Systematic approach to appropriate prescribing in the elderly

Anne Spinewine

MPharm, MSc, PhD

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

ACCP/ESCP International Congress on Clinical Pharmacy, Orlando, 24-28 April 2009

Learning objectives

- To describe the components of a systematic evaluation of appropriate prescribing in the elderly.
- To explain the characteristics, strengths and weaknesses of existing tools to evaluate appropriate prescribing in elderly patients.
- To summarise the evidence supporting the impact of clinical pharmacists on the quality of prescribing.

Structure

- Case presentation
- What does appropriate prescribing mean?
- How should we review prescribing for an elderly patient?
- What is our impact as clinical pharmacists?
- Case discussion

Spinewine A, Schmader KE, Barber N, Hughes C, Lapane KL, Swine C, Hanlon JT. ***Appropriate prescribing in elderly people: how well can it be measured and optimised?*** *Lancet 2007;370:173-84.*

Case presentation

- Mrs L.A., 89 y, admitted to the ED
- HPI: recent fall, confusion and functional decline, respiratory infection
- Lives alone at home, no need for help in (i)ADL
- PMH: IHD, AF, HT, falls, depression, COPD (GOLD II)
- Drug history:

- Fenoterol + ipratropium prn
- Mirtazapine 30mg od
- ASA 160mg od
- 1 week earlier:
  - Clarithromycin 250mg bd
  - Ipratropium tds

- Theophylline LA 250mg od
- Lorazepam 2.5mg od
- Amiodarone 200mg od
- Furosemide 20mg od
- Perindopril 5mg od

Additional medications identified by the clinical pharmacist on admission

Case presentation

- Uses a dosette box – good compliance – relatively good understanding of her medications
- On admission
- Creat Cl (Cockroft): 36ml/min
- Inflammatory syndrome
- Cardiac rhythm 65/min, reg, BP 120/70
- Normal: electrolytes, thyroid function, lipid levels
- Vit D: 10 ng/ml

Case presentation

- What are the pharmaceutical problems?

- In any systematic approach to review prescribing, what should be the first question we should always ask to ourselves?

What is appropriate prescribing?

- A prescription that maximises efficacy and safety, minimises costs, and respects patient's choices. (Barber N. Pharm J 1996;257:289-91)

- « Pharmacological appropriateness »
  - Only 1 dimension

- Other dimensions
  - What the patient wants
  - The « general good »

What is appropriate prescribing?

- More complex than for younger patients
  - Comorbidities and polymedication
  - PK/PD changes
  - Physical/cognitive impairment
  - Limited clinical evidence
  - Goals of treatment
  - Social and economic factors
  - …

Prescribing for a frail elderly patient

≠

Prescribing for a 60-yr old fit patient

Categories of inappropriate prescribing

- Prescribing more drugs than are clinically indicated — *OVER-*
- Inappropriate with regard to: — *MIS-*
  - Choice of medicine
  - Dosage
  - Duration
  - Modalities of administration
  - Drug interactions (/drug or /disease)
  - Cost
- Failure to prescribe drugs that are needed — *UNDER-*

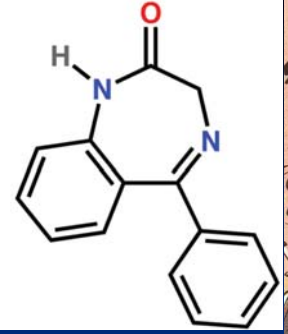
How should we review prescribing for an elderly patient?

