

**PCNE Working Symposium – Egmond an Zee (NL)**  
**7<sup>th</sup> February 2020**



# WS1: Valid Tools for Medication Review

## focus on Clinical Decision Support Systems

Moderators:

Kurt Hersberger (Switzerland)

Mitja Kos (Slovenia)

Jacqueline Hugtenburg (The Netherlands)

# Objectives of the WS

- Collect examples from different countries on the integration of Clinical Decision Support Systems (CDSS) in the work flow of pharmaceutical care.
- Discuss the needs for being supported during a MR and design of a CDSS for type 2a or type 3 MR
- Discuss research gaps and opportunities for shared research projects

# What is CDSS? First impressions by participants

“Set of **algorithms**, patient data, help patients and health care practitioners, could [? should] be digital”

“[Includes] **all different possible data**: Clinical data, medication data, side effects...”

“**differences** between the systems in our countries... [therefore, different understanding]”

“[knowledge base] e.g interaction checker + communication and process: transfer of data in health care setting”

“**Hard to develop one that would suit all**... its app, you have many and you choose the one that is right according to the needs.”

“**System to support and not replace the pharmacist**”

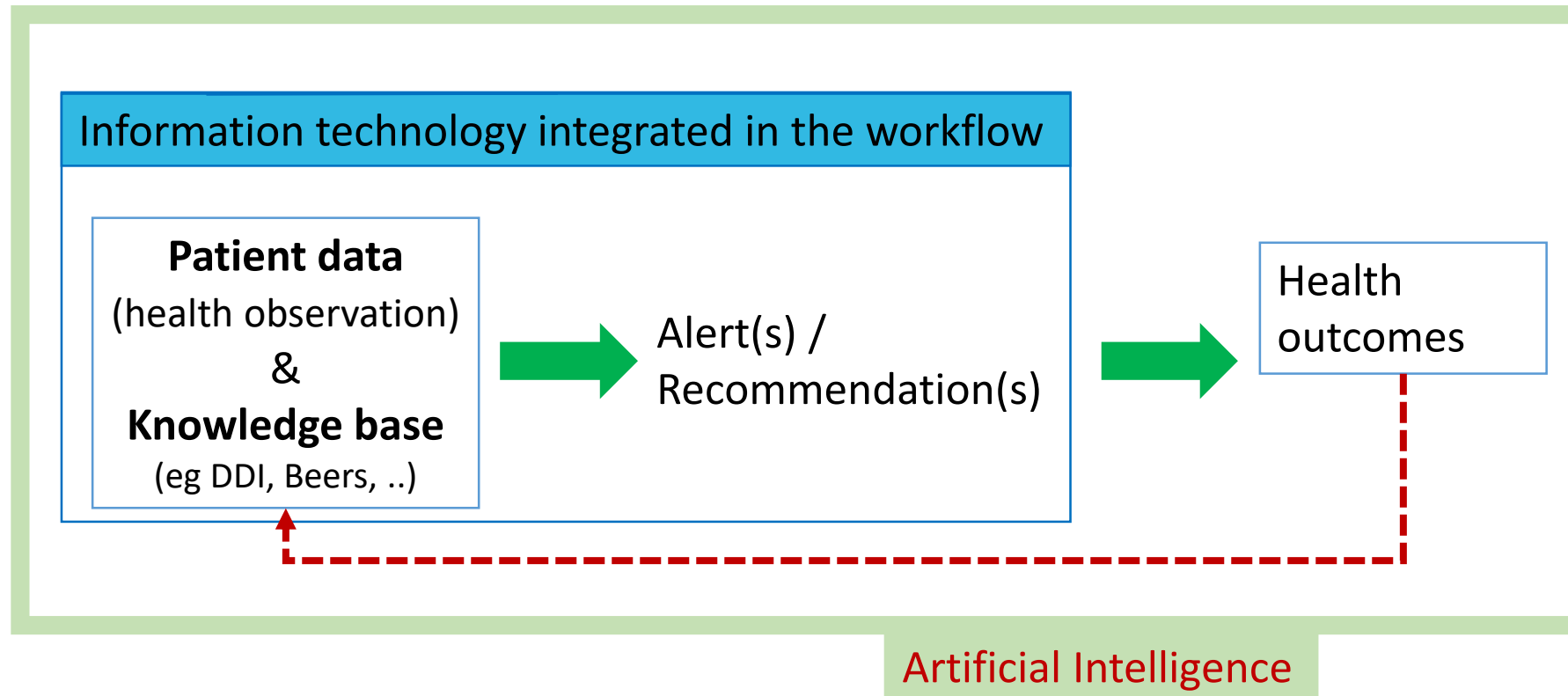
“database, algorithms, include in the system, pop up alerts”

“**evidence based system to support and prioritise problems and reactions to these problems**”

“More advanced system than just alerts, algorithm helping making the right decision”

“we have some kind CDSS at some levels, **not just generating alerts but giving decision aids, needs to be updated** and always includes individual patient data”

# CDSS visualisation



# Cases

## 5. On request, the systems displays a summary of the CDS-Check

CDS Report für Tatiana Muster (06.08.1990)

### Übersicht

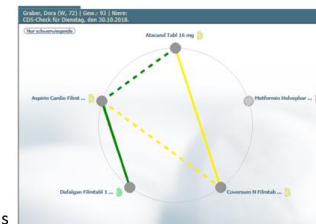


Amlodipin-Mepha Tabl 5 mg Amlodipin	▲	!	✓	✓	✓	▲	▲
Bisoprolol-Mepha Tabl 5 mg Bisoprolol fumarat	▲	✓	✓	✓	✓	▲	▲
Metformin-Mepha Lactab 1000 mg Metformin hydrochlorid	✓	▲	✓	✓	✓	✓	▲
Tramadol Sandoz Kaps 50 mg Tramadol hydrochlorid	✓	▲	✓	✓	✗	!	▲
Paracetamol Sandoz Tabl 1000 mg Paracetamol	✓	✓	✓	✓	✓	✓	▲
Magnesium Diasporal Gran 300 mg zuckerfrei Magnesium	✓	✓	✓	?	✓	!	✓

### Documedis CDS.CE Die 12 Check's



These checks were partially (soon fully) integrated in the pharmacy software for dispensing and administration of prescriptions.




