentor students, all of which further solidified my interest in pharmacy education. I love the challenging, rewarding nature of the work that I do every day, and I feel honored that I can play a role in helping students achieve meaningful personal and professional lives.

#### Why did you decide to join the EdTr PRN?

I was encouraged to join the EDTR PRN by my residency program director, Sarah Nisly. I was looking for a way to further engage in ACCP, and the EDTR PRN's mission to promote interactions between educators across the academy matched my professional goals and development needs. I continue to be a part of the PRN after all these years, because the members of this PRN have been so supportive and have inspired me to engage in a multitude of ways!

""My practice has benefited greatly from the relationships I have built through the EDTR PRN. I have learned so much from my interactions with other PRN members (both faculty and nonfaculty) who engage in teaching across all levels. "





"I think being part of a community is especially important now during the COVID-19 pandemic as all pharmacy educators needed to pivot in didactic and experiential course delivery and assessments. I love learning about what my colleagues are doing at their institutions and to develop new

## **Member Spotlight**

#### Julie Kalabalik-Hoganson, PharmD, BCPS, BCCP

Dr. Kalabalik-Hoganson is Chair of Pharmacy Practice and Associate Professor at Fairleigh Dickinson University (FDU) School of Pharmacy and Health Sciences. She joined FDU in 2013. She is a registered pharmacist in New Jersey and is dual board certified in pharmacotherapy and critical care. Dr. Kalabalik-Hoganson has authored multiple peer-reviewed publications and has been featured on national television by CBS News and quoted by multiple media sources including *Newsweek, U.S. News and World Report,* and *The Hill.* She is the Director of the Council on Public Policy for the New Jersey Society of Health-System Pharmacists and is a state delegate for ASHP. She received her PharmD from St. John's University College of Pharmacy and Health Sciences in 2008 and completed her PGY-1 residency training at Valley Hospital in New Jersey and PGY-2 critical care residency at New York Methodist Hospital in Brooklyn, New York. Dr. Kalabalik-Hoganson was Clinical Assistant Professor at Rutgers University and critical care pharmacotherapy specialist at Somerset Medical Center from 2011 to 2013. She is currently pursuing her Master in Public Health degree.

#### What inspired you to be a pharmacist?

I have always been fascinated and humbled by the interworkings of the human body. I enjoyed learning about how the body works, heals, and adapts and how medications combat diseases. I also internally struggled with observing human suffering and the consequences of disease. Being a pharmacist means being able to play a part in alleviating another human being's pain or ailment. This is an honor and I am happy to be able to help others.

#### What drew you to your area of practice?

I found myself attracted to the field of critical care. Why? (1) I could help the most unstable patients, (2) I could see the pharmacological effects of medications quickly, allowing rapid change of patient management, and (3) the critical care pharmacist is a valued member of the multidisciplinary ICU team. A few years later, I had the opportunity to transition to a highly teaching focused, tenure-track position at FDU. I have the opportunity to introduce the world of pharmacy to students and mentor them in their early careers. I find this very rewarding and am delighted to help students excel.

#### Why did you decide to join the EdTr PRN?

I joined the EdTr PRN because I believe in the strength and value of a community of peers. I joined to learn from my colleagues and contribute my experiences with the hopes of an interchange of ideas and innovations. I think being part of a community is especially important now during the COVID-19 pandemic as all pharmacy educators needed to pivot in didactic and experiential course delivery and assessments. I love learning about what my colleagues are doing at their institutions and to develop new professional connections.

#### How has the EdTr PRN positively affected your practice?

Christopher Giuliano, Sean McConachie, and I received the ACCP EdTr PRN Teaching Enhancement Grant in 2019 for our project entitled "Can IBM Watson Improve Pharmacy Student Use of Micromedex?". We were grateful for this grant that supported our research. The manuscript describing our study results is accepted for publication in the *Journal of Medical Library Association* in spring 2021. I appreciate the EdTr PRN because it connects me with colleagues to share ideas on how to improve pharmacy education in various settings, amidst a pandemic and a time of change for our profession.

