



# Clinical Pharmacology & Toxicology Pearl of the Week

## Pharmacogenomics: Pros and Cons

- ✓ Adverse drug events are responsible for up to 6% of all hospital admissions, are estimated to cost the healthcare system up to \$5000 each event, and increase hospital length of stay by up to 3 days.
- ✓ Just as [clinicians consider a patient's co-morbidities](#), laboratory values, and drug allergies when deciding on a drug choice and dosage; pharmacogenomics can be introduced to improve a patient's response, while decreasing adverse effects from medications.
- ✓ Studies in the US assessing for 12 high risk pharmacogenetics mutations identified between 91-99.1% of all patients had at least one actionable genotype.
  - Therefore, pharmacogenomic testing is applicable to almost everyone. Nearly every patient would benefit from a change in drug prescribed or the dose prescribed in order to improve clinical response or minimize adverse events. Without pharmacogenomic testing, it is difficult to determine which drug(s) these are.
- ✓ Like all tests, pharmacogenomics testing has its pros and cons:

Pros	Cons
Identify high risk medications that should not be used or should have significant dose adjustments	Financial cost to patient and/or system
Decrease adverse effects from drug therapies	Variable (long) turn-around time (median = 7 days)
Improve clinical response and outcomes	Clinical expertise required to interpret and implement results into daily practice
Decreased time to response to treatment and decreased length of treatment through dose optimization	Need for additional testing as additional actionable genotypes are identified and made available
Improve quality of life	Potential to have an impact on private insurance, though some insurance companies are piloting pharmacogenomic testing as part of their coverage
Decrease hospitalization rates and duration from adverse drug events	False-negative reporting of rare genotypes



**The Calgary Clinical Pharmacology physician consultation service is available Mon-Fri, 9am-5pm. The on-call physician is listed in ROCA. Click [HERE](#) for clinical issues the CP service can assist with.**



**The Poison and Drug Information Service (PADIS) is available 24/7 for questions related to poisonings. Please call 1-800-332-1414, and select option 1.**

### References:

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5. Maruf AA, Fan M, Arnold PD, Müller DJ, Aitchison KJ, Bousman CA. Pharmacogenetic Testing Options Relevant to Psychiatry in Canada [published online ahead of print, 2020 Feb 17]. Can J Psychiatry. 2020;706743720904820. doi:10.1177/0706743720904820