Seminar M1

Inspired by STOPP/START:
a new prescription screening tool for adult patients

QUESTION 1

What is the most frequently observed drug-related problem among geriatric patients ?

GREEN **underprescription**

RED **overprescription**

Seminar M1

Inspired by STOPP/START:
a new prescription screening tool for adult patients

QUESTION 2

What is the most frequently observed drug-related problem among internal medicine patients ?

GREEN **underprescription**

RED **overprescription**

Seminar M1

Inspired by STOPP/START:
a new prescription screening tool for adult patients

QUESTION 3

A 50 years patient is known for an ischaemic cardiopathy and a congestive systolic heart failure. He receves aspirin, metoprolol and atorvastatin.

Is there a problem of:

GREEN **underprescription**

RED **overprescription**

STOPP

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UNIL | Université de Lausanne

START

STOPP

Screening Tool of Older Person's Prescriptions

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I have no conflict of interest to declare with respect to this symposium

Pr. P.-O. Lang

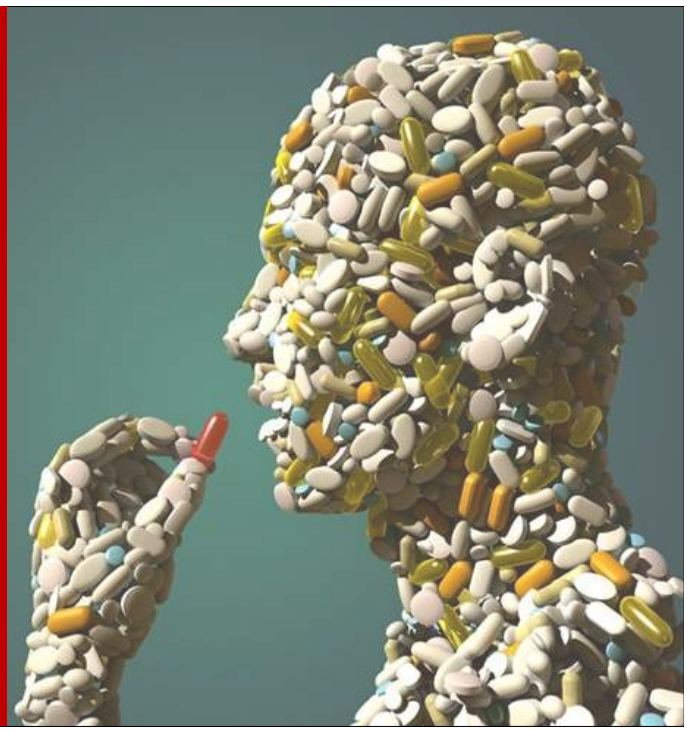
START

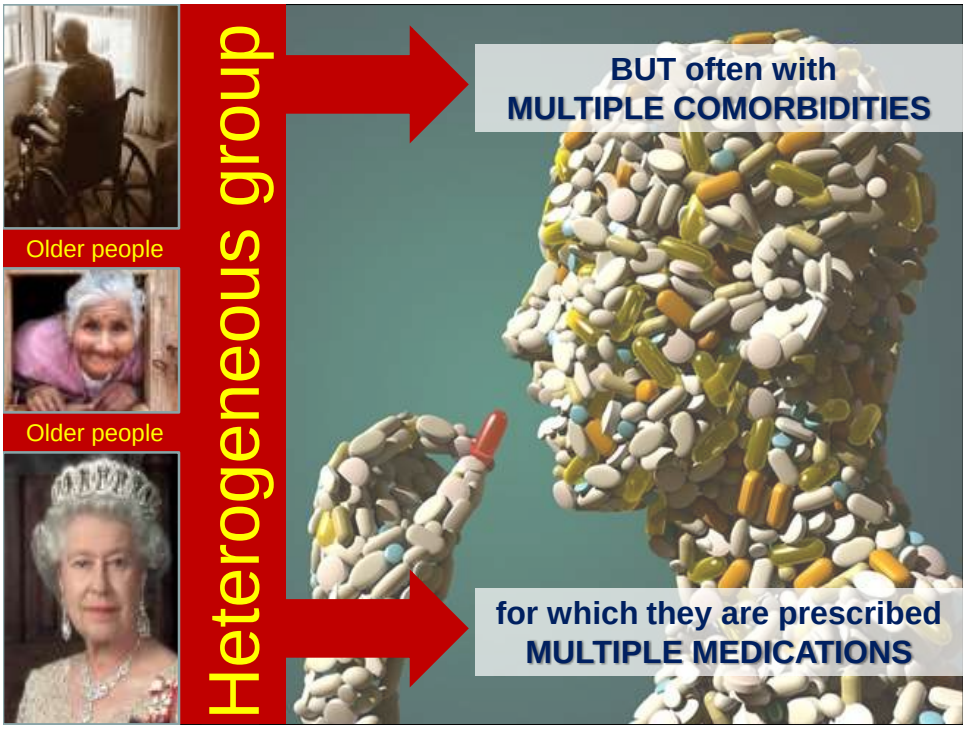
Screening Tool to Alert doctors to Right Treatment

