Collaborative care to optimise drug therapy in the elderly

Anne Spinewine

MPharm, MSc, PhD

Cliniques Universitaires de Mont-Godinne and Center for Clinical Pharmacy, Université catholique de Louvain, Belgium

XIXth IAGG Congress, Paris, 7 July 2009

Contact details

- **Anne Spinewine**
- **Cliniques Universitaires de Mont-Godinne, Université catholique de Louvain, Belgium**
- **Email: anne.spinewine@uclouvain.be**

Disclosure of interest

- **1-** No funds were received in support of this presentation.
- **2-** No benefits in any form have been or will be received from a commercial party related directly or indirectly to the subject of this presentation.

Structure

- What's going on with drugs in the elderly?
- Why?
- How can it be improved?
  - Collaborative care involving
    - Multidisciplinary teams and geriatric medicine services
    - Clinical pharmacists, nurses
    - Patients
- Discussion

What's going on?

- Inappropriate prescribing
  - 186 patients admitted to an acute geriatric unit (Spinewine et al., JAGS 2007)
    - Almost 60% of prescriptions: 1 inappropriate rating
    - 30% of patients were taking 1 drug-to-avoid
    - Under-prescribing in 50% of patients

- 50% of elderly patients do not take their drugs as intended

What's going on?

- Discontinuity of care
  - 108 patients ≥ 75, readmitted to the ED 1 month after discharge (Witherington et al., Qual Saf Health Care 2008)
    - Readmission related to medication in 38% of cases
      - Preventable on 61% of cases
    - Preventable discharge communication gaps: 54% of patients

- Economic consequences
  - 1 € spent on drugs → 1.33 € spent to treat drug-related problems (Bootman, 1997)

Why?

Categories underlying inappropriate use of medicines

Reliance on general acute care and short term treatment

- Review of treatment driven by acute considerations; other considerations overlooked — Environment
- Limited transfer of information on medicines from primary to secondary care — Environment
- "One size fits all": prescribing behaviour not tailored to the older patient — Prescriber

Passive attitude towards learning

- Anticipated inefficiency in searching for medicines information — Environment
- Reliance on being taught (teacher centred) rather than self directed learning — Prescriber

Paternalistic decision making

- Patients thought to be conservative — Patient
- Patients declared as unable to comprehend — Patient
- Ageism
- Difficulty in sharing decisions about treatment with other prescribers — Prescriber

Spinewine et al., BMJ 2005; 331: 935-9

Why?

- **Factors leading to a *<u>better</u>* use of medicines**
  - <u>Multidisciplinary team</u>
    - Identification of drug-related problems by team members (nurse, physiotherapist,…) → communication to the prescriber
  - <u>Input of geriatricians</u>

    ↔ « one size fits all »

= COLLABORATIVE CARE

COLLABORATIVE CARE

- Multidisciplinary teams
  - Geriatric medicine services
- Collaboration with
  - clinical pharmacists
  - nurses
- Collaboration with the patient

- Educational approaches
- Collaboration with computers

Multidisciplinary approaches

Geriatric medicine services

- Multidisciplinary approaches
  - Mainly in nursing home and ambulatory care settings
  - Team members: usually GPs, nurses, pharmacists
- Geriatric medicine services
  - Acute care and outpatient clinics
  - Team members: geriatricians, nurses, pharmacists, psychiatrists, … with specialised geriatrics training

- Can potentially address most causes of inappropriate use of medicines
- Every team member brings specific competences

