



Informatics Bytes: Clinical Resources for Precision Medicine
Episode Transcription

Speaker 1: Welcome to the ASHP official podcast, your guide to issues related to medication use, public health and the profession of pharmacy.

Amey Hugg 00:14: Thank you for joining us for Therapeutic Thursdays podcast. This podcast provides an opportunity to listen as members discuss what's new and ongoing in the world of therapeutics. My name is Amey Hugg and I'm the ASHP Director of the section of pharmacy Informatics and Technology and I will be your host today for the ASHP Therapeutic Thursdays podcast. With me today are Amy Sheehan and Khan Duong. Amy's practice interests are evidence based medicine and formulary management and she is the associate professor of pharmacy practice at Purdue university college of pharmacy. She's a drug information specialist at Indiana university. Khanh Duong is a pharm D candidate at Purdue university college of pharmacy. Her practice areas are academia, ambulatory care and infectious diseases. Thank you for joining us today, Amy and Khanh. Let's get started talking about today's topic, clinical resources for precision medicine. Let's start with the basics. What is precision medicine? Amy, can you share with us?

Amy Sheehan 01:20: At this point, most listeners are familiar with the term Precision Medicine which continues to be an emerging science with the potential to significantly improve patient outcomes by tailoring drug therapy recommendations based on individual pharmacogenomic data; and this includes both drug selection as well as drug dosing. The most common medications we typically think of with clinically actionable recommendations based on pharmacogenomic data include anticoagulants (warfarin and clopidogrel), antidepressants, antipsychotics, and medications for the treatment of various types of cancer. with the widespread use of commercial genetic testing kits (such as 23andMe) there is an increasing likelihood that pharmacists may be presented with pharmacogenetic data from their patients. And this presents a challenge in translating genetic test results into actionable prescribing decisions. Because this is an ever evolving field, it is important for pharmacists to be able to know where they can find a reputable information regarding pharmacogenomics.

Amey Hugg 02:45: And what types of specialized resources are available to it?



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Amy Sheehan 02:49: Well, there are multiple resources available to help guide clinicians in providing these recommendations and these can actually range from the FDA approved product labeling. Currently, there are about 200 FDA-approved drugs that have genomic or other selected biomarker information provided in various sections of the label. Of course there are a standard tertiary resources such as Lexicomp or Micromedics that may have information and we may need to go all the way to pre-clinical studies that evaluate the pharmacologic effect of drugs in genomic variations. However, the most useful resources for pharmacists that really provide clear evidence based recommendations for these clinically actionable drug therapy modifications PharmGKB and CPIC or C P I C.

Amey Hugg 03:50: Okay. How about Khan? Can you tell us more about PharmGKB, which is the pharmacogenomics knowledge database?

Khanh Duong 03:58: Yes, definitely. The pharmacogenomics knowledge database (also known as PharmGKB, which can be found at www.pharmgkb.org) is a publicly available resource funded by the National Institutes of Health, that collects, develops, and publishes information about clinically actionable gene-drug associations. So the website include four primary sections. Annotated drugs, Curated Pathways, Clinical guideline annotations and drug labels. For annotated drugs, the section compiles data on on the relationship of single genetic variants for specific drugs. The database can be searched by either the drug name and provides valuable information about how a specific gene can affect a patient's response and the potential for adverse effects that are associated with the genetic variant. PharmGKB curators routinely review the primary literature to update this information for Curated Pathways, this section focuses on the PKPD of the medication. It presents evidence-based diagrams and written descriptions of how the drug specifically targeted at key genes that code for proteins.

Khanh Duong 05:25: For the clinical guidelines annotations, this section contains links to evidence-based guidelines for drug dosing recommendation based on specific genetic variant. It includes links to guidelines published by CPIC or CPIC (the Clinical Pharmacogenetics Implementation Consortium), the Royal Dutch Association for the Advancement of Pharmacy-Pharmacogenetics Working Group, and the Canadian Pharmacogenomics Network for Drug Safety. A brief summary is normally provided for the recommendations for each guideline. And lastly for the drug label annotations, this section contains pharmacogenomic information provided with the medication label. The database includes drug



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labels from the US FDA, the European Medicines Agency (EMA), as well as medications marketed in Japan, Switzerland, and Canada.

Amey Hugg 06:28: Oh, thank you for that. Can you Khanh tell us more about the clinical pharmacogenomics implementation consortium or [inaudible]?

Khanh Duong 06:36: CPIC, stands for the Clinical Pharmacogenetics Implementation Consortium. So it basically publishes guidelines in cooperation with the journal Clinical Pharmacology and Therapeutics that are available in PubMed and referenced in PharmGKB. CPIC can be found at <https://cpicpgx.org/>. It is an international consortium of scientists and clinicians with a primary goal of providing clinicians access to freely available, peer-reviewed, evidence-based, and updated gene/drug clinical practice guidelines. These guidelines are designed to help healthcare professionals understand how available genetic test results should be used to optimize drug therapy— not whether a genetic test should be conducted. CPIC provides options for users to find guidelines using either medication names or genetic variants in the search box.. The most up-to-date guideline is located at the top of the page and the historical guidelines are located at the bottom of the page. CPIC guidelines present therapeutic dosing recommendations that are rated as “strong”, “moderate”, or “optional” based on the strength of available evidence.

Amey Huegg 07:59: Well great. Thank you for that. How about Amy? I'm going to direct this question to you. How do you implement genomics and practice? I believe there's an acronym for that called IGNITE. Can you tell us more about that?

Amy Sheehan 08:11: Sure. Another great resource to find information to support implementing genomic information into drug therapy optimization is IGNITE. IGNITE stands for “Implementing Genomics in Practice”. IGNITE is funded by NIH (National Institute of Health), and it is comprised of five research sites, which are Indiana University, Mount Sinai, Duke University, University of Florida, and Vanderbilt University. And the most helpful part about the IGNITE website is that it provides access to genomic resources for pharmacists and clinicians through what is known as the SPARK Toolbox. And this is actually an open SharePoint site where clinicians can upload or download resources for implementation of genomics into practice. And these documents include literature reviews at specific institutional policies that support implementation, examples of



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clinical decision support alerts, algorithms for genetic testing, billing codes, and even lab fee information for pharmacogenomic tests among others . And this can be found at available at gmkb.org/IGNITE.

Amey Hugg 10:43: That's great. So what kind of resources or programs are available for a pharmacist to learn more about precision medicine? Amy?

Amy Sheehan 09:54: There are many resources available for pharmacists to learn more about precision medicine. ASHP actually offers an online self-guided "Pharmacogenomics Certificate" program. ASHP Pharmacogenomics Educational Series which is a free series of webinars for members that can be found on the ASHP website (ashp.org) underneath the professional development link. The emerging sciences SAG also maintains a pharmacogenomics resource center and there are links to articles, guidelines webinars, as well as ASHP Midyear Clinical Meeting presentations that are related to ppharmacogenomics.

Amey Hugg 10:43: Thank you, Amy. That's all the time we have for today. I want to take Amy Sheehan and Khanh Duong for joining us today to discuss clinical resources for precision medicine. Join us here every Thursday where we will be talking with ASHP member content matter experts on a variety of clinical topics. Thank you.

Speaker 1 11:03: Thank you for listening to ASHPOfficial, the voice of pharmacists advancing healthcare. Be sure to visit ashp.org/podcast to discover more great episodes, access show notes, and download the episode transcript. If you loved the episode and want to hear more, be sure to subscribe rate, or leave a review. Join us next time on ASHPOfficial