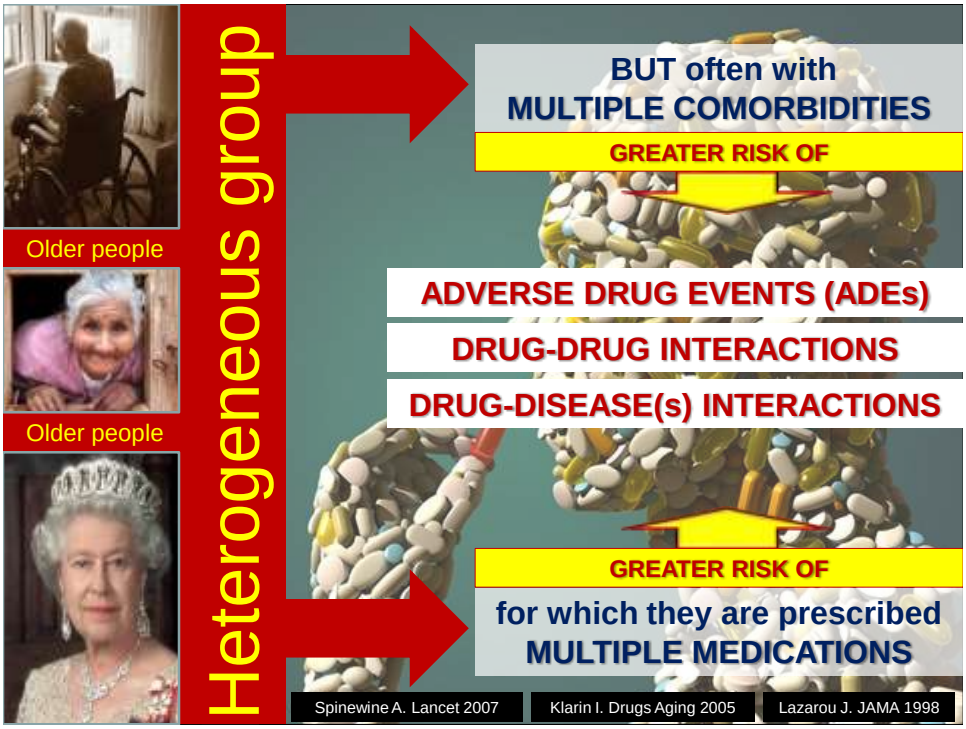
Older people

Older people

Heterogeneous group




Older people
Older people
Heterogeneous group
BUT often with
MULTIPLE COMORBIDITIES
for which they are prescribed
MULTIPLE MEDICATIONS


Older people
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Heterogeneous group
BUT often with
MULTIPLE COMORBIDITIES
GREATER RISK OF
ADVERSE DRUG EVENTS (ADEs)
DRUG-DRUG INTERACTIONS
DRUG-DISEASE(s) INTERACTIONS
GREATER RISK OF
for which they are prescribed
MULTIPLE MEDICATIONS
Spinewine A. Lancet 2007
Klarin I. Drugs Aging 2005
Lazarou J. JAMA 1998

Older people

Older people

Heterogeneous group

BUT often with MULTIPLE COMORBIDITIES

Number of Emergency Department Visits for Adverse Effects of Medical Treatment

DRPs = 30% community-dwelling older people

INAPPROPRIATE PRESCRIBING = MAJOR CAUSE OF DRPs

DRPs = 30% of hospital admissions of older people

for which they are prescribed MULTIPLE MEDICATIONS

Spinewine A. Lancet 2007 | Klarin I. Drugs Aging 2005 | Lazarou J. JAMA 1998

Definition

APPROPRIATE prescribing medication

It encompasses the use of medicines

- clinically indicated
- at a right frequency and right periods
- with acceptable risks of adverse drug-drug interactions
- with acceptable risks of adverse drug-disease(s) interactions