Impact on appropriateness of prescribing

Multidisciplinary approaches					
Allard et al[109]	Ambulatory care, Quebec, Canada	266 patients	DRR by single interdisciplinary team (two physicians, one pharmacist, and one nurse) and written recommendations given to family doctor	12 months	P: The mean number of potentially inappropriate prescription (Quebec consensus panel: drug interactions, therapeutic overlapping, drugs of limited use) declined by 0·24 in the intervention group and by 0·15 in the control group (p<0·001); 37% of intervention patients had no team DRR, and those with team DRR were twice as likely to have fewer potentially inappropriate prescriptions
Meredith et al[110]	Healthcare homes, NY and LA, USA	259 patients	DRR by pharmacist and nurse to identify problems that were then presented to the physician	From 6 weeks to 90 days	P: Overall medication use improved for 50% of intervention patients and 38% of control patients (p=0·051); more duplicative drugs stopped in intervention group (p=0·003) and more appropriate cardiac drugs (p=0·017); no effect on appropriate prescribing of psychotropic drugs and NSAIDs (p>0·05; DUR criteria) O: No difference in clinical outcomes or health care use
Geriatric medicine services					
Coleman et al[104]	Nine primary care physician practices, USA	Nine intervention practices [cluster]; nine family doctors, 169 patients	Chronic care clinic including visit with geriatrician, nurse, and pharmacist	24 months	P: No significant improvements in the prescription of high-risk medications at 12 months (2·94 high-risk medications per patient in the intervention group *vs* 3·26 in the control group; p=0·57) and 24 months (1·86 *vs* 2·54, respectively; p=0·20) O: No difference in selected geriatric syndromes
Schmader et al[105]	11 Veteran Affairs hospitals and clinics, USA	834 patients	Multidisciplinary geriatric team care (including a geriatrician) for inpatients and outpatients (2×2 factorial design)	12 months	P: Higher improvements in the number of unnecessary drugs in intervention than in control patients (–0·6 *vs* +0·1, p<0·0001), inappropriate prescribing (47% decrease *vs* 25% increase in MAI score, p<0·0001), and number of conditions with underuse (–0·4 *vs* +0·1; p<0·001) in inpatients. Higher improvements in the number of conditions with underuse in intervention than in control outpatients (–0·2 *vs* +0·1; p<0·0004) O: Decreased risk of serious adverse drug reactions in outpatients
Saltvedt et al[106]	Single Hospital, Norway	254 patients	Multidisciplinary geriatric team care (including a geriatrician)	Until hospital discharge	P: Lower prevalence of potential drug-drug interactions in intervention than in control group at discharge (p=0·009, 36% decrease from admission to discharge *vs* 17%, respectively), and of anticholinergic medications (p=0·03, 78% *vs* 10% decrease, respectively); no difference in prescription of Beers' drugs (p>0·05, 60% *vs* 33% decrease, respectively)
Crotty et al[107]	Ten residential care homes, Australia	Ten facilities [cluster]; 154 residents	Two multidisciplinary case conference (including a geriatrician), 6–12 weeks apart	3 months	P: Higher improvements in prescribing appropriateness in intervention than in control group (55% decrease *vs* 10% decrease in MAI scores, p=0·004) O: No differences in resident behaviour
Strandberg et al[108]	Ambulatory care, Finland	400 patients with CVD	Geriatrician-driven treatment review plus nutritional and smoking recommendations	3 years	P: Significant increase in the use of evidence-based drugs in the intervention compared with control group (β blockers p=0·02, ACE-I p=0·0001, ARA p=0·007, statins p<0·0001) O: Significant improvements in blood pressure and cholesterol levels, but no difference in major cardiovascular events and total mortality

Spinewine et al. Lancet 2007;370:173-84.

Less effective if

- No direct interaction with the prescriber
- Intervention not provided at the time of prescribing (retrospectively – after the prescription has been issued)