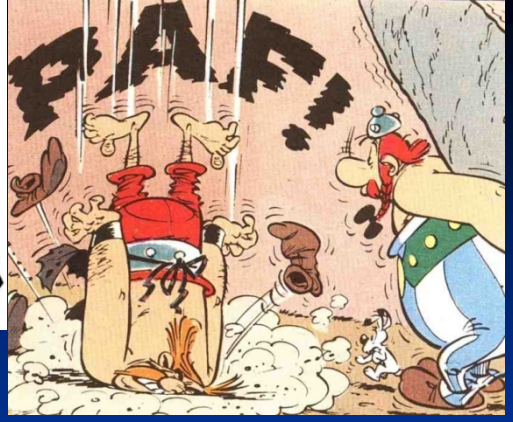
Pre-requisites for pharmacists

- 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,…
- Calculate creatinine clearance

Instruments to review prescribing

- Explicit
  - Criterion-based
  - < reviews, consensus, experts
  - Focus on drugs/diseases
- Process
  - Prescription accords with accepted standards
  - Should have causal links to important outcomes
- Implicit
  - Judgement-based
  - Focus on the patient
- Outcome
  - Indicators of adverse outcomes





Example

	Process	Outcome
Explicit	- LA-BZD - LA-BZD in patients with fall	Admission to hospital for fall and patient taking a LA-BZD
Implicit	Patient with LA-BZD for insomnia for 5 years, other risk factors for fall, patient open to attempt progressive discontinuation	

Explicit instruments

- The Beers' criteria
  - Drugs to avoid, risks > benefits
  - Drugs – drugs in certain diseases
  - O/M

- McLeod and Naugler: Canada

Beers et al., Arch Int Med 1991;151:1825-32 – Arch Int Med 1997;157:1531 and 2003;163:2716-24

Explicit instruments

- The Beers' criteria

Beers 1997

- Amitriptyline
- Diazepam, flurazepam,clorazepate, triazolam,…
- Propoxyphene
- Ticlopidine, Dipyridamole
- Indomethacin
- Loraz.>3 mg, alpraz.>2mg
- VKA + aspirin / NSAID
- …

Beers 2003 - additions

- Amiodarone
- Fluoxetine
- Cimetidine
- Nitrofurantoin
- Oestrogens
- …

Explicit instruments

- The Beers' criteria

☹ - Some drugs controversial

- Many drugs not available in Europe

- Only 2 aspects of inappropriate prescribing

☺ - Easy and rapid to use

Beers et al., Arch Int Med 1991;151:1825-32 – Arch Int Med 1997;157:1531 and 2003;163:2716-24

Explicit instruments

- The ACOVE criteria
  - Assessing Care Of the Vulnerable Elder
  - 68 medication-related indicators
  - If… then… (unless…)
  - O/U/M

Wenger and Shekelle Ann Intern Med 2001;135:642-6

ACOVE criteria

Domains of care taken into consideration

- Continuity of care
- Dementia
- Depression
- Diabetes mellitus
- End-of-life care
- Falls and mobility disorders
- Hearing impairment
- Heart failure
- Hospital care
- Hypertension
- Ischaemic heart disease
- Malnutrition
- Medication management
- Osteoarthritis
- Osteoporosis
- Pain management
- Pneumonia and influenza
- Pressure ulcers
- Screening and prevention
- Stroke and atrial fibrillation
- Urinary incontinence
- Vision impairment

Wenger and Shekelle. Ann Intern Med 2001;135:642-6

Explicit instruments

- The ACOVE criteria

☹ - Operationalisability

☺ - Geriatric conditions included

- Encompass Tx, prevention, monitoring, education and documentation

- Applicable to patients with dementia and poor prognosis

Beers et al., Arch Int Med 1991;151:1825-32 – Arch Int Med 1997;157:1531 and 2003;163:2716-24

Explicit instruments

- The STOPP / START criteria
  - Screening tool of older persons' potentially inappropriate prescriptions (STOPP)
    - 65 criteria, O/M
    - 33 not found in Beers' criteria
  - Screening tool to alert doctors to the right treatment (START)
    - 22 criteria, U

Gallagher et al. Int J Clin Pharmacol Ther 2008;46:72-83

Explicit instruments

- The STOPP/START criteria

STOPP

- Aspirin > 150mg/d
- SSRI with a history of clinically significant hyponatremia
- PPI for peptic ulcer disease at full therapeutic dosage for > 8 wks

START

- Antidepressant drug in Mo-Se depressive symptoms lasting at least 3 months

Gallagher et al. Int J Clin Pharmacol Ther 2008;46:72-83

Explicit instruments

- Pros of using explicit criteria in our daily practice
  - Relatively easy to remember and to detect
  - Provides support to identify inappropriate prescribing in the elderly
  - BUT…

- Cons of using explicit criteria in our daily practice
  - This is just one part of the story…
  - The patient's perspective is often not taken into consideration

→ We should not limit our evaluation to the application of such criteria

There is a role for inappropriate prescribing screening tools in everyday clinical practice.

