

UBC Emergency Medicine Fraser Site Academic Rounds Summary

Pharmacogenomics – Implications in ED Care

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What is pharmacogenomics:

- Pharmacogenomics is the study of how variations in our genetic make-up affect our response to medications.
- The goals of pharmacogenomics are:
 - Improve drug efficacy
 - Reduce adverse drug reactions
 - Predict response to drugs prior to dosing
- Pharmacogenomic variants that affect responses to drug therapy are extremely common. Literature examining the incidence of pharmacogenomics variants supports that essentially all patients have them.
 - Everyone is predisposed to have adverse drug reactions (ADRs), it is simply a matter of being prescribed a medication that we are genetically predisposed to react adversely to.

Role in ED care:

- Adverse drug reactions are much more common than we think, and we frequently misdiagnose them in the ED.
- This leads to increased morbidity in the form of longer hospital admissions and increased cost of care.
- Use of a simple, validated clinical decision tool to identify patients at high risk for ADRs for review by an ED pharmacist helps increase our diagnostic accuracy in the ED:

Has the patient taken medications in the past 2 weeks?

Yes No → **LOW RISK**



Does the patient have any pre-existing medical problems **or** has the patient taken antibiotics in the past 7 days?

Yes No → **LOW RISK**



Is the patient ≥ 80 years old **or** has the patient changed any medications in the past 28 days?

Yes No → **LOW RISK**



HIGH RISK

- Serious ADRs have mandatory reporting obligations as per Vanessa's Law
 - The most responsible physician has a duty to report. At a Fraser Health Authority site, report serious ADRs by completing a PSLS form.
 - Penalties for failing to report a serious ADR can be severe.

Future directions:

- Thoughtful application of artificial intelligence technology will likely help us build and implement precision medicine systems to render patient care safer and more effective.

References:

