

ACCP STUNNEWS

Networking in a Small Pharmacy World

Charles M. Summerlin, PharmD Candidate, 2019
University of Maryland School of Pharmacy

“Pharmacy is a small world.” You have probably heard this statement many times. Even though almost 300,000 pharmacists are currently employed in the United States,¹ this statement is nevertheless true.

Consequently, it is incredibly important to network with others in the pharmacy profession.

Networking is obviously important, but how and where do you do it?

Pharmacy School: As a student pharmacist, you have access to many faculty members who are more than happy to help you. All you have to do is ask! Are you interested in one of your professor’s research projects or practice sites? Simply talk to the professor about how you are interested, and it may lead to additional opportunities. Networking with your fellow classmates is just as important. You will likely end up working with some of your classmates in the future. Some may end up being your bosses, and you may reach out to others for opportunities. Making a good impression with them will go a long way toward your future success.

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Professional Organizations: Professional organizations provide many opportunities for networking, whether on a local, state, or national scale. At the University of Maryland School of Pharmacy, several organizations (including the Student College of Clinical Pharmacy chapter) plan panel discussions and roundtable events where students have the chance to meet many different pharmacists. This is a fantastic and easy way to network. Simply chat with pharmacists about their careers and interests. You can ask for their business cards and stay in touch later if you want to follow up with them regarding shadowing opportunities or if you have any questions. If you have a chance to sign up for a mentor, you should definitely take advantage of this opportunity. The District of Columbia College of Clinical Pharmacy, for example, recently sent out an e-mail to student members to sign up for a mentor. This is a great way to network with a pharmacist and receive advice on best preparing for your future. If your chapter does not currently do something like this, it would be a great thing for you to start.

Professional Conferences: Professional conferences give students the opportunity to network with other students and pharmacists from all across the country. The ACCP Annual Meeting is a perfect example of a professional conference where you can network with many individuals. At the ACCP Annual Meeting, attend the Opening Reception to network with other students, residents, and fellows. Check out the Residency and Fellowship Forum as well; this will give you an excellent opportunity to meet with residency preceptors and program directors. If you cannot attend the ACCP Annual Meeting this year, definitely look into going next year to take advantage of these incredible networking opportunities. Just remember to bring a stack of business cards with you!

When you hear the statement “pharmacy is a small world” again, do not simply dismiss it as meaningless. Instead, take advantage of the many opportunities around you and network as much as possible because making meaningful connections can lead to endless opportunities.

Reference:

¹Bureau of Labor Statistics, U.S. Department of Labor. Occupational Outlook Handbook, 2016-27 Edition. Pharmacists. Available at <https://www.bls.gov/ooh/healthcare/pharmacists.htm>. Accessed June 22, 2017.

Important Deadlines

Student Travel Award: August 14, 2017

Clinical Pharmacy Challenge Registration: August 24th, 2017

Early Bird Annual Meeting Registration: September 1, 2017

Clinical Spotlight: Ambulatory Care Pharmacy

Amulya Tatachar, PharmD, BCACP, TTS

Interviewed by Kassie Pfluger, PharmD Candidate, 2018

University of North Texas System College of Pharmacy

Dr. Amulya Tatachar is PGY2-trained and board-certified pharmacist in ambulatory care. She currently serves as an assistant professor in the Department of Pharmacotherapy at the University of North Texas (UNT) System College of Pharmacy at the UNT Health Science Center in Fort Worth, Texas. As part of her clinical services, she works at a patient-centered medical home (PCMH) primary care clinic, which serves the indigent and underinsured patient population of Fort Worth. She received her Pharm.D. degree from the University of Oklahoma Health Sciences Center in Oklahoma City, Oklahoma, and completed both her PGY1 pharmacy practice and her PGY2 ambulatory care residencies at Parkland Health & Hospital System in Dallas, Texas. In addition to being board certified, she is a Tobacco Treatment Specialist (TTS). The TTS certification supports her efforts to help tobacco-dependent individuals eliminate their tobacco use through developing the motivation, confidence, knowledge, and skills needed to achieve cessation and maintain abstinence.

What interested you in clinical pharmacy?

