

## Pharmacogenetics in the public pharmacy, Bern, 18th April 2017, CB Eap

Report of the Federal Council on the Positioning of Pharmacies in Basic Health Services – Statement of the Swiss Academy of Pharmaceutical Sciences (SAPhS) Bern, 16. Dezember 2016

Assays for the quantitative determination of relevant gene sequences responsible for drug metabolism have been available for some time. These assays, **applied** and **interpreted** by the pharmacist, could provide useful clues to the responsible physician for the design of the individual medication.

### **Applied**

- 1) Federal Office of Public Health rules concerning genetic analysis
- 2) Reimbursement
- 3) Genotyping once in a life time
- 4) Availability of high-throughput analysis

## Applied

### Federal Office of Public Health rules concerning genetic analysis

The screenshot shows the website of the Swiss Federal Office of Public Health (OFSP). At the top left is the logo of the Swiss Confederation with the text: "Schweizerische Eidgenossenschaft", "Confédération suisse", "Confederazione Svizzera", "Confederaziun svizra". To the right is "Office fédéral de la santé publique OFSP". Below this is a navigation bar with "Actualités", "Thèmes", "Services", and "L'OFSP". A breadcrumb trail reads: "Office fédéral de la santé publique OFSP > Services > Demandes & autorisations > Demandes & autorisations concernant l'analyse génétique et moléculaire". The main content area has a blue header "Analyses cytogénétiques et moléculaires". Below it, a text box states: "La réalisation d'analyses cytogénétiques et moléculaires est soumise à une autorisation de l'OFSP. Vous trouverez ici tous les renseignements utiles à ce sujet." A sidebar on the left lists: "Demandes & autorisations concernant l'analyse génétique", "Analyses cytogénétiques et moléculaires", "Dépistages génétiques", and "Assurance qualité". A paragraph of text explains that information on authorization and forms is available in the following sections, and that a list of authorized laboratories is in the "Documents" section.

<https://www.bag.admin.ch/bag/fr/home/service/gesuche-bewilligungen/gesuche-bewilligungen-bereich-genetische-untersuchungen/zyto-molekulargenetische-untersuchungen.html>

<https://www.bag.admin.ch/bag/fr/home/service/gesetzgebung/gesetzgebung-mensch-gesundheits/gesetzgebung-genetische-untersuchungen.html>

## Reimbursement

Tests prescribed by all MD (list in evolution)

HLA-B\*5701 (pour l'abacavir)

HLA-A\*3101 et HLA-B\*1502 (pour la carbamazépine)

TPMT (pour la 6-mercaptopurine et l'azathioprine)

DPYD (pour le 5-FU)

CCR5 (pour le maraviroc)

G6PD (pour la Rasburicase, la dapsone et le cotrimoxazole)

CFTR (pour l'ivacaftor)

UGT1A1 (pour l'irinotécan).

All other tests prescribed by a MD with FMH clinical pharmacology (including CYP and transporters)

Tests for oncology genes not in the pharmacogenetic area

## Genotyping once in a life time

Theoretically analysis not to be repeated, unlike other clinical laboratory testings such as e.g. glucose etc

Financial attractiveness reduced

## Availability of high-throughput analysis

Chip containing millions of single nucleotide polymorphisms

Whole genome sequencing

Prices sharply reduced

Private companies such as 23 and me proposing also PK genes besides "exotic results"

## Interpreted

- 1) Expertise of pharmacists highly needed !!
- 2) Not all enzymes genotypable (discussion CYP2D6, CYP2B6, CYP3A, CYP1A2)
- 3) Influence of comedications
  - a. extensive metabolizers or ultrarapid metabolizers being phenotypically poor metabolizers due to comedications blocking the activity of the enzyme of interest
  - b. Metabolic interactions depending in the genotype/phenotype
- 4) Interpretation needed over time, evolution of the interpretation depending on the comedication, stage of the illness etc