- **and prescribed with respect to patients' life expectancy and disabilities**

INAPPROPRIATE prescribing medication

It encompasses the use of medicines

- no clinically indicated
- at a higher frequency and/or longer periods than clinically indicated
- with high risks of adverse drug-drug interactions
- with high risks of adverse drug-disease interactions
- where adverse drug event outweighs the clinical benefit

Gallagher P. Int J Pharmaco Ther 2007

Definition

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- with high risks of adverse drug-drug interactions
- with high risks of adverse drug-disease interactions
- where adverse drug event outweighs the clinical benefit

- **and the UNDER-USE of medicines that are clinically indicated**

Rochon PA. JAMA 1999

Review of the literature

Systematic prescriptions review

Based on explicit and implicit criteria for inappropriate prescribing

Beers MH. Arch Intern Med 1991

Naugler CT. Can J Clin Pharmacol 2000

Hanlon JT. J Clin Epidemiol 1992

Fick DM. Arch Intern Med. 2003

Review of the literature

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APPEARED AS

- an attractive solution for limiting **potentially inappropriate prescribing medication**
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AVAILABLE TOOLS

- **Beers' criteria**
- **IPET** – Improved Prescribing in the Elderly Tool
- **MAI** – Medication Appropriateness Index
- **ACOVE** – Assessing care of Vulnerable Elder under-use criteria

Beers MH. Arch Intern Med 1991 | Naugler CT. Can J Clin Pharmacol 2000 | Hanlon JT. J Clin Epidemiol 1992 | Fick DM. Arch Intern Med. 2003

Review of the literature

Beers' criteria (2003 version)

The first well-organised list of common errors of prescribing in older people

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Review of the literature

Beers' criteria (2003 version)

The first well-organised list of common errors of prescribing in older people

HOWEVER

Several deficiencies militate against their widespread use in European countries

Gallagher P. Int J Clin Pharmacol Ther 2007

O'Mahony D. European Geriatric Med 2010

Review of the literature

Beers' criteria (2003 version)

The first well-organised list of common errors of prescribing in older people

Drugs listed in Beers' criteria that are rarely used in European practice

Trimethobenzamide	Methocarbamol	Carisoprolol
Metaxalone	Cyclobenzaprine	Me…
Halazepam	Reserpine	…pamide
Hydroxyzine	Hyoscyamine	Clidinium
Cyclandelate	Cy…	Tripelenamine
Guanedrel	…	Guanethidine
Mesoridazine	Isoxsurpine	Thioridazine
Amphetamines	Clonidine	Ethacrynic acid
Dyclomine	Phenylpropanolamine	Pemolin

29/78 medications are obsolete or no longer available in Europe

Gallagher P. Int J Clin Pharmacol Ther 2007

O'Mahony D. European Geriatric Med 2010

Review of the literature

Beers' criteria (2003 version)

The first well-organised list of common errors of prescribing in older people

HOWEVER

Drugs listed in Beers' criteria that are not actually contra-indicated in older people, according to up-to-date evidence based drug formularies

Amitriptyline	Nitrofurantoine	Amiodarone
Doxazosin (α-blocker)	Propanolol	

Beers' criteria do not included several important instances of potentially inappropriate prescribing

Drug-drug interaction	Drug class prescription duplication	Prescribing omission

Gallagher P. Int J Clin Pharmacol Ther 2007

O'Mahony D. European Geriatric Med 2010

Some prescriptions to be avoided in elderly patients that are not mentioned in Beers' criteria (2003)
Loop diuretic for dependent ankle edema only i.e. no clinical signs of heart failure
Thiazide diuretic with a history of gout
Aspirin to treat dizziness not clearly attributable to cerebrovascular disease
Tricyclic antidepressants with glaucoma
Anticholinergics to treat extrapyramidal side-effects of neuroleptic medications
Proton pomp inhibitor for peptic ulcer at full therapeutic dosage for > 8 weeks
Theophylline as monotherapy for COPD
NSAIDs with heart failure
NSAIDs with chronic renal failure
Vasodilatator drugs with persistent postural hypotension
Neuroleptics and recurrent falls
Any duplicate drug class prescription e.g. two concurrent opiates, NSAIDs, loop diuretics, …
[…]

O'Mahony D. European Geriatric Med 2010

STOPP

Screening Tool of Older Person's Prescriptions

… Given these deficiencies of BEERS' criteria, D. O'Mahony's research group sets about drafting a new and different set of potentially inappropriate prescribing criteria in older people, based on the following precepts …