Acute geriatric unit

Mobile geriatric team for patients hospitalised on other medical/surgical units

Geriatric day-clinic for outpatients

Collaboration with clinical pharmacists

Setting X

Setting Y

Physician

Physician

Nurse

Carers

Clinical pharmacist

Pharmacists

Others

Others

Impact on appropriateness of prescribing

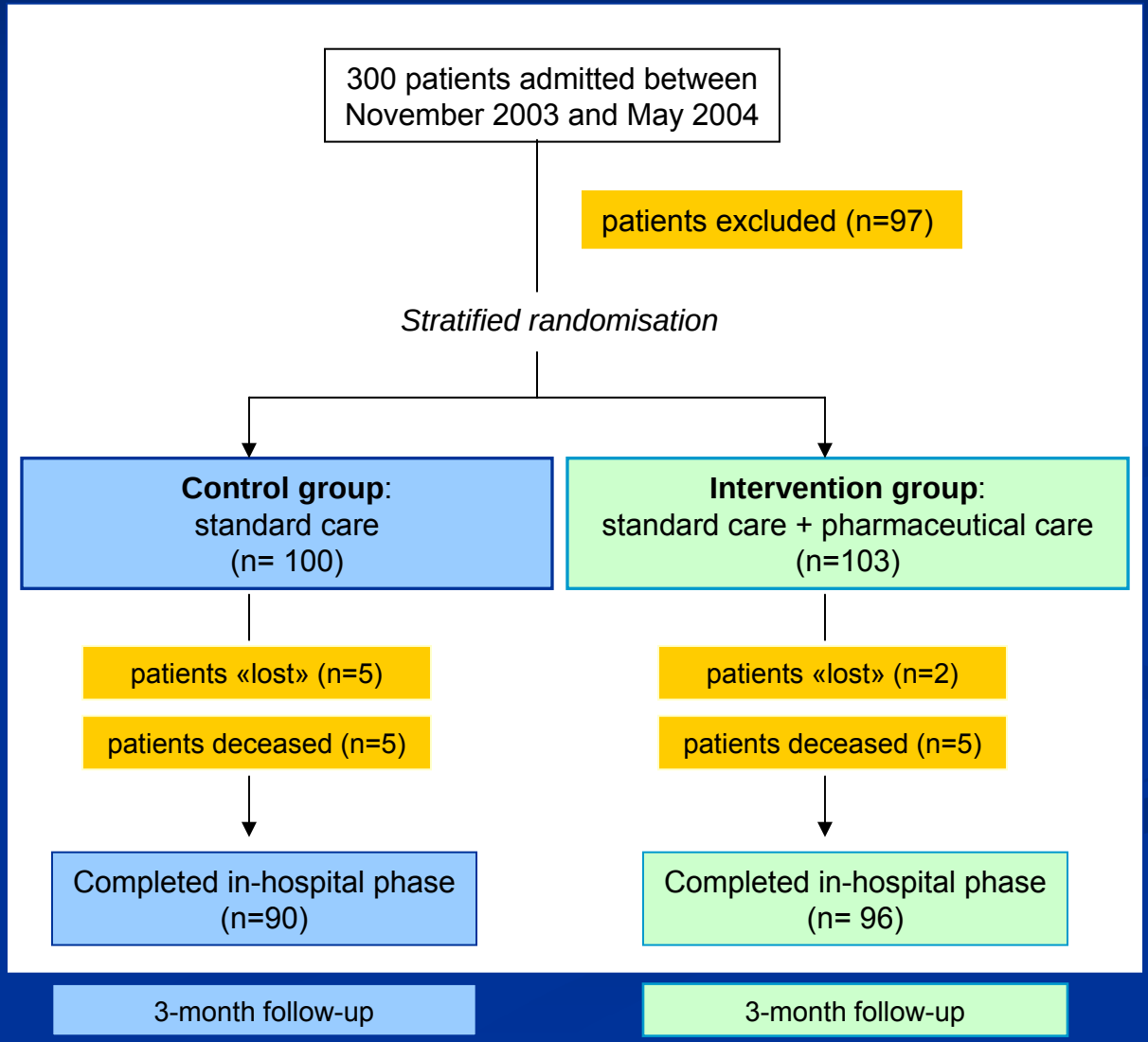
Clinical pharmacy*					
Hanlon et al[101]	Veteran Affairs General Medicine clinic, USA	208 patients	DRR and written drug therapy recommendations for physician; patient counselling at each clinic visit	12 months	P: Higher decline in inappropriate prescribing scores (MAI) in intervention *vs* control group, at 3 months (24% *vs* 6% decrease, p=0·0006), and 12 months (28% *vs* 5% decrease, p=0·0002) O: No significant differences in adverse drug events, health related quality of life, or health services use
Krska et al[102]	Ambulatory care, Scotland	332 patients	Pharmaceutical care plan completed and given to family doctor	3 months	P: More drug-related problems resolved in intervention than in control group (82·7% *vs* 41·2%, p<0·05) O: No difference in health related quality of life or health services use
Crotty et al[103]	Hospital to nursing home, Australia	110 patients	Transfer medication list to community pharmacist, DRR by community pharmacist, and case conference with doctors and pharmacists	8 weeks	P: Scores of inappropriate prescribing (MAI) at follow-up lower in the intervention than in control group (2·5 *vs* 6·5 p=0·006); at follow-up, 22% decrease *vs* 91% increase, respectively O: Better pain control and less hospital use; no difference in adverse drug events, falls/mobility, behaviour/cognition

Spinewine et al. Lancet 2007;370:173-84.