They should enhance, not replace good clinical judgement.

(Hamilton et al., BMC Geriatrics 2009;9:5)

Implicit instruments

- The Medication Appropriateness Index (MAI)
  - 10 questions per drug

1. Valid indication?
2. Appropriate choice?
3. Correct dose?
4. Modalities of treatment correct?
5. Modalities of treatment practical?
6. Clin. significant drug-drug interactions?
7. Clin. significant drug-disease interactions?
8. Duplication?
9. Appropriate duration?
10. Cost?

Hanlon et al. Am J Med 1996;100:428-37

Implicit instruments

- The MAI

☹ - Time consuming

- Knowledge-dependent

☺ - Comprehensive and systematic

- Includes operational definitions, explicit instructions, and examples

- Excellent as an educational « tool » for clinical pharmacy students!

Beers et al., Arch Int Med 1991;151:1825-32 – Arch Int Med 1997;157:1531 and 2003;163:2716-24

In summary

For every patient

- Could the presenting complain be related to an ADE?
- Are there diseases or symptoms that are undertreated?
- What does the patient think about the medicines prescribed?

For every medicine prescribed

1. Valid indication?
2. Appropriate choice?
3. Correct dose?
4. Modalities of treatment correct?
5. Modalities of treatment practical?
6. Clin. significant drug-drug interactions?
7. Clin. significant drug-disease interactions?
8. Duplication?
9. Appropriate duration?
10. Cost?

BMJ 11 oct 2003

When you evaluate prescribing,

never forget to ask (if possible)

the patient's point of view!

Don't anticipate that the patient will disagree with what you want to propose

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

Application to drug interactions

Panel 5: Team approach to the prevention of drug interactions in elderly people

Pharmacist

- Develop a therapeutic relationship with the patient and caregiver to assess attitudes, preferences, and drug compliance
- Document a complete up-to-date drug history, including over-the-counter medications, health supplements, alcohol, and vitamins
- Review medications for actual drug interactions; screen for drug–disease interactions and for drugs that are metabolised primarily via cytochrome P450 isoenzymes
- Detect and document actual drug interactions in health record with action plan and follow-up; suggest drugs with a lower risk of interactions according to the patient's drug profile
- Monitor for adverse outcomes from potential drug interactions
- Educate the patient and caregiver on non-prescription drug use, nutritional supplements, and potential drug–food interactions
- Educate members of the health-care team on drug interactions
- Document and report any adverse drug event
- Reconcile active drug lists and pharmaceutical care plan on transition between care settings, to promote continuity of care

Prerequisites

Know your CYPs!

Communicate
Document
Educate
Follow-up

Mallet L et al. Lancet 2007;370:185-91.

Prescribing review by clinical pharmacists

Is it evidence-based ?

Impact of clinical pharmacists on prescribing: RCTs

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

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.

Impact of clinical pharmacists on prescribing: RCTs

Does pharmacist-led medication review help to reduce hospital admissions and deaths in older people? A systematic review and meta-analysis

Richard Holland, James Desborough,[1] Larry Goodyer,[2] Sandra Hall,[2] David Wright[1] & Yoon K. Loke