I worked as a pharmacy technician and intern for around 5 years in the community setting. Although I enjoyed my experiences, I wanted to look for other opportunities in the pharmacy field. I was fortunate to shadow an ambulatory clinical pharmacy specialist at Parkland Health & Hospital System and, in doing so, found my passion for clinical pharmacy. I liked the relationships and rapport with patients and providers. I enjoyed that critical thinking and application skills were heavily exercised as a clinical pharmacist. I also appreciated the independence to manage medications to improve patient care and patients' health care experiences. Above all else, I wanted to continuously learn and be challenged, and clinical pharmacy aligned nicely with my goals.

Why did you decide to pursue a residency?

Residency would help me become an expert in my field. Residency provides structured, challenging experiences that would build and expand my knowledge, attitudes, and skills. I knew residency would be an invaluable experience and provide great opportunities for professional and self-development. I strongly believe in lifelong learning, and residency training fit naturally with my goals.

Which specialty area of clinical pharmacy do you practice in?

My speciality is ambulatory care pharmacy and academia.

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(Clinical Spotlight Continued)**Why did you choose to become to become board certified?**

I chose to become board certified to remain well informed and knowledgeable of new advances in medicine through pharmacy practice and continuing education requirements. I also became board certified to distinguish myself in the field of pharmacy. Board certification is a great away to set you apart from others and keeps you updated in pharmacy practice. To be eligible to take the exam for board certification in ambulatory care pharmacy, candidates must meet one of the following criteria after completing a Pharm.D. degree: completion of 4 years of direct practice experience with at least 50% of time spent in ambulatory care pharmacy activities, completion of a PGY1 residency plus 1 additional year with at least 50% of time spent in ambulatory care pharmacy activities, or completion of a specialty (PGY2) residency in ambulatory care pharmacy.

What encouraged you to join ACCP?

I became involved with the local ACCP chapter as a student pharmacist in Oklahoma. I enjoyed the networking opportunities as well as the exposure to different career paths in clinical pharmacy. My career goals to pursue clinical pharmacy aligned with the mission and values of ACCP. ACCP also provided me with numerous resources for professional development.

What involvement have you had in ACCP?

I currently serve as the chapter adviser of the student ACCP chapter on the UNT campus and chair of the mentor-mentee program within the ACCP Dallas/Fort Worth (DFW) chapter, and I have also had past responsibilities as continuing education coordinator with the ACCP DFW chapter. I am also in Practice and Research Networks (PRNs) for ambulatory care, cardiology, and education and training. PRNs serve as a great resource for networking and professional interactions with clinical pharmacists with a common practice.

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(Clinical Spotlight Continued)**How has ACCP been important in your professional development?**

ACCP consistently provides programs on continuing education, opportunities for leadership – especially at the local chapter, modules to prepare for board certification examination, annual meetings, PRNs, journal club, and a lot of educational information specific to ambulatory care pharmacy and other pharmacy interests.

How would you describe your practice site?

I work in a PCMH charity clinic for the indigent and underinsured patient population. PCMHs serve as a “one-stop shop” for patients to have continuity of care in the same clinic for services provided by community health workers for diabetes management, social workers, health coaches to address lifestyle modifications, and behavioral health therapists, in addition to traditional medical providers. Our clinic has two primary care providers: a physician and a nurse practitioner. In this setting, I provide multiple services, including medication therapy management, smoking cessation, and transitions of care. I also serve as a preceptor for pharmacy students on experiential rotations and am the research and academia preceptor for PGY1 community residency pharmacists. As a UNT System College of Pharmacy faculty member, I am the course director for a case studies course, and I teach in multiple integrated pharmacotherapy modules, including renal, cardiology, endocrinology, and special populations. I serve as part of committees within the UNT Health Science Center administration to ensure the curriculum is appropriate and continuously assessed. I am also involved in clinical and educational research. My clinical research interests include cardiology, telehealth, anticoagulation, diabetes, and hyperlipidemia. My educational research interests include improving the student experience and seeking non-traditional approaches to improve student performance and skills. The ultimate goal of my educational research efforts is to find strategies to ensure our students are practice-ready when they graduate pharmacy school.

How would you describe your typical workday at your clinic?