Effect of a Collaborative Approach on the Quality of Prescribing for Geriatric Inpatients: A Randomized, Controlled Trial

Anne Spinewine, PhD, Christian Swine, MD,*§ Soraya Dhillon, PhD,‖ Philippe Lambert, PhD,¶ Jean B. Nachega, MD, MPH, DTM&H,#** Léon Wilmotte, MPharm,*† and Paul M. Tulkens, MD, PhD*‡*

JAGS 2007;55:658-65



JAGS 2007;55:658-65

- OR (95%CI) for having ≥1 improvement from admission to discharge in the intervention group compared with the control group
  - MAI 9.1 (4.2-21.6)
  - Drug-to-avoid 0.6 (0.3-1.1)
  - Underuse (ACOVE criteria) 6.1 (2.2-17.0)
- Trend toward decreased rates of mortality and visits to the emergency department

A Comprehensive Pharmacist Intervention to Reduce Morbidity in Patients 80 Years or Older

A Randomized Controlled Trial

Arch Intern Med. 2009;169(9):894-900

- 400 patients ≥ 80y, 2 acute internal medicine wards (Sweden)
- Randomisation: usual care / ward-based pharmacists
- 12-month follow-up

Table 2. Summary of Outcomes at 12 Months' Follow-up

Variable[a]	Value (Quotient)		Estimate (95% Confidence Interval)
	Intervention Group (n=182)	Control Group (n=186)	
Visits to the hospital[b]	**266** (1.88)	**316** (2.24)	0.84 (0.72-0.99)
Patients readmitted[c]	106 (58.2)	110 (59.1)	0.96 (0.64-1.46)
Readmissions	217 (1.54)	223 (1.58)	0.97 (0.81-1.17)
Drug-related readmissions	9 (0.06)	45 (0.32)	0.20 (0.10-(
Visits to the emergency department	49 (0.35)	93 (0.66)	0.53 (0.37-(
Overall survival[d]	0.69	0.67	0.94 (0.65-1

Table 3. Drug-Related Readmissions

Drug-Related Cause for Readmission	Intervention Group (n=9)	Control Group (n=45)
Digoxin intoxication	1	3
Overprescribing of antihypertensive agents	1	8
Suboptimal drug therapy		
Heart failure	0	5
Ischemic heart disease	0	2
Diabetes mellitus	3	2
Dehydration due to overprescribing of diuretics	3	5
Anemia due to aspirin or nonsteroidal anti-inflammatory drugs	0	4
Confusion and/or fall due to sedatives, opioids, or anticholinergic drugs	1	9
Diarrhea due to antibiotic treatment	0	2
Hyperkalemia	0	1
Hyponatremia due to diuretics and selective serotonin reuptake inhibitor therapy	0	2
Lack of drug treatment for atrial fibrillation (embolism)	0	1
Bleeding (hematoma) due to warfarin sodium	0	1

Pre-requisites / success factors

- Knowledge and skills
- Have full access to patients' records
  - Past medical Hx, drug Hx, laboratory data, evolution,…
- See the patient/carer !
  - Drug history, compliance,…
- Communicate with other HCPs
  - Physicians, nurses, physiotherapists, community pharmacists,…
  - Work in close liaison, whenever possible

Pre-requisites / success factors

- If not…

Does home based medication review keep older people out of hospital? The HOMER randomised controlled trial

Richard Holland, Elizabeth Lenaghan, Ian Harvey, Richard Smith, Lee Shepstone, Alistair Lipp, Maria Christou, David Evans and Christopher Hand

BMJ 2005;330;293; originally published online 21 Jan 2005;

Conclusions The intervention was associated with a significantly higher rate of hospital admissions and did not significantly improve quality of life or reduce deaths. Further research is needed to explain this counterintuitive finding and to identify more effective methods of medication review.

Collaboration with nurses

Collaboration with nurses

- Interactive role in a multidisciplinary team
  - Administration and compliance: Identify patients with difficulties in medicines taking, poor compliance,…
  - Follow-up of prescription (side-effets, duration of therapy,…)
- Should be involved in educational programs

Collaboration with nurses

- Nurse-physician communication and quality of drug use (Schmidt et al., SSM 2002)
  - 36 Nursing homes in Sweden
  - Quality of drug use positively associated with
    - Quality of nurse-physician communication
    - Regular multidisciplinary team discussions

Collaboration with the patient / carer

"When we want your opinion, we'll give it to you"

BMJ 11 oct 2003

Concordance

Collaboration with the patient

- What does the patient want to know?
- How far does the patient want to be involved in the decisions relative to his/her medicines?

- Elicit patient's preferences
- Don't anticipate that the patient would disagree with changing one of his/her medicines

Collaboration with carers

Bogardus et al. JAGS 2004;52:99-105.

