University of Basel

DEPARTMENT OF PHARMACEUTICAL SCIENCES

solothurner spitäler soH

Integrating pharmacogenetic information into medication reviews – an interprofessional challenge

Céline K. Stäuble*[1,2,3], Chiara Jeiziner[2], Samuel Allemann[2], Martin Hatzinger[4], Kurt E. Hersberger[2], Henriette E. Meyer zu Schwabedissen[1], Thorsten Mikoteit[4], Markus L. Lampert[2,3]

[1] Biopharmacy, University of Basel, Switzerland; [2] Pharmaceutical Care Research Group, University of Basel, Switzerland; [3] Institute of Hospital Pharmacy, Solothurner Spitäler, Olten, Switzerland; [4] Psychiatric Services Solothurn, Solothurner Spitäler and Faculty of Medicine, University of Basel, Switzerland

Background & Objectives

- Inter-individual differences in **drug response** are well-known.
  - Ranging from an adequate effect to nonresponse and even toxicities
- Drug response can be influenced by the patients' **genetic makeup** [1].
  - Affecting expression and/or activity of enzymes and transporters involved in absorption, distribution, metabolism and excretion
- Evidence on **drug-gene interactions** is accumulating, notably for antidepressants.
  - Pharmacogenomics Knowledge Base (www.pharmgkb.org)
  - Recommendations for pharmacogenetic (PGx)-guided drug selection and dosing (www.cpicpgx.org)
  - Information in drug labels [2]

- PGx-testing is **not yet routinely applied** in clinical practice.
  - Barriers include lacking education of healthcare professionals and non-established interprofessional procedures [3]
- Drug response can also be influenced by **other factors.**
  - Such as drug-drug – and drug-food interactions, renal- and liver function as well as adherence

> **Therefore, we aim to**:
  a) integrate PGx-information into medication reviews as a pharmacy service
  b) promote interprofessional decision making on drug selection and dosing, considering PGx-information

Pharmacy Service

Setting:
- Solothurner Spitäler
- Psychiatry inpatients and outpatients
- Service may be initiated by physicians and pharmacists

Patient Selection:
> **Medication with known PGx-association AND:**

a) adverse drug reactions
OR/AND
b) insufficient response
} reactive testing
OR/AND
c) planned new prescription or therapy change
} pre-emptive testing

Physician
- Diagnosis and medical treatment

personalized pharmacotherapy

Laboratory
- Genetic laboratory analysis

Pharmacist
- Pharmacist-led medication review

Figure 1: Interprofessional approach to a PGx-guided, personalized pharmacotherapy.

1. **patient interview**
- medication reconciliation
- clarification of medication history (incl. ADRs and nonresponse)

2. **patient consent**
- under current Swiss law, consent for PGx-testing must be obtained by a medical doctor

3. **PGx-analysis**
- samplig and shipping of blood or buccal swab to laboratory
- genetic analysis

4. **medication review**
- incl. integrative evaluation of PGx-data

5. **written report**
- results, conclusions and concrete recommendations

6. **shared decision making**
- on medication selection and dosing
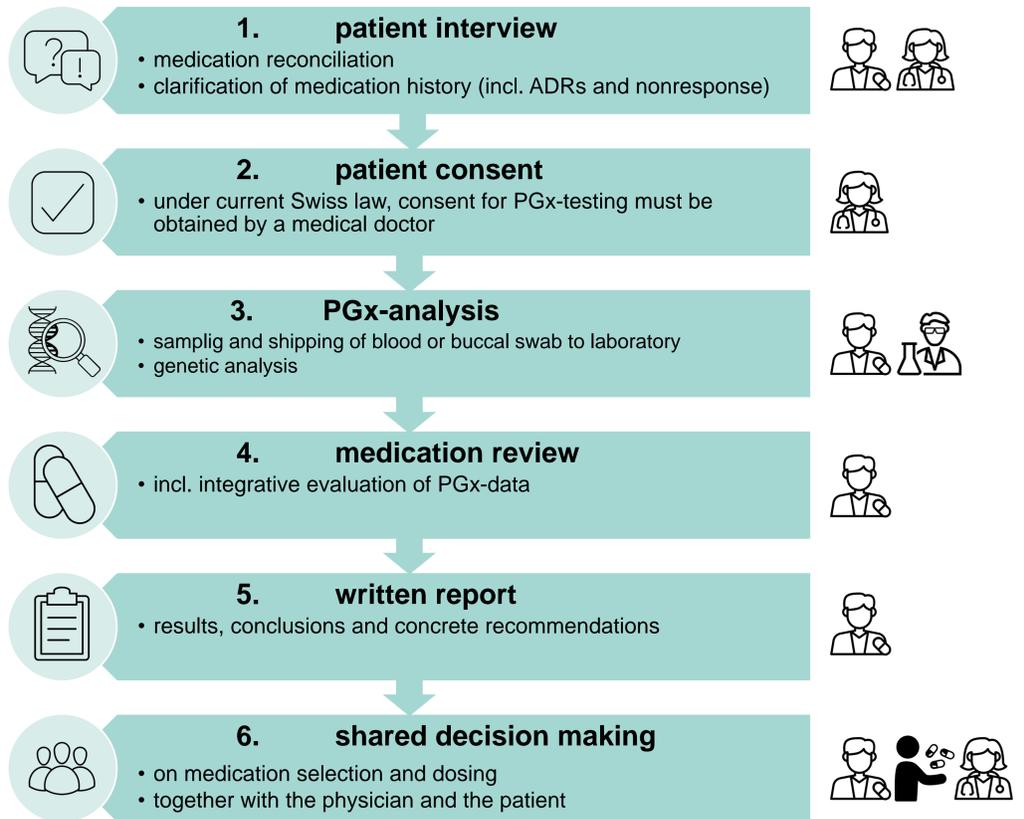- together with the physician and the patient

Figure 2: Step-by-step pharmacist-guided integration of PGx-information into a medication review, as a basis for shared decision making on medication selection and dosing.

Discussion & Conclusion

To achieve best possible benefits, we postulate that **PGx-information should be analyzed in the context** of the medication history, the current therapy as well as other factors influencing drug response. The herein described PGx pharmacy service enables an extensive medication analysis including PGx-information, to personalize pharmacotherapy recommendations. This **rational preselection** based on primarily kinetic considerations, provides a **basis for interprofessional decision making** together with the physician [4]. We are currently collecting data within a case series (NCT04154553), for a qualitative evaluation of the herein proposed **pharmacist-led PGx-service**.

Literature

1 Meyer zu Schwabedissen, HE. Springer: Cham, Switzerland. 2015; Volume 7, pp. 93–112.
2 Jeiziner, C. et al. *Pharmacogenomics J.* 2021; 21(4):423-434.
3 Chenoweth, MJ. et al. *Clin. Pharmacol. Ther.* 2020; 107(1):57-61.
4 Stäuble, CK. et al. *Life.* 2021; 11(7):673.

*Corresponding author
celine.staeuble@unibas.ch
Biopharmacy & Pharmaceutical Care Research Group, University of Basel
Klingelbergstrasse 50, 4056 Basel, Switzerland
www.pharmacare.unibas.ch

National Poster Prize Winner Switzerland
GSASA Congress, Lugano, 10-12 November 2021

GSASA
Schweizerischer Verein der Amts- und Spitalapotheker
Association suisse des pharmaciens de l'administration et des hôpitaux
Associazione svizzera dei farmacisti dell'amministrazione e degli ospedali
Swiss Association of Public Health Administration and Hospital Pharmacists

eahp
european association of hospital pharmacists