#### **Promotions**

- Denise Kolanczyk, PharmD, BCPS AQ-Cardiology: Promoted to Associate Professor with Tenure, Midwestern University Chicago College of Pharmacy
- Adrian Sandoval, PharmD, BCPS, BCACP: Promoted to Associate Professor of Family Medicine, UTRGV School of Medicine
- Mate Soric, Pharm.D., BCPS, FCCP: Promoted to Chair, Pharmacy Practice, Northeast Ohio Medical University College of Pharmacy

Damien Fisher PharmD., AE-C: Promoted Asthma Coalition Board Houston

Alex N. Isaacs, PharmD, BCPS - Promoted to Clinical Associate Professor of Pharmacy Practice

Meredith Howard, PharmD, BCPS - Promoted to Associate Professor of Pharmacotherapy, University of North Texas System College of Pharmacy

#### Awards

Takova D. Wallace-Gay, PharmD, BCACP: Texas Pharmacy Association Bowl of Hygeia Award

- Mate Soric, Pharm.D., BCPS, FCCP: Journal of the American College of Clinical Pharmacy Top Downloaded Paper 2018-2019
- Damien Fisher PharmD., AE-C: Walmart Scholar AACP Mentor/Mentee Award
- Kristin Janzen, PharmD, BCPS: Educator of the Year, The University of Texas at Austin
- Kristin Janzen, PharmD, BCPS: Wm. Arlyn Kloesel Preceptor of the Year, The University of Texas at Austin
- Kristen Cook, Pharm D, BCPS: Innovative Practices in Education, University of Nebraska Medical Center
- Lynn Stevenson, PharmD, BCPS Auburn University Harrison School of Pharmacy's 2020 Rho Chi (Zeta Chapter) Society Alumni Honor Roll
- Karen L Kier, PhD, BCPS, BCACP, FASHP ACCP Drug Information PRN, Distinguished Practitioner Award, October 2019
- Sarah Vordenberg, PharmD, MPH, BCACP University of Michigan College of Pharmacy Teaching Excellence Award
- Kali M. VanLangen, PharmD, BCPS: Ferris State University Academic Scholar Award, April 2020
- Damien Fisher PharmD., AE-C: University of Houston College of Pharmacy: American Association College Walmart Scholar Program June 2020
- Meredith Howard, PharmD, BCPS: University of North Texas System College of Pharamcy Pharmacotherapy Professor of the Year, October 2019

#### **Grants**

- Tsitsi G MoneraPenduka; Research in Education and Mental Health in LMICs during the COVID19 pandemic grant; International Pharmaceutical Federation Academic Pharmacy Section (FIP AcPS); Euro1500; Principal Investigator
  - Operation Naloxone. Co-Principal Investigator. University of Texas Health Science Center San Antonio Community Service Learning (UTHSA CSL) Grant, \$4,000.
- Kelly Cochran, PharmD, BCPS; Co-Investigator: An Innovative Model to Increase Primary Care Physicians for Rural and Underserved Missouri; HRSA Medical Student Education Program: \$4.2million

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#### New ACCP Fellows:

Mate Soric, Pharm.D., BCPS: Fellow

#### **Other Notable Achievements:**

Daniel Longyhore: Success defense of dissertation towards earning a Doctor of Education degeree

Erin Maggie Jones, PharmD, CSP: Graduate Student Online Teaching Certificate (Penn State); Instructional Practice Certificate (Penn State); Team-Based Learning Certificate (University of Florida/Team-Based Learning Collaborative)

Brianna McQuade, PharmD, BCACP - graduated Masters in Health Professions Education (University of Illinois at Chicago Department of Medical Education)

Tsitsi Monera-Penduka, appointed Council Member for the Pharmacists Council of Zimbabwe, the national pharmacy regulatory body.

Laura K. Sjoquist, PharmD: Assistant Professor of Teaching in Pharmacy Practice (previously was a fellow at UNC), The University of Findlay College of Pharmacy

Laura K. Sjoquist, PharmD: Completed 2-year Experiential Programs Academic Fellowship at UNC Eshelman School of Pharmacy

Cheng Yuet, PharmD, BCACP: Credentialed as Certified Diabetes Education and Care Specialist (CDCES)

Cheng Yuet, PharmD, BCACP: Appointed to iForumRx Advisory Board for 2020-2022



### **Updates 2019 Teaching Enhancement Grant**

#### Well-Being and Resilience Integration into an Intensive Pharmacotherapy Course

Kristine Mason, Pharm D, MS Co-Investigators: Maria Pruchnicki, Pharm D, FCCP, BCPS, BCACP, CLS & James W. McAuley, PhD, FAPhA

The ACCP Education and Training PRN grant supported integration of well-being skill building activities into a large interdisciplinary team-taught course at The Ohio State University College of Pharmacy. As a new faculty member, I was excited to find new ways to continue on my well-being journey after completing my residency research on burnout and resilience in community-based pharmacist practitioners. We know that this is an issue in practice, so who is to say it isn't just as important for our students during their education? Doctor of Pharmacy (PharmD) students complete rigorous and integrated curricula with multiple components, including didactic, co-curricular, and experiential training and often also supplemented with extracurricular and paid internship activities. If we want to equip our students to be resilient practitioners, we first must guide them to be resilient students.