Each day is very different at my work setting. At the clinic, I treat patients and fulfill any administrative duties. These duties include analyzing outcomes, tracking data generated from the clinic, and constantly serving as the main source of communication to patients, providers, and caregivers on behalf of pharmacy and patient medications. I also serve as a mediator between the outpatient pharmacy and the clinic. I work closely with an interdisciplinary team to provide patient care. The team approach helps ensure patients are receiving well-rounded care and improves patient outcomes.

What strategies do you use to stay up to date in your field?

I stay up to date by taking advantage of the continuing education requirements to remain active for board certification requirements, attending webinars offered by ACCP and other organizations, and remaining knowledgeable with new practices through academia.

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(Clinical Spotlight Continued)**What advice do you have for students wishing to pursue a career in clinical pharmacy after graduation?**

Students wishing to pursue clinical pharmacy as a career path should always continue to challenge themselves and pursue lifelong learning, regardless of whether they pursued residency training. This allows for continuous improvement and growth in clinical knowledge and encourages students to stay up to date in the field. When pharmacists become established in their career, it's easy to lose sight of lifelong learning, self-reflection, and professional development. I strongly encourage students to continue to challenge themselves because the medical field is dynamic and always changing. To be a great clinical pharmacist, it is important to always seek any learning opportunity.

What experiences should students seek during pharmacy school to pursue a career in clinical pharmacy? Ambulatory care?

I recommend that students always stay involved in organizations and seek out leadership opportunities because leadership is a big component of a clinical pharmacist's job. All clinical pharmacists multitask, so learning these skills as a student will be beneficial later in practice. A big focus of ambulatory care is developing longitudinal relationships with patients. I recommend that students seek out volunteer or work opportunities that allow for relationship building and application of clinical knowledge. You become part of your patient's family, so it's important to value relationships with your patients.

New Drug Update: Xultophy (insulin degludec/liraglutide)

*Justin Moore, PharmD Candidate, 2018
University of Georgia College of Pharmacy
Reviewed by Andrew Darley, PharmD, BCPS, and
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Midwestern University Chicago College of Pharmacy*

Introduction:

In 2012, 29.1 million Americans, or 9.1% of the population, had diabetes, resulting in an estimated direct medical cost of \$176 billion.¹ Diabetes treatment continues to evolve toward individualized management. Insulin therapies have remained among the mainstay of optimal options for patients with diabetes who do not achieve goal A1C targets. On November 21, 2016, Novo Nordisk's Xultophy (insulin degludec/liraglutide) was FDA approved as an adjunct to diet and exercise to improve glycemic control in adults with type 2 diabetes inadequately controlled on less than 50 units of basal insulin daily or 1.8 mg or less of liraglutide daily.²

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(New Drug Update Continued)

Insulin degludec/liraglutide 100/3.6 is a once-daily injectable combination product consisting of a basal insulin, Tresiba 100 mg (insulin degludec), and a glucagon-like peptide-1 receptor agonist (GLP-1 RA), Victoza 3.6 (liraglutide). This new combination provides clinicians with a novel option for improving glycemic control in patients with type 2 diabetes.¹

Pharmacology:

Once administered, the components of insulin degludec/liraglutide, also called IDegLira in the literature, concurrently lower blood glucose. Insulin degludec serves as an ultra-long-acting basal insulin analog that stimulates peripheral blood glucose uptake and inhibits hepatic glucose production, lipolysis, and proteolysis. Protein synthesis is also enhanced by insulin degludec. With a pharmacokinetic profile similar to insulin glargine, insulin degludec has an onset of action of 1–3 hours, no peak concentration, and a duration of action surpassing 24 hours.³ Liraglutide decreases glucagon secretion, increases the release of glucose-dependent insulin, and decreases fasting and prandial plasma glucose through slowed gastric emptying, as well as provides a potential benefit of weight loss.⁴ Liraglutide's estimated duration of action is almost 24 hours, together with its insulin-sparing effects.¹

Dosage Regimen:

Insulin degludec/liraglutide is available as a prefilled pen to be administered subcutaneously into the thigh, upper arm, or abdomen. Each dosage unit contains 1 unit of insulin degludec and 0.036 mg of liraglutide.¹ The recommended initial dose is 16 units (16 units of insulin degludec and 0.58 mg of liraglutide).¹ The recommended maximum dose of 50 units consists of 50 units of insulin degludec and 1.8 mg of liraglutide. Use of liraglutide in pregnancy and while breastfeeding is not advised because the manufacturers are uncertain of its potential teratogenicity.¹

