

ASHP 2020 Midyear abstract:

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## **Guidance for implementing pharmacogenomics (PGx) testing in the first year pharmacy curriculum**

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### **Purpose:**

Pharmacogenomics (PGx) studies the role of genetics in pharmacologic management of disease states. PGx training is essential for developing well-rounded pharmacists to further advance the future of pharmacy and medicine alike. We have established a research study to educate all incoming pharmacy students by offering PGx testing with the RightMed® test from OneOme (Minneapolis MN).

### **Method:**

First year students at the Bill Gatton College of Pharmacy were asked to participate in the study by providing free PGx testing. Those who consented completed anonymized surveys before and after PGx testing and training to assess perceived significance. Testing began with cheek swab collection in the first month of the Fall semester. During processing, all students received 14 classroom lectures in PGx imbedded within the required Pharmaceutical Biochemistry course. Lectures included topics such as the Human Genome Project, CYP enzymes, PharmGKB use and pertinent examples such as codeine/CYP2D6. Finally, testing results were confidentially returned and generally discussed using an in-house guide to the 27 genes analyzed. This study was approved by the ETSU IRB.

### **Results:**

Beginning in Fall 2018, 216 students were asked to participate. 210 (97%) consented to the study: 84 in Fall 2018, 70 in Fall 2019 and 55 in Fall 2020. Median age was 22, 81% reported Caucasian ethnicity and 39% reported prior genetics training. Pre-testing survey results indicated that 47% of the respondents were currently taking a medication (Rx, OTC or herbal); 36% reported ineffective response to a medication, and 60% reported side-effects to a medication. To date, post-analysis responses from 67% of the students showed 98% interest in personal PGx tests, with only 12% reporting strong anxiety while awaiting test results. Most importantly, 60% of students endorsed interest in additional pharmacogenomic education provided in the pharmacy curriculum.

### **Conclusion:**

This research project provided free PGx testing, education, and guided review for consenting new first year pharmacy students. The data show the feasibility of integrating this program into the pharmacy curriculum. Early PGx immersion is stimulating for new students entering the field. We observed that immersive PGx profiling delivers a foundational element for further classroom and laboratory training. This foundation is now being expanded to clinical PGx training in courses such as Pharmacokinetics, Cardiology, Neuropharmacology and Oncology. The use of online resources is fundamental for this training. Ultimately, these students gained first-hand understanding of how their future patients might react to PGx testing to improve drug therapies.