Br J Clin Pharmacol 2008;65:303-16

We set out to determine the effects of pharmacist-led medication review in older people by means of a systematic review and meta-analysis covering 11 electronic databases. Randomized controlled trials in any setting, concerning older people (mean age >60 years), were considered, aimed at optimizing drug regimens and improving patient outcomes. Our primary outcome was emergency hospital admission (all cause). Secondary outcomes were mortality and numbers of drugs prescribed. We also recorded data on drug knowledge, adherence and adverse drug reactions. We retrieved 32 studies which fitted the inclusion criteria. Meta-analysis of 17 trials revealed no significant effect on all-cause admission, relative risk (RR) of 0.99 [95% confidence interval (CI) 0.87, 1.14, $P = 0.92$], with moderate heterogeneity ($I^2 = 49.5$, $P = 0.01$). Meta-analysis of mortality data from 22 trials found no significant benefit, with a RR of mortality of 0.96 (95% CI 0.82, 1.13, $P = 0.62$), with no heterogeneity ($I^2 = 0\%$). Pharmacist-led medication review may slightly decrease numbers of drugs prescribed (weighted mean difference = –0.48, 95% CI –0.89, –0.07), but significant heterogeneity was found ($I^2 = 85.9\%$, $P < 0.001$). Results for additional outcomes could not be pooled, but suggested that interventions could improve knowledge and adherence. Pharmacist-led medication review interventions do not have any effect on reducing mortality or hospital admission in older people, and can not be assumed to provide substantial clinical benefit. Such interventions may improve drug knowledge and adherence, but there are insufficient data to know whether quality of life is improved.

Impact of clinical pharmacists

- Added-value compared to that of other HCPs
- Impact on prescribing, but also on
  - Administration
  - Compliance
  - Continuity of care
- Educational role
  - NB: formal education sessions: ineffective!

Case discussion

- Mrs L.A., 89 y, admitted to the ED
- Reasons for admission: recent fall (at night), respiratory infection, confusion and functional decline
- Lives alone at home, no need for help in (i)ADL
- PMH: IHD, AF, HT, falls, COPD (GOLD II)
- Drug history:

- Fenoterol + ipratropium prn
- Mirtazapine 30mg od
- ASA 160mg od
- 1 week earlier:
  - Clarithromycin 250mg bd
  - Ipratropium tds

- Theophylline LA 250mg od
- Lorazepam 2.5mg od
- Amiodarone 200mg od
- Furosemide 20mg od
- Perindopril 5mg od

Additional medications identified by the clinical pharmacist on admission

BEERS

Case discussion

- Mrs L.A., 89 y, admitted to the ED
- Reasons for admission: recent fall (at night), respiratory infection, confusion and functional decline
- Lives alone at home, no need for help in (i)ADL
- PMH: IHD, AF, HT, falls, depression, COPD (GOLD II)
- Drug history:

- Fenoterol + ipratropium prn
- Mirtazapine 30mg od
- ASA 160mg od
- 1 week earlier:
  - Clarithromycin 250mg bd
  - Ipratropium tds

- Theophylline LA 250mg od
- Lorazepam 2.5mg od
- Amiodarone 200mg od
- Furosemide 20mg od
- Perindopril 5mg od

Additional medications identified by the clinical pharmacist on admission

STOPP/ START

Case discussion

- Mrs L.A., 89 y, admitted to the ED
- Reasons for admission: recent fall (at night), respiratory infection, confusion and functional decline
- Lives alone at home, no need for help in (i)ADL
- PMH: IHD, AF, HT, falls, COPD (GOLD II)
- Drug history:

Regular inhaled bronchodilator

- Fenoterol + ipratropium prn
- Mirtazapine 30mg od
- ASA 160mg od
- 1 week earlier:
  - Clarithromycin 250mg bd
  - Ipratropium tds

Vit D

- Theophylline LA 250mg od
- Lorazepam 2.5mg od
- Amiodarone 200mg od
- Furosemide 20mg od
- Perindopril 5mg od

Additional medications identified by the clinical pharmacist on admission

MAI

- Choice: amiodarone, theopylline, clarithromycin, mirtazapine,…
- Dosage: ASA 160mg,…
- DDI: clarithromycin + mirtazapine/theophylline (→ confusion, fall)
- DDiI: BZD-fall, theophylline-insomnia,…
- Duplication: ipratropium

Mrs LA really well understood that lorazepam might not be appropriate for her, but she did not want to consider discontinuation of this drug.

Systematic approach to appropriate prescribing in the elderly

YES WE CAN!

« Our » patients deserve it.

Thank you for your attention