We developed a variety of well-being education and practice activities, incorporated into both in-class and out of class sessions. While all sessions and activities were optional, the in-class activities did occur during required class sessions. Our in-class sessions, "Take 5s", were strategic pauses of about 5 minutes designed to create opportunities to develop and be mindful of our own wellness, for both faculty and students. Each was intentionally diverse, to address all of the University's 9 dimensions of wellness. Examples include guided meditation and deep breathing during exam weeks, chair yoga and step challenges during class breaks, and voting on art challenges and which is the best budgeting app to use. Though short, each logistically fit into busy class sessions and demonstrated to students that it does not take a lot of time to promote your own well-being. Instructors also appreciated being able to participate and model wellness behaviors that could be easily mixed into the day (even when we all were feeling endlessly busy).

To supplement the "Take 5s", in-depth sessions created opportunities for students to "dig deeper" to learn more about the impact of burnout on healthcare providers and how they can adopt a preventive approach. "Well-being Workshops" were focused on reviewing consensus documents and published literature, creating and adopting student-generated strategies for course wellness, using technology assisted biofeedback training, and instituting finals week trivia nights. These sessions allowed students better understand the science of wellbeing and to see that their well-being extends beyond focus on healthy diet and physical activity.

The EDTR grant funding allowed us to support these activities with needed tools and resources, and also to incentivize students for investing in their own well-being with small tokens of appreciation. Some examples include providing healthy snacks for early morning sessions or long days, office supplies for collaborative strategy sessions, or even sweet treats from local bakeries for art contest winners! The high-profile implementation and sustained support over the academic year created and sustained our overall culture of well-being and caring for each other. This proved to be much appreciated (and critical) in a course that is high-stakes and highstress for the entire cohort of students, faculty, and staff involved.

This project was brought to fruition and able to be successful thanks to the generous grant awarded by the EDTR PRN. Looking into the future, we plan to expand these integrated well-being efforts into other course sequences throughout the PharmD program, and to enhance the connection to university wide efforts. Due to the additional challenges and student needs related to well-being in the time of COVID, our team is creatively implementing "just in time" virtual activities and resources to continue to engage students even though we aren't face-to-face in the classroom. We are so thankful for this award and look forward to sharing more about the project and its expansion in the future.

### **Updates 2019 Teaching Enhancement Grant**





Julie Kalabalik, Pharm D, BCPS, BCCP

Co-Investigators: Christopher Alan Guiliano, Pharm D, MPH and Sean McConachie, Pharm D

We are grateful for the generous grant from the EDTR PRN that made this multicenter, randomized comparative trial of Micromedex with Watson, Micromedex without Watson, or Google possible. We look forward to sharing our findings in more detail in a published manuscript.

#### Background

Pharmacy students today are familiar and comfortable with technology from a young age, often referred to as the "Google Generation." Although this generation has matured in an information-rich era, they may lack understanding of how information is structured online and desire quick answers which may contribute to poor search strategies and reliance on search engines. Search engines like Google are easy to use but may include blogs, anecdotal experiences, outdated information, or basic medical information that is not patient-specific.<sup>1-3</sup> Micromedex<sup>®</sup> is a clinical decision support system used to find information related to medications, disease states, toxicology, and alternative medicine. This database is commonly used by pharmacists and medical librarians to teach healthcare students how to identify reliable and accurate drug information. In 2018, International Business Machines (IBM®) incorporated Watson™ into Micromedex. Watson uses natural language processing, hypothesis generation and evaluation, and dynamic learning to provide answers to a stated question. The format for entering questions is similar to Google, although the information provided is from Micromedex, which should improve reliability. Understanding which resources provide the correct answers in the shortest time is important as healthcare professionals and trainees have limited time in practice. No studies to date have been performed evaluating Micromedex with or without Watson compared to Google in the setting of answering drug information questions. Therefore, the purpose of this study is to compare pharmacy students' drug information responses using Micromedex with Watson, Micromedex without Watson, or Google.

