Personalized Medicine: patient & healthcare professionals' attitudes towards pharmacogenetics & the PA role in individualized care

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Introduction

As advancements are being made in the field of genetics, there has been a realization that in addition to understanding how traits and disorders are passed through a family, one's genetic makeup can be used to create personalized medical plans and revolutionize the approach to the administration of pharmaceuticals. This new approach to pharmacology uses information on genetic variation paired with an understanding of drug interactions and chemistry, in order to predict one's response to different types and doses of drugs. As pharmacogenomics has been investigated, it's been shown that both inherited and acquired variants can help predict the efficacy and toxicity of specific drugs in a patient. The aim is to create individualized medicine, where pharmacological decisions are not made as a generalization for an entire population, but rather in a targeted fashion for a single patient. With the correct implementation, pharmacogenetics could offer individualized, more effective, and safer treatments to patients.

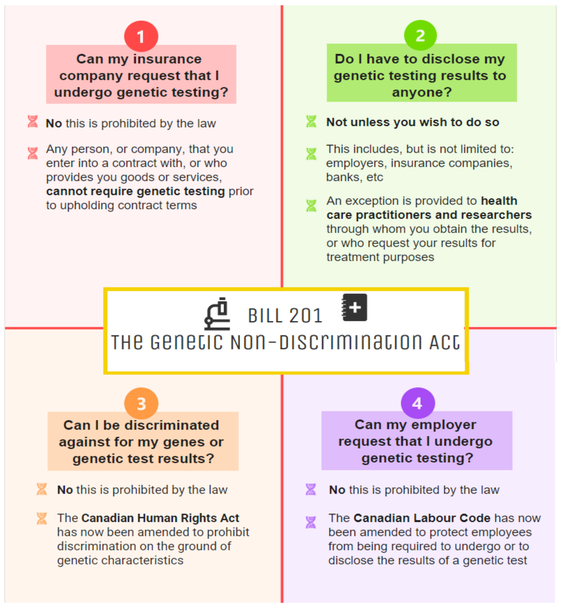
Purpose

As pharmacogenetics (PGx) emerges, there is a need to comprehend the patient perspective, in order to know their concerns and desires from pharmacogenomic testing. It is also important to understand other healthcare providers' views on pharmacogenomics, in order to understand any barriers there are in implementing pharmacogenomics into clinical practice. With a thorough understanding of the current climate of pharmacogenomics in the healthcare system, physician assistants can understand what roles they can fill and services they can provide in this field as it becomes more validated and mainstreamed.

Methods

A review of the literature surrounding patients' and healthcare professionals' perception, knowledge, and understanding of pharmacogenomics was conducted, including only research performed in the last 15 years. As a large portion of the research was conducted in a qualitative manner, such as through focus groups, analysis was done in a qualitative manner, examining trends that emerged throughout the literature, in order to propose areas where patients seem consistently to be concerned or hopeful. This was then analysed in the context of healthcare provider's knowledge of pharmacogenomic testing and their comments and concerns regarding the implementation of PGx into current standards of care and clinical practice. Given that the field of pharmacogenomics is only growing and that PAs function as physician extenders with prescribing capabilities, it is only natural that they have a role to play in this field. The current literature involving PAs and pharmacogenomics was reviewed and concepts and suggestions for further implementation of PGx education and future directions were discussed.