Clinical Trials:

The approval of insulin degludec/liraglutide was largely based on the results of the DUAL IV and DUAL V trials, which focused on the efficacy of insulin degludec/liraglutide in lowering baseline A1C levels. The A1C lowering of insulin degludec/liraglutide was compared with that of placebo in the DUAL IV trial and similarly to insulin glargine in the DUAL V study. In the DUAL IV trial, insulin degludec/liraglutide was superior to placebo, with 79.2% of patients achieving an A1C less than 7% compared with 28% ($p < 0.001$) in the placebo group. For stricter A1C targets, 64% of the patients receiving insulin degludec/liraglutide achieved an A1C of less than 6.5% compared with only 12.3% ($p < 0.001$) in the placebo arm.⁵ Insulin degludec/liraglutide benefit was also shown in the DUAL V trial, with 71.6% of patients achieving an A1C of less than 7% compared with 47% ($p < 0.001$) of patients using insulin glargine. A weight-neutral characteristic of insulin degludec/liraglutide was also shown: 41.7% of patients treated with insulin degludec/liraglutide had no weight gain compared with 12.5% ($p < 0.001$) of patients treated with insulin glargine.⁴

Clinical Pearls:

The American Diabetes Association's 2017 Standards of Medical Care in Diabetes recommends combination injectable therapy in patients with an A1C of 10% or more or in those whose A1C values are not controlled by basal insulin therapy with or without oral glucose-lowering medications.⁶

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(New Drug Update Continued)

Often, clinicians are hesitant to use combination injectable therapy because of an increased risk of adverse events, including hypoglycemia and weight gain, together with decreased patient understanding. This may result in fewer clinicians incorporating these products into their practice. Insulin degludec/liraglutide is potentially a useful tool to treat patients who have difficulty achieving A1C goals as a single daily dose. With its low risk of hypoglycemia and observed weight-neutrality and weight loss, insulin degludec/liraglutide may be a viable option for patients whose blood glucose remains inadequately controlled by first- and second-line regimens, including the use of sulfonylureas or insulin glargine with or without metformin. Insulin degludec/liraglutide is not recommended in combination with another product containing any GLP-1 RA.¹ Insulin degludec/liraglutide product is not recommended for patients with type 1 diabetes or those with diabetic ketoacidosis. Insulin degludec/liraglutide's use with mealtime insulin was not studied and therefore cannot be recommended at this time. Insulin degludec/liraglutide would not be recommended in patients with pancreatitis, thyroid cancers, hepatic or renal insufficiency, multiple endocrine neoplasia syndrome type 2, or allergies to any of the ingredients in the insulin degludec/liraglutide combination product. Insulin degludec/liraglutide should be taken at the same time each day with or without food while alternating injection sites. If missed doses occur for more than 3 days, the patient should be reinitiated at the starting dose (16 units).¹ These characteristics confirm the safe and effective role of insulin degludec/liraglutide among other therapy options for patients with diabetes whose glycemic targets are not achieved by higher doses of basal insulin monotherapy or oral hyperglycemic agents used in combination.

Reference:

¹American Diabetes Association (ADA). Statistics About Diabetes. December 12, 2016. Available at www.diabetes.org/diabetes-basics/statistics/. Accessed June 22, 2017.

²Novo Nordisk USA. Novo Nordisk Receives FDA Approval for Xultophy® 100/3.6 (Insulin Degludec and Liraglutide Injection). 2016. Available at <http://press.novonordisk-us.com/2016-11-21-Novo-Nordisk-Receives-FDA-Approval-for-Xultophy-100-3-6-insulin-degludec-and-liraglutide-injection>. Accessed June 22, 2017.

³Mayo Clinic. Insulin Degludec and Liraglutide (Subcutaneous Route). Drug information provided by: Micromedex. Available at www.mayoclinic.org/drugs-supplements/insulin-degludec-and-liraglutide-subcutaneous-route/proper-use/drug-20313078?p=1. Accessed June 22, 2017.

⁴Lingvay I, Manghi FP, García-Hernández P, et al. Effect of insulin glargine up-titration vs insulin degludec/liraglutide on glycosylated hemoglobin levels in patients with uncontrolled type 2 diabetes. *JAMA* 2016;315:898-907.