Option: Visualisation od Drug-Drug Interactions

### Drugs & Aging

February 2020, Volume 37, Issue 2, pp 115–123 | [Cite as](#)

## Reducing Inappropriate Drug Use in Older Patients by Use of Clinical Decision Support in Community Pharmacy: A Mixed-Methods Evaluation

Authors [Authors and affiliations](#)

Linda G. M. Mulder-Wildemors , Mette Heringa, Annemieke Floor-Schreudering, Paul A. F. Jansen, Marcel L. Bouvy

### Conclusion

When community pharmacists implemented CDSS alerts to reduce inappropriate drug use in older patients, they registered a persistent drug therapy change in 8.7% of the cases. Alerts triggered by a first prescription were two times more likely to be associated with a persistent drug therapy change than alerts triggered by repeat prescriptions. This study found that clinical rules can be used to detect inappropriate drug use in older patients and that drug therapy can change based on the alerts. This suggests that CDSS alerts are a useful tool for implementing guidelines on PIM in older patients in daily practice.

*Drugs & Aging*, 29 Nov 2019, DOI: 10.1007/s40266-019-00728-y



Thrombosis Research  
Volume 187, March 2020, Pages 79-87



Full Length Article

## Do computerized clinical decision support systems improve the prescribing of oral anticoagulants? A systematic review

Anne-Laure Sennesael <sup>a, b, d, 1</sup>, Bruno Krug <sup>c, d, 1</sup>, Barbara Sneyers <sup>b</sup>, Anne Spinewine <sup>a, b</sup>

### Conclusions:

CDSS might positively impact the use of oral anticoagulants in AF patients at high risk of stroke. The scope of CDSS should now evolve to assist prescribers in selecting the most appropriate and tailored medication. Efforts should nevertheless be made to improve the relevance of notifications and to address implementation outcomes.



Article

## Pharmacist-Initiated Pre-Emptive Pharmacogenetic Panel Testing with Clinical Decision Support in Primary Care: Record of PGx Results and Real-World Impact

Cathelijne H. van der Wouden <sup>1,2</sup>, Paul C. D. Bank <sup>1,2</sup>, Kübra Özokcu <sup>3</sup>, Jesse J. Swen <sup>1,2</sup> and Henk-Jan Guchelaar <sup>1,2,\*</sup>

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  - 3 Division of Pharmacoepidemiology and Clinical Pharmacology, Utrecht Institute for Pharmaceutical Sciences (UIPS), Utrecht University, 3584 CG Utrecht, The Netherlands; K.Ozokcu@students.uu.nl
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A total of 24.2% of these prescriptions had actionable DGIs, requiring pharmacotherapy adjustment. Healthcare utilization seemed not to vary among those who did and did not encounter a DGI. Pre-emptive panel-based PGx-testing is feasible and real-world impact is substantial in primary care.

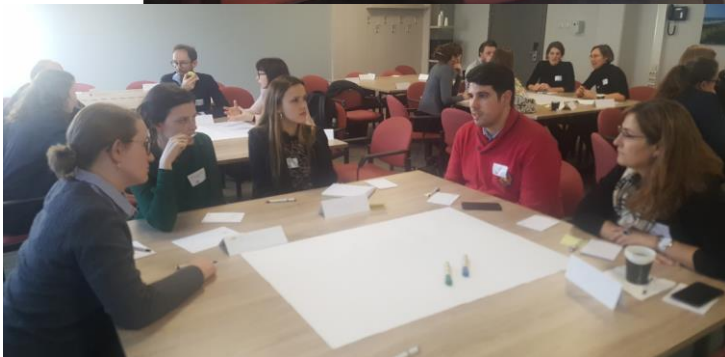
*Genes* 2019, 10(6), 416; <https://doi.org/10.3390/genes10060416>



# Study design groups



## A. Medication review Type 2a + B. Medication review Type 3



# Key issues from presentations

- For whom:
  - Relevant to specific groups OR general, eg related to medicines.
- Knowledge base:
  - Constant improvements & upgrades, aligned with recent algorithms, guidelines etc.
  - How to get to more sophisticated algorithms?
- Data need to be accurate eg diagnoses, lab vales
- Relevance of algorithms:
  - Intelligence:
    - Stop algorithm for alerts and when to restart a popup alert
    - Specific, according to the patient profiles (tailored information), eg not 4 signals, but one action based on all 4 signals
  - Sensitivity and specificity of the system?
    - Eg Layered approached: first layer a lot of false positives, second layer checking what is going on and exclude false positives
- Validation, quality, formal approval of tools, prove of benefit
- Implementation:
  - Just for pharmacist or rather shared with other health care professionals, clarification of the roles
  - Should offer options to document the patient journey, task manager
  - Link with other services: eg follow-up of drug related problems, low adherence, adverse effects
- Remuneration and money for development:
  - Who and how? Eg insurance, pharmaceutical industry support to tackle safety issues as part of their responsi

# Research Gaps & Shared projects

- Upgrade of knowledge base:
  - We do not have recommendations for every patient group
- Is a drug approach better than the disease approach?
- What do we want to measure in evaluation of CDSS impact?
- EMA is investing in research, combine activities with pharmacovigilance