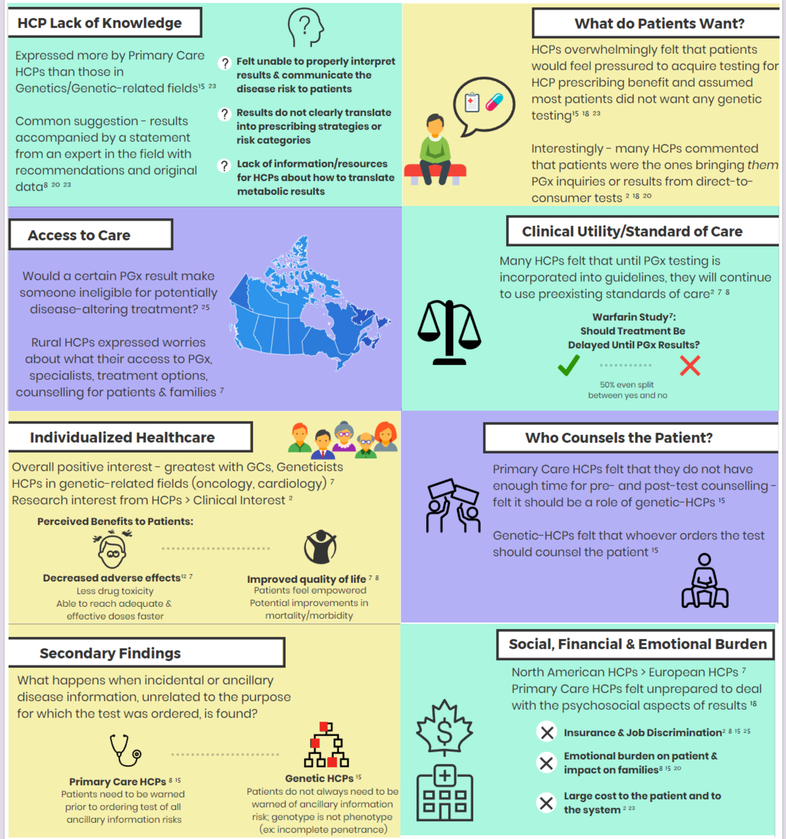
Canadian Law & PGx



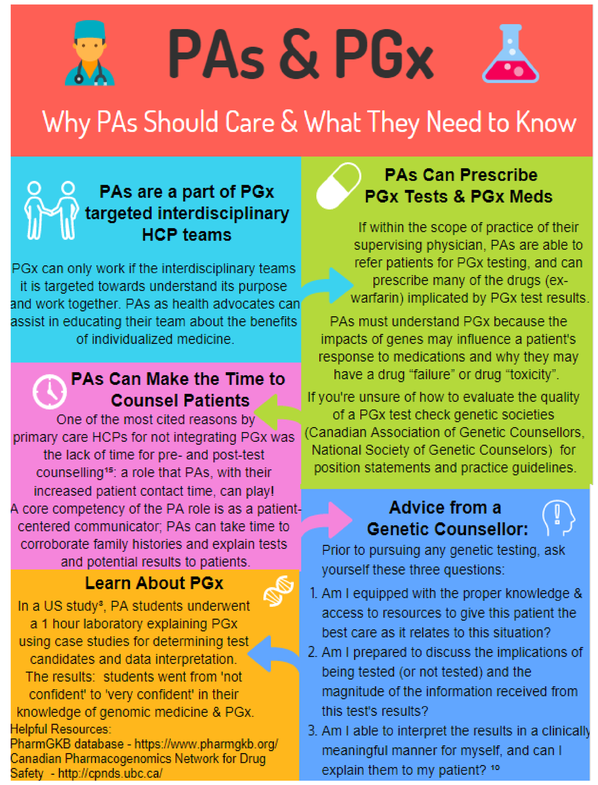
Patient Perspectives on PGx

References	1	6	7	9	10	11	13	18	19	23
General Findings										
Interest in PGx	Low	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Understand PGx	No	>75%		No	>75%	<50%	No		<50%	
Understanding of drug response			No		No		<25%		No	
Return of results			Familiar, informed	No strong preference				Doctor; not other HCP	GP	GP
Patient Concerns										
Cost	✓	X					✓			✓
Unequal access	✓						✓			
Privacy	✓			✓		✓	✓		X	
Discrimination				✓	X		✓		✓	✓
Anxiety or inadequacy			✓						X	
Role in decisions		✓		✓						
Treatment delay		X		✓						
Inferior treatment or adverse effects		X							✓	
2° findings		X								
Patient Interests										
Best drug choice			✓		✓	✓	✓		✓	
Improving health outcomes		✓	✓				✓		✓	
No trial and error			✓				✓		✓	
Doctor offered it		✓			✓					
Reassurance over current treatment		✓			✓				✓	
Personalizes healthcare			✓			✓			✓	

HCP Perspectives on PGx



PA Role in PGx



Conclusion

There is a disconnect between patients' desires for PGx testing and the integration of PGx by healthcare providers. As identified by our literature review, patients were most interested in PGx to determine drug responses, and for conditions that are treatable with modern medicine. Despite acknowledgement of the benefits to patient outcomes, HCPs remain reluctant to utilize PGx primarily due to the lack of resources and information available to them. Conversely, a lack of understanding of PGx in patients did not influence their desire to pursue PGx. Further, the Education Committee of the International Society of Pharmacogenomics has called for incorporation of PGx teaching into the core curriculum of HCP schools. It is evident that education of both practicing and studying HCPs of PGx as well as strategies for communicating with patients is essential as we move forward into the age of individualized medicine.

Future Directions

Of all the studies in this analysis, very few included Canadian patient or HCP populations. Further, only a handful included practicing PAs, primarily in the USA. We would like to expand on this research, given Canada's genetic non-discrimination law, and interview a sample of Canadian HCPs and PA students on their interactions with, and knowledge of genetic medicine and PGx. This study is currently under review by the Hamilton Integrated Research Ethics Board.

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