

# 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**)<sup>1</sup> 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
- 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 admissions<sup>2</sup> and 20% of unjustified overt health care costs<sup>3</sup> → Reduce adverse events and hospitalisations, thereby lower costs

- **2<sup>nd</sup> step:** Generation of recommendations using STOPP/START criteria<sup>4</sup>
  - **STOPP-criterion**  
e.g. Digoxin at a long-term dose greater than 125 µg/day if **eGFR < 30 ml/min/1.73m<sup>2</sup>** (risk of digoxin toxicity if plasma levels not measured)
  - **START-criterion**  
e.g. Beta-blocker with **ischaemic heart disease**
- **3<sup>rd</sup> step:** Shared decision making between GP and patient

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

## 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

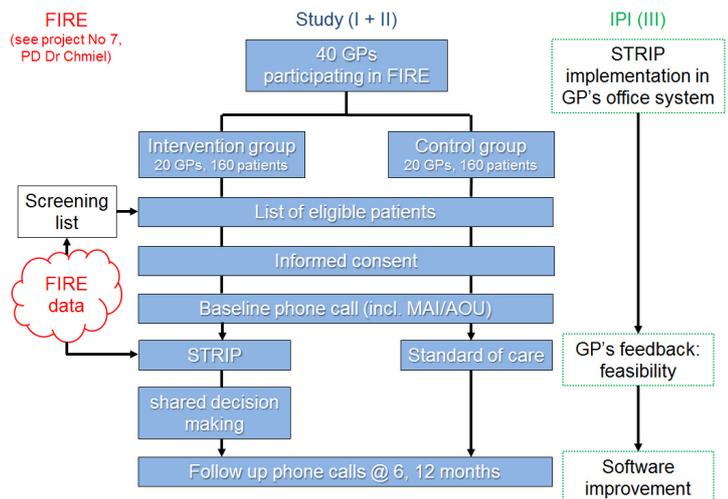
## Approach

### Intervention:

- **1<sup>st</sup> 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



### 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
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- 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