

Host: This is the podcast from *Clinical Chemistry*. I am Bob Barrett. Nearly 31 million Americans have been prescribed warfarin on an outpatient basis, and adverse events associated with warfarin therapy are common. A rapid and accurate computational method for modeling the anticipated response to a drug in a specific patient would provide healthcare practitioners with a basis for establishing individualized therapeutic strategies.

Dr. Roland Valdes and Dr. Mark Linder recently developed a computational decision support tool that combines patient-specific genotype and phenotype information to provide strategic dosage guidance. This tool provides the necessary patient-specific context for interpreting INR, or International Normalized Ratio, measurements.

Their findings were published in the October issue of *Clinical Chemistry*. Dr. Valdes is a Professor, Distinguished University Scholar, and Senior Vice Chairman, and Dr. Linder is an Associate Professor. Both are in the Department of Pathology and Laboratory Medicine at the University of Louisville, and they are our guests in this podcast.

Dr. Linder, there are multiple published and ongoing studies regarding genetic testing in warfarin. How is your work unique?

Dr. Mark Linder: Our work is unique in that our approach is specifically targeted for clinical applications, and it's consistent with the emerging concept of precision medicine, and that's where treatment decisions are made based on more precise information about the specific patient.

The majority of the research that's published to date in this area is really focused on estimating the maintenance dose of warfarin, and that approach fell short, in that it doesn't address the more complex dosing scenarios, like loading dosing, transition dosing, or responding to out of range therapy.

In our approach, we really emphasize what the genetic test results imply, with respect to the measurable characteristics of the patient, and then we display that influence in a time-based format that informs the physician, so that they can make ongoing modifications to the standard practices. What this allows is for them to more precisely manage the dosing and also the monitoring for the individual patient.

Host: Dr. Valdes, what is the major implication of the recently published work from your group?

Dr. Roland Valdes: Well, it's interesting. The major implication is that, it applies fundamental principles of pharmacology as a basis for the approach, as opposed to exclusively using empirical correlations.

What this does is that it establishes the credibility of pharmacogenetics as a discipline, with direct clinical application.

It also, very importantly, places the clinical laboratory squarely in patient care decision support role. This is where it should be for creating maximum value.

Host: So, Dr. Linder, then what's the status of this technology at this point, are there ongoing studies?

Dr. Mark Linder: Yes, at this time, PGXL Laboratories, which is a Louisville-based laboratory company, in conjunction with ARUP Laboratories has developed a web-based clinical decision support software application. This software application incorporates the techniques described in our publication and is now testing this decision-support tool in actually two separate prospective pilot trials, which we expect the results from that to be published sometime late this summer.

Host: Well, finally, Dr. Valdez, how do you ultimately see this approach being utilized in routine healthcare?

Dr. Roland Valdes: Well, I think I see several approaches here that are applicable. For example, the one important thing is the standardization of patient care and practice relative to warfarin therapy. Now, this could have tremendous cost savings to the healthcare system.

The other thing is that it also reduces patient and physician anxiety, and it does it based on understanding of what is happening to the INR value and how to intelligently interpret the INR value.

Another important aspect is that it's the demonstration of the power of properly applied pharmacogenetic testing in a clinical setting. And because this approach is based on fundamental principles, it can be applied broadly to decision support tools that are developed for other high-risk or difficult to manage medications. And what this does collectively is that it brings all of us closer to fine-tuning the practice of precision medicine or personalized medicine as it's referred to by many.

Host: Dr. Roland Valdes is a Professor, Distinguished University Scholar, and Senior Vice-Chairman, and Dr. Mark Linder is an Associate Professor. Both are in the Department of Pathology and Laboratory Medicine at the University of Louisville, and they have been our guests in this podcast from *Clinical Chemistry*.

I am Bob Barrett. Thanks for listening.

Total Duration: 5 Minutes