

Pharmacogenetics: from Research Results to Practical Guidelines

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Objective

The translation of pharmacogenetics (PGx) to the clinic has proven to be difficult. Clear recommendations that are integrated into computerised systems for drug prescribing and dispensing, can contribute to the implementation of PGx data in clinical practice.

We describe a method for a structured translation of research results into practical recommendations, including the incorporation in computerised healthcare systems.

Results – assessed drugs

The following polymorphisms and drugs are assessed and incorporated in computerised systems:

- CYP2D6: psychopharmaca, some opioids, metoprolol, tamoxifen
- CYP2C9: cumarines, phenytoin, 5U-derivatives
- CYP2C19: PPI's, voriconazole, (es)citalopram, imipramine, moclobemide
- Factor V Leiden: estrogen containing contraceptives
- TPMT: mercaptopurines
- UGT1A1: irinotecan
- VKORC1: cumarines

Methods

A structured assessment of PGx data from literature comprises the

following factors:

- search in Pubmed (with fixed terms) and in product information
- assignment of literature with codes for evidence and severity of the effect
- comprehensive datasheet with results
- formulation of clear recommendation
- incorporation of recommendations and datasheets in computerised healthcare systems

The data are assessed by a working group with scientific and day-to-day clinical experience, including physicians, pharmacists and clinical pharmacologists.

Results – clear recommendation

The recommendation for clinical practice as pop-up on the screen while prescribing/dispensing the drug include:

- dose adjustments
- advice for the selection of an alternative drug
- advice for therapeutic drug monitoring
- alert for increased risk for adverse drug reactions or diminished effectiveness

Background information:

- mechanism of the gene – drug interaction
- clinical/pharmacokinetic findings
- literature

Patient is linked to CYP2D6 status in health record

CYP2D6 PM



Clomipramine is in drug database linked to CYP2D6 PM and advice

clomipramine

Physician prescribes clomipramine

advice

Physician gets advice on his screen



Method is published in: Swen JJ et al. Pharmacogenetics: from bench to byte. Clin Pharmacol Ther 2008;83(5):781-7.

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