

I am grateful to the CAPSGW Executive Board for providing me a Travel Grant to attend this year's American Academy of Child & Adolescent Psychiatry Annual Meeting in Seattle. During the conference, I had the opportunity to attend two series of talks on an area of special interest to me: pharmacogenetics.

The first series of talks was entitled "Symposium 21: Pharmacogenetic Testing and Antidepressants in Youth With Depressive and Anxiety Disorders." It included lectures by Dr. Laura Ramsey from Cincinnati Children's (which has designed a customized pharmacogenetic test for use in their inpatient psychiatric unit) and Dr. Carol Matthews from University of Florida (which uses pharmacogenetic testing in an outpatient clinic).

The second series of talks was entitled "Clinical Perspectives 76: Pharmacogenomics 2018: A Closer Look at Relevant Genes and Current Guidelines." It included lectures by 5 different presenters, most notably Lisa Namerow from Institute of Living in Hartford, CT (who provided practical guidelines for incorporating pharmacogenetics into evidence-based practice).

I headed into the conference with a high level of eagerness about pharmacogenetics due to a patient family having recently requested pharmacogenetic testing. Due to this patient having had multiple unusual side effects to medications, my supervisor and I did ultimately order pharmacogenetic testing for the patient, and I wanted to be able to interpret the results correctly.

I soon found, however, that a recurrent theme throughout the talks was the limitations in the current evidence base for use of pharmacogenetic testing. More problematically, several presenters highlighted how public perception over-estimates the utility of pharmacogenetic testing (no doubt exacerbated by testing company marketing), and this can lead to sub-optimal clinical care. For example, because one company presents testing results in a three-tiered format, this can be over-simplistically interpreted as "good," "maybe," and "bad" and lead to substitution of medications in the "good" category for medications with a stronger evidence base. For example, one presenter reported that use of pharmacogenetic testing in their outpatient clinic resulted in increased use of desvenlafaxine, which the limited research among adolescents suggests is not efficacious. Interestingly, several rural physicians in the audience echoed this sentiment of the presenters, sharing that since Medicaid had begun to pay for the testing in their states, it had become widespread and they had to spend significant time taking patients off inappropriate medications.

Although the conference talks tempered my excitement about the *technological* potential of pharmacogenetic testing, it illuminated how *clinical* knowledge of pharmacogenetics could enhance patient care. Namely, from the perspective of SSRIs, the main distinction to draw is between CYP2D6-metabolized medications, such as fluoxetine, and CYP2C19-metabolized medications, such as escitalopram. I learned about important resources such as PharmGKB and Clinical Pharmacogenetics Implementation Consortium, the latter of which issues guidelines of how to interpret pharmacogenetic tests that have already been ordered (e.g. reduce starting dose of escitalopram by 50% in those who are CYP2C19 "poor metabolizers"). Dr. Namerow gave examples of specific questions that could be used during clinical interview to hint at a patient's pharmacokinetic status, even without ordering a test (e.g. adverse reactions to over-the-counter medications that are also metabolized by CYP2D6). While the majority of the information presented was related to pharmacokinetics, there was also discussion of the SLC6A4 gene, which is a pharmacodynamic gene that is thought influences response to SSRIs. However, as Dr. Namerow stated, a prescriber should not deviate from using SSRIs

first-line in a patient with the short-short genotype. Rather, having this information could be helpful because, if SSRIs are failed, one might move quicker to another class of medication. The overall message was that pharmacogenetic results could be helpful in making decisions between medications with similar-quality evidence bases, but should never turn a prescriber away from evidence-based practice.

After attending these series of talks, I can say that I feel more comfortable in interpreting pharmacogenetic reports, and using such information to inform my clinical decision-making. I also feel more comfortable candidly discussing the limitations of the testing with my patients. Like all technology, when used correctly, pharmacogenetic testing can enhance the capability of the human brain, but never substitute for it.