

Optimising PharmacoTherapy In the multimorbid elderly in Primary CAre

a cluster randomized trial



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Challenges



Goals

- Growing **aging population** challenges health care systems → Support health care system with a **cost-effective** medication review tool
- > 60% of elderly: multiple chronic conditions (**multimorbidity**)¹ requiring multiple drugs (**polypharmacy**) → Generate **patient-centered** solutions for adjusting complex medication
- General practitioners (GPs) have **limited time** to adjust polypharmacy as needed → Provide a user-friendly, **time-saving** aid for polypharmacy adjustment as needed
- Most guidelines address **diseases in isolation**, RCTs: elderly often excluded → **Evidence-based** medication optimization in accordance with guidelines and disease limitations
- Inappropriate drug prescription contribute to up to 30% of hospital admissions² and 20% of unjustified overt health care costs³ → Reduce adverse events and hospitalisations, thereby lower costs

Research questions

- I. How effective is our user-friendly, software-assisted method* for optimizing medication among **multimorbid, elderly** with **polypharmacy** in GP offices?
- II. What is the impact of STRIP on secondary outcomes?
 - drug utilization
 - health care utilization (incl. in- and outpatient care)
 - costs
 - falls
 - quality of life (EQ-5D)
 - changes in medication
- III. What hurdles are to overcome for a broad implementation in GP offices?

Methodology

Design:

- 12-month, cluster randomised, controlled trial
- Unit of randomisation (cluster): GP

Inclusion criteria (for patients):

- Elderly ≥ **65 years** of age
- Multimorbidity ≥ **3 coexistent chronic conditions**, duration: minimum 6 months
- Polypharmacy ≥ **5 different regular drugs**

Statistical considerations:

- Co-primary outcomes: improvement of MAI- and AOU-score at 12 months
 - potential overuse: medication appropriateness index (MAI)
 - potential underuse: assessment of underutilization index (AOU)
- Intention-to-treat & per-protocol analysis, followed by sensitivity analysis
- Analysis tools include mixed-effect models

Approach

Intervention:

- **1st step *STRIP**: Systematic Tool to Reduce Inappropriate Prescribing
- A web-based version of STRIP
- STRIP assistant (STRIPA)

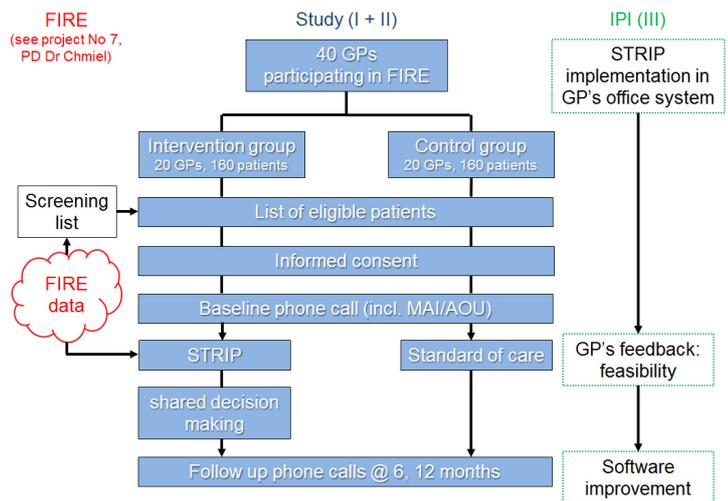


Figure 1: Allocation of drug to diagnosis by drag and drop function

- **2nd step**: Generation of recommendations using STOPP/START criteria⁴
 - **STOPP**-criterion
e.g. Digoxin at a long-term dose greater than 125 µg/day if **eGFR < 30 ml/min/1.73m²** (risk of digoxin toxicity if plasma levels not measured)
 - **START**-criterion
e.g. Beta-blocker with **ischaemic heart disease**

- **3rd step**: Shared decision making between GP and patient

Control group receives medication review by GP in accordance with usual care



Collaborations with

- the Department of Information and Computing Sciences, University of Utrecht, the Netherlands, for STRIPA
- the "Institut für Praxisinformatik" (IPI) in Zurich, Switzerland
- the "Institut für Hausarztmedizin" (IHAMZ) in Zurich, Switzerland, using FIRE ("family medicine ICPC research using medical records") that enables automatic data collection from GP offices

Expected results:

- Improved MAI- and AOU-score: optimized medication
- Clinically relevant effect on secondary outcomes
- Beneficial impact on current healthcare standard in Switzerland
- Evidence for improvement regarding STRIP/ STRIPA, focus: user-friendliness

References:

- 1.) Barnett K et al, Epidemiology of multimorbidity and implications for health care, research, and medical education: a cross-sectional study. Lancet 2012
- 2.) Lau DT et al, Hospitalization and death associated with potentially inappropriate medication prescriptions among elderly nursing home residents. Arch Intern Med 2005
- 3.) Cahir C et al, Potentially inappropriate prescribing and cost outcomes for older people: a national population study. Br J Clin Pharmacol 2010
- 4.) Gallagher PF et al, Prevention of potentially inappropriate prescribing for elderly patients: a randomized controlled trial using STOPP/START criteria. Clin Pharmacol Ther 2011