Re: Pharmacogenetic Testing Options Relevant to Psychiatry in Canada

The Canadian Journal of Psychiatry /
La Revue Canadienne de Psychiatrie
2020, Vol. 65(8) 584-585
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DOI: 10.1177/0706743720925735
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Keywords

pharmacogenetics, medication decision support, testing

Dear Editor

Maruf et al.¹ have comprehensively reviewed pharmacogenetic testing options relevant to psychiatry that are available in Canada. In the discussion, the authors point out that “pharmacogenetic testing should not be used without careful consideration of other factors.” They go on to state that current pharmacogenetic tests do not have decision algorithms that consider these other factors such as renal and liver function. We agree that it is essential to take these other factors into account when integrating pharmacogenetics into clinical practice and would like to point out that our TreatGx medication decision support software already does this.

To eliminate the need to use multiple information resources when reviewing drug options, pharmacists and physicians asked us to develop software that identifies the drug treatment options for individual patients based on *all* variables that may affect drug selection and dosing. In response, we produced a condition-based medication decision support software, TreatGx. The user first selects the condition for which they wish to see the drug treatment options; the system includes many mental health conditions. The variables taken into account by the TreatGx decision support include medical history, current conditions, previous medications, current medications, renal function, liver impairment, weight, age, other biophysical markers such as QTc interval, and pharmacogenetic test results. The end result for the user is a list of condition-specific, personalized drug treatment options with suggested dose adjustments, drug interactions, cost comparison, side effect profiles (where relevant), and other important prescribing information for selecting the best treatment option for a patient.

The decision support uses algorithms to create the list of drug options. Information to build the algorithms comes from multiple sources regularly used by prescribers. These include disease management guidelines, product monographs, textbooks and articles on renal and liver dosing, a drug–drug interaction database (DrugBank), and international pharmacogenetic groups, including CPIC,² DPWG,³ and PharmGKB (<http://www.pharmgkb.org>). The references to create the algorithms are available on the GenXys website (www.genxys.com). It would be possible for a health

professional to duplicate the process for each patient, but the time to identify and apply the information is considerable compared to the software, which runs the algorithm within seconds.

The high level of reported adverse drug reactions⁴ and inappropriate prescribing⁵ indicates that there is a problem with the current medication decision process. Implementing a personalized prescribing approach that combines pharmacogenetic information with other clinical factors may be key in utilizing pharmacogenetic test results, and improving the safe and effective use of medications globally though this has not been demonstrated in prospective clinical trials. An automated algorithmic approach is a desirable function due to the volume of information that needs to be considered. Our condition-based software algorithms created using an evidence-based approach have demonstrated feasibility in utilizing pharmacogenetic information in the context of other relevant prescribing factors,⁶ and are in use in Canada.

Yours sincerely,

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