Establishing multi-lingual, multi-modal pharmacogenomic decision support across seven European countries

Kathrin Blagec (1), Rudolf Koopmann (2), Mandy Crommentuijn – van Rhenen (3), Inge Holsappel (3), Cathelijne van der Wouden (4), Lidija Konta (5), Hong Xu (1), Daniela Steinberger (2,5,6), Enrico Just (2), Jesse J. Swen (4), Henk-Jan Guchelaar (4), Kathrin Blagec (1), Rudolf Koopmann (2), Mandy Crommentuijn – van Rhenen (3), Inge Holsappel (3), Cathelijne van der Wouden (4), Lidija Konta (5), Hong Xu (1), Daniela Steinberger (2,5,6), Enrico Just (2), Jesse J. Swen (4), Henk-Jan Guchelaar (4), Matthias Samwald (1)

(1) Section for Artificial Intelligence and Decision Support; Center for Medical Statistics, Informatics, and Intelligent Systems; Medical University of Vienna, Vienna, Austria; (2) bio.logis Genetic Information Management GmbH, Frankfurt am Main, Germany; (3) Medicines Information Centre; Royal Dutch Pharmacists Association (KNMP), The Hague, The Netherlands; (4) Dept of Clinical Pharmacy & Toxicology, Leiden University Medical Center, Leiden, The Netherlands; (5) bio.logis Center for Human Genetics, Frankfurt am Main, Germany; (6) Institute for Human Genetics, Justus Liebig University, Giessen, Germany

Clinical pharmacogenomics (PGx) has the potential to make pharmacotherapy safer and more effective by utilizing genetic patient data for drug dosing and selection. However, widespread adoption of PGx depends on its successful integration into routine clinical care through clinical decision support (CDS) tools, which is often hampered by insufficient or fragmented infrastructures. We present the setup and implementation of a unique multimodal, multilingual CDS intervention consisting of digital, paper- and mobile-based tools that are deployed across implementation sites in seven European countries participating in the Ubiquitous Pharmacogenomics (U-PGx) project.

We developed a set of complementary PGx decision support tools that can be deployed in the presence or absence of an electronic health record infrastructure, allowing each clinical site to chose the delivery mode that best fits their infrastructure, workflow and requirements.

The 'safety-code' card allows for the retrieval of patient-specific PGx dosing recommendations via a smartphone or tablet.

Try it for yourself: Scan the QR code to view an exemplary PGx report for the fictional patient Jane Doe.

Interested in deploying our PGx decision support tools at your institution? If you are interested in deploying our decision support tools to advance the implementation of pharmacogenomics at your institution, please do not hesitate to contact us:

Assoc. Prof. Dr. Matthias Samwald
matthias.samwald@meduniwien.ac.at

For more information, please also visit:

U-PGx project: http://www.upgx.eu
Safety-code system: http://www.safety-code.org

Acknowledgments. The research leading to these results has received funding from the European Community’s Horizon 2020 Programme under grant agreement No. 668353 (U-PGx).

UPGx project outline

Project start: January 2016 • Total duration: 5 years • Budget: 15 million Euros from the Horizon 2020 EU research programme

Clinical study

7 European countries • More than 15 clinical sites • 8,100 patients will be pre-emptively tested for more than 48 clinically relevant PGx markers across 13 important pharmacogenes.

Challenge

To establish a consistent PGx decision support intervention across all participating sites despite immense differences in existing health IT infrastructures, ranging from the availability of sophisticated and well-integrated electronic health record (EHR) systems to complete absence of any such infrastructure.