⁵Rodbard HW, Bode BW, Harris SB, et al. Safety and efficacy of insulin degludec/liraglutide (IDegLira) added to sulphonylurea alone or to sulphonylurea and metformin in insulin-naïve people with type 2 diabetes: the DUAL IV trial. *Diabet Med* 2017;34:189-96.

⁶American Diabetes Association (ADA). Standards of medical care in diabetes. 2. Classification and diagnosis of diabetes. *Diabetes Care* 2017;40(suppl 1):S11-S24.

Student Chapter Spotlight: St. John's University College of Pharmacy

*Ji Min Son, PharmD Candidate, 2019
St. John's University College of Pharmacy*

St. John's University College of Pharmacy and Health Sciences Student College of Clinical Pharmacy chapter recently held a joint event with physician assistant students. This event incorporated the use of "SimMan," a stimulated person who responds to treatments "administered" and has programmed vital signs. This program was open to student pharmacists and physician assistant students to emphasize the importance of interprofessional relationships in health care. Before the event, the selected physician assistant and pharmacy students were asked to read the guidelines specific to the case. During the event itself, the physician assistant student primarily diagnosed SimMan and monitored vital signs, and the pharmacy students helped ensure that the proper drug therapy was implemented while monitoring for patient-specific contraindications and possible drug-drug interactions. This year, the case involved a patient who had torsades de pointes that turned into ventricular fibrillation with no rhythm or pulse. On January 31, the students were expected to perform cardiopulmonary resuscitation, hook up a defibrillator, and administer two doses of epinephrine 1 mg. Sotalol was determined to be the primary agent that caused the drug-induced torsades de pointes. After the patient stabilized, the students changed the patient's home medication to another antiarrhythmic agent. This activity helped the students understand the value of working together on an interdisciplinary team. Otherwise, the physician assistant students might not have concluded that sotalol was the offending agent, and the pharmacy students might not have been comfortable diagnosing and stabilizing the patient. As health care professionals, we must remember that the patient's health is collectively our No. 1 priority and that open communication between all members of the health care team is crucial.

Vicky Sideras, a 2018 PharmD candidate and one of the event organizers, said: *This event allowed the physician assistant and pharmacy students to experience a real-life scenario and understand how interprofessional the health care professions are. It allowed them to work together as a team and apply what they learn during class to a real-life situation. The students took a lot away from this experience and enjoyed testing their skills while working with another profession in order to stabilize the patient.*

Student Chapter Challenge

As a pharmacy student, would you rather have a photographic memory with an average retention time or an average learning speed with an extended retention time?

*Pharmacy School and the Quest for Knowledge
Aakash Patel, PharmD Candidate, 2019
Manchester University College of Pharmacy*

In the words of Benjamin Franklin, “An investment in knowledge pays the best interest.” In this spirit, I would rather have an average learning speed with an extended retention time than a photographic memory with an average retention time because of the benefits of long-term comprehension and the potential that long-term comprehension can reveal. As a student, I am ready to put in the time to learn, time being the investment. If I were to know that this time I am putting in would allow me to better remember and understand the knowledge I need in the future in order to better help my peers and my patients, this would drive me to spend this time learning all that I can.

The “average retention time” option does provide the flexibility of learning something new at that moment, but the issue comes with having to relearn the information every time you come across it. Patients may feel uncomfortable with their pharmacist having to look up the indications and counseling information for acetaminophen, a drug that all patients probably feel their pharmacist needs to be intimately familiar with. Long-term retention allows the average pharmacy student to better know how the information they learned in their earlier years ties in with what they are learning with therapeutics.

If we could remember every detail about enzyme kinetics, which many of us have tried to forget, we would be able to remember why the CYP3A4 substrates of simvastatin and verapamil should not be taken together at certain doses. Understanding the minutiae of a drug’s interactions with our receptors can better allow us to predict interactions and adverse effects that may require the use of resources that may be inaccessible at the time. Furthermore, this long-term retention can help us better establish relations with our patients when we need to develop rapport as well as remember their needs, which can help improve adherence.