#### Methods

We conducted a multicenter randomized controlled trial comparing pharmacy student responses to drug information questions using Micromedex with Watson (Watson), Micromedex without Watson (Micromedex), or Google from January to March of 2020. First to fourth year pharmacy students ≥ 18 years of age at Wayne State University Eugene Applebaum College of Pharmacy and Health Sciences and Fairleigh Dickinson University School of Pharmacy and Health Sciences were included. No exclusion criteria were present. IRB approval was obtained at both institutions prior to the start of the trial.

The primary outcome was the number of correct answers from a series of drug information questions. Secondary outcomes evaluated the time taken to answer the questions across drug information resources and differences in number of correct answers by pharmacy student year and institution. Students were recruited during a lunch event and via subsequent emails sent at both institutions. Pizza was provided as an incentive and students were entered into a raffle for one of five \$50 gift cards. The questionnaire consisted of a total of 20 questions comprising 10 main constructs with two questions per construct and was delivered through Qualtrics<sup>®</sup>. These included indication, adult dosing, pediatric dosing, contraindications, black box warning, drug interaction, intravenous compatibility, monitoring parameters, and storage. Questions were developed targeting medications not commonly used to decrease the chance that student past knowledge would drive responses. Content validation of the questionnaires was performed by three pharmacists and five pharmacy residents.





### IBM Watson article continued......

#### Results

A total of 276 students began the questionnaire in the study period, of which 172 completed all questions. Following deletion of duplicate entries (n=10), 162 responses were included in the final analysis including 52 students in the Micromedex group, 51 students in the Watson group, and 59 students in the Google group. The majority of participating students were from Wayne State University (66%), female (69%), and most had obtained a bachelor's degree prior to enrollment in the PharmD program (82%). The average age of the participants was 25 years old and the median year in pharmacy school was year three. In terms of prior experiences, most students were currently employed in the community setting (57%) and the most common career goal was to pursue a residency or fellowship following graduation (37%). The usage of various drug information resources in regular practice varied widely across the population. At baseline, 61% of students indicated they utilized Micromedex at least weekly, 31% of students indicated they used Watson at least weekly, and 81% of students indicated they used Google for drug information at least weekly.

The three treatment groups were well-balanced in terms of demographic characteristics with the exception of the frequency of baseline Micromedex usage (p=0.01) and randomization to a database that was used by at least weekly by the student (p<0.01). However, neither matching DI database (p=0.44) nor baseline Micromedex usage (p=0.074) were associated with the primary outcome. For the primary outcome, there was a significant difference between groups in the total number of questions answered correctly (p = 0.02). Post-hoc analysis revealed that participants randomized to Micromedex answered significantly more questions correctly than those randomized to Google (mean difference = 2.18; p = 0.015). Those randomized to the Micromedex group did not answer more questions correctly than those in the Watson group (mean difference = 0.88; p = 0.52) and there was no difference between Watson versus Google (mean difference = 1.31; p = 0.22). Adjusting for baseline Micromedex use did not change the difference observed in the primary outcome. In terms of the time required to complete the survey, there was no difference identified between the three treatment groups (p=0.72), therefore no post-hoc analyses were conducted. The average time to study completion was 40.3 minutes for Watson, 42 minutes for Micromedex, and 85.9 minutes for Google. There were no differences in results by institution (p=0.78) but there were differences in performance by student year (p=0.007). Number of correct questions trended towards being higher for third and fourth year students as compared to first year students (mean difference 2.96, p=0.008 and 2.41, p=.07).

#### Conclusion

This is the first study to compare students utilizing Micromedex with or without Watson to Google in answering drug information questions. Students using Watson performed similarly to Micromedex when examining the number of correct answers, and Micromedex performed better than using Google. Although time to the correct answer was not statistically significant between groups, this was largely a result of the large variance around the time it took to answer the questions. Our findings have important implications for healthcare educators and pharmacists. We should continue to reinforce that Google will not save students time in answering drug information questions, and the answers that they find are less likely to be correct. Having evidence to reinforce this point is important. These findings suggest that health care educators should further reinforce training on the appropriate use of drug information resources.

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