- 1-yr prospective cohort study, 200 patients and family caregivers at a geriatric assessment center
- 46% of recommendations pertained to medications
- Caregiver agreement with recommendations predicted adherence to recommendation and goal attainment 1 year later

COLLABORATIVE CARE

- Multidisciplinary teams
  - Geriatric medicine services
- Collaboration with
  - clinical pharmacists
  - nurses
- Collaboration with the patient

- Educational approaches
- Collaboration with computers

Educational approaches

- Passive vs interactive
- Academic detailing
- Audit and feedback

Advantages
Directly addresses the absence of training in geriatric pharmacotherapy
Can promote changes in prescribin
Personalised, interactive, and mult
approaches most likely to be effect

Disadvantages
Usually restricted to specific drugs or diseases
Passive approaches likely to be ineffective
Effect not sustained without continued intervention
Low participation rate; barriers to implementation of interactive and multidisciplinary meetings

« Collaboration » with computers

- CPOE: computerised prescribing order entry
- CDSS: computer decision support system

Advantages

Potentially powerful tools to prevent adverse drug events
Support at the time of prescribing
All categories of inappropriate prescribing can be addressed, if prescription data are linked to clinical data

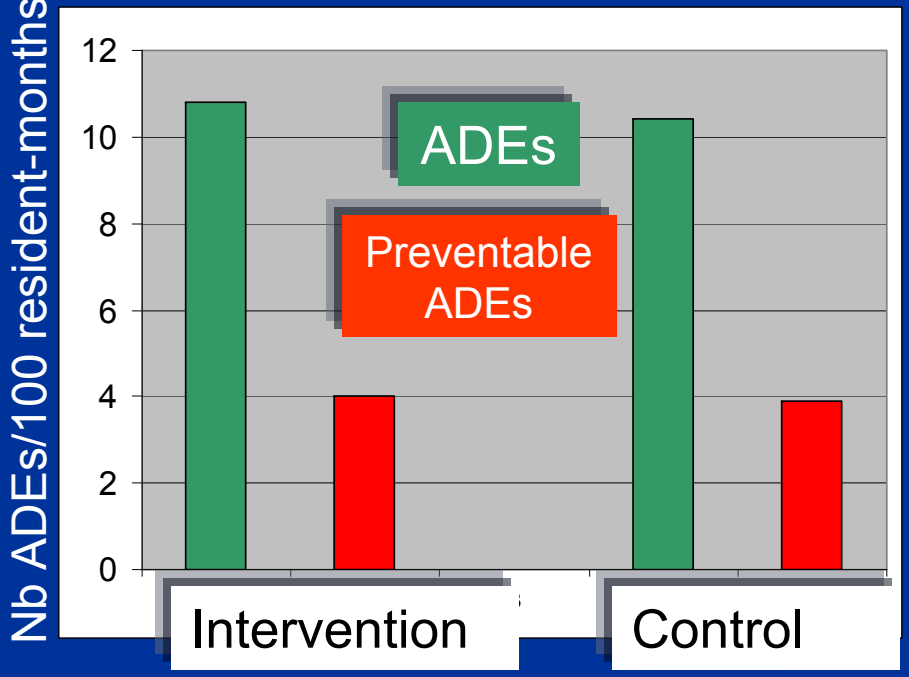
Disadvantages

Challenging to implement
Existing systems are not geriatric-specific
High volume of alerts; therapeutic flags usually overridden by physicians; risk of unimportant warnings. Some prescribers are reluctant to use

Effect of Computerized Provider Order Entry with Clinical Decision Support on Adverse Drug Events in the Long-Term Care Setting

Gurwitz JH et al. JAGS 2008; 56: 2225-33

- Cluster RCT, 1118 residents, 29 care units
- CPOE with and without CDSS



- Alert burden
- Limited scope of the alerts
- Insufficient lab-clinical data integration

Additional thoughts

- The focus should be on the frail geriatric patient rather than on single diseases
- Transferability between countries/settings
  - ! Environmental factors
  - What works in acute care does not necessarily works in ambulatory care
  - What works in the US does not necessarily works in Belgium or in France, for example

Un(der)answered questions…

- Impact of collaborative care on clinical, economic, humanistic outcomes ↔ surrogate outcomes
- Cost-effectiveness?
- Patient's empowerment – how to measure it? What is the impact?
- …

Thank you for your attention