The ability to synthesize knowledge can be accomplished with long-term retention, the usefulness of which rises above the recall abilities of the average-term retention option; furthermore, without synthesis, there are advances that humanity would not have accomplished. One such advancement is humanity’s reach for the stars and the moon landing. Without the ability to understand the Wright brothers’ work at Kitty Hawk half a century earlier, and how it should be molded with Wernher von Braun’s work in jet propulsion and Isaac Newton’s study of gravity, we would be incapable of ascending toward the moon at a mind-numbing 25,000 miles per hour. Finally, long-term retention allows us to use the work ethic that is already present in us pharmacy students and be able not only to understand the knowledge that we have already discovered, but also to find the potential of therapies that yet elude us without extensive comprehension.

Clinical Case Segment

Vignette: A 35-year-old white woman with acute lymphocytic leukemia (ALL) underwent total body irradiation and allogeneic bone marrow transplantation 2 weeks ago. She is currently in the ICU because of an increased severity of illness while awaiting stem cell engraftment. She developed *Acinetobacter* pneumonia and is on day 7 of piperacillin/tazobactam and tobramycin. Because of high fevers (temperatures as high as 105°F [40.6°C]), decreased mental status, decreased urine output, increased sputum production, and worsening respiratory function over the past 48 hours, she has been intubated and placed on a mechanical ventilator. Chest radiography and a CT scan reveal a left lower lobe infiltrate with a halo sign. A sputum sample is sent to the laboratory for culture.

Past Medical History: ALL, hypertension, anemia, atrial fibrillation

Social History: Noncontributory, no alcohol, occasional marijuana use

Current Medications: Piperacillin/tazobactam 4.5 g every 6 hours, tobramycin 7 mg/kg every 24 hours, oxycodone 5–10 mg every 4 hours as needed, furosemide 20 mg twice daily, simvastatin 40 mg daily, cyclosporine 200 mg twice daily, prednisone 20 mg daily, and filgrastim 300 mcg every 24 hours

Allergies: No known drug allergies

Vital Signs: Temperature 104°F [40.1°C], heart rate 100 beats/minute, respiratory rate 23–48 breaths/minute, weight 72.1 kg, height 168 cm, blood pressure 94/50 mm Hg

Laboratory Values: WBC 3×10^3 cells/mm³ (3×10^9 cells/L), Plt 390,000/mm³ (3.9×10^9 /L), Na 136 mmol/L, K 4.3 mmol/L, Cl 99 mmol/L, bicarbonate 18 mmol/L, glucose 196 mg/dL (10.8 mmol/L), BUN 38 mg/dL (13.6 mmol/L), SCr 1.8 mg/dL (159.2 micromoles/L), INR 1.6

Procedure Data: Blood and sputum cultures: Pending

Microscopic evaluation of sputum reveals filamentous fungi (mold), likely *Aspergillus* spp. (species identification to follow).

Galactomannan enzyme-linked immunoassay was positive at 1.8 (normal range 0–0.8).

Other Data: Intravenous lines: 2 peripherals, 1 arterial line, 1 triple lumen peripherally inserted central catheter

Question 1: What risk factor is **LEAST** likely contributing to this patient's susceptibility to an invasive mold infection?

1. Age
2. Allogeneic bone marrow transplantation
3. Broad-spectrum antibiotics
4. Cyclosporine

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(Clinical Case Continued)

Question 2: What is the most appropriate antifungal regimen to treat this patient's invasive *Aspergillus* infection?

1. Amphotericin B deoxycholate intravenously
2. Caspofungin intravenously
3. Posaconazole oral suspension
4. Voriconazole intravenously

Question 3: A major drug interaction with voriconazole requires a dose reduction in which of the patient's current medications?

1. Cyclosporine
2. Filgrastim
3. Furosemide
4. Prednisone

Question 4: A voriconazole trough concentration in this patient is 0.4 mg/L. A genetic polymorphism in what enzyme might be responsible for the subtherapeutic voriconazole concentration in this patient?

1. CYP2C19
2. CYP2D6
3. CYP3A4
4. UDP-glucuronosyltransferase

Question 5: Which of the patient's medications could cause a false-positive galactomannan assay result in this patient?

1. Cyclosporine
2. Oxycodone
3. Piperacillin/tazobactam
4. Tobramycin

For additional case question and answers, click [here](#)

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