START

Screening Tool to Alert doctors to Right Treatment

STOPP

Screening Tool of Older Person's Prescriptions

Criteria should capture common and important instances of potentially inappropriate prescribing medication

START

Screening Tool to Alert doctors to Right Treatment

STOPP

Screening Tool of Older Person's Prescriptions

Criteria should capture common and important instances of potentially inappropriate prescribing medication

Criteria should be organised according to physiological systems, as is the case with most drug formularies

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Screening Tool to Alert doctors to Right Treatment

STOPP
Screening Tool of Older Person's Prescriptions

- Criteria should capture common and important instances of potentially inappropriate prescribing medication
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- Criteria should give special attention to drugs that adversely affect patients at risk of falls

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- Duplicate class prescription should be highlighted

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- Potentially serious errors of prescribing omission should be addressed

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Screening Tool to Alert doctors to Right Treatment

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Screening Tool of Older Person's Prescriptions

Criteria should capture common and important instances of potentially inappropriate prescribing medication

Criteria should be organised according to physiological systems, as is the case with most drug formularies

Criteria should give special attention to drugs that adversely affect patients at risk of falls

Criteria should give special attention to opiate use in older people

Duplicate class prescription should be highlighted

Potentially serious errors of prescribing omission should be addressed

The criteria should represent the consensus views of a panel of experts in prescribing in older people

START

Screening Tool to Alert doctors to Right Treatment

STOPP

Screening Tool of Older Person's Prescriptions

2003

First draft list of potential errors of prescribing commission = **68 STOPP**
First draft list of potential errors of prescribing omission = **22 START**

2004

Prevalidation pilot study in hospitalised older patients

O'Reilly V. Irish J Med Sci 2004

START

Screening Tool to Alert doctors to Right Treatment

STOPP

Screening Tool of Older Person's Prescriptions

2006
Validation by Delphi consensus methodology involving 18 experts in geriatric medicine, clinical pharmacology, clinical pharmacy, old age psychiatry and primary care **65 STOPP** and **22 START**

Gallagher P. Int J Pharmacol Ther 2008

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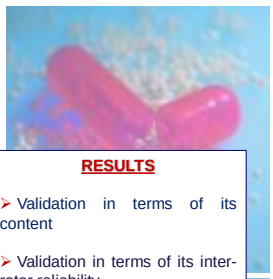

2006
Validation by Delphi consensus methodology involving 18 experts in geriatric medicine, clinical pharmacology, clinical pharmacy, old age psychiatry and primary care **65 STOPP** and **22 START**

Gallagher P. Int J Pharmacol Ther 2008

RESULTS

- Validation in terms of its content
- Validation in terms of its inter-rater reliability

2003
First draft list of potential errors of prescribing commission = **68 STOPP**
First draft list of potential errors of prescribing omission = **22 START**

2004
Prevalidation pilot study in hospitalised older patients

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START

Screening Tool to Alert doctors to Right Treatment

STOPP

Screening Tool of Older Person's Prescriptions

Representing the consensus views of a panel of experts, the **87 STOPP (65)/START (22)** criteria:

- → Capture common instances of potentially inappropriate prescribing
- → Are organised according to physiological systems
- → Give special attention to drugs that adversely affect fallers
- → Give special attention to opiate use in older people
- → Highlight duplicate class prescription
- → Address potentially serious errors of prescribing omission

START

Screening Tool to Alert doctors to Right Treatment

STOPP

Screening Tool of Older Person's Prescriptions

Representing the consensus views of a panel of experts, the **87 STOPP (65)/START (22)** criteria:

STOPP criteria - *Example*

H. Drugs that adversely affect fallers

1. Benzodiazepines (*sedative, may cause reduced sensorium, impair balance*) [Tinetti 2003].
2. Neuroleptic drugs (*may cause gait dyspraxia, parkinsonism*) [Tinetti 2003].
3. First-generation antihistamines (*sedative, may impair sensorium*) [Sutter et al. 2003].
4. Vasodilator drugs with persistent postural hypotension, i.e. recurrent > 20 mmHg drop in systolic blood pressure (*risk of syncope, falls*) [Leipzig et al. 1999].
5. Long-term opiates in those with recurrent falls (*risk of drowsiness, postural hypotension, vertigo*) [American Geriatrics Society Panel on Persistent Pain in Older Persons 2002, Leipzig et al. 1999].

I. Analgesic drugs

1. Use of long-term powerful opiates, e.g. morphine or fentanyl as first-line therapy for mild-to-moderate pain (*World Health Organization analgesic ladder not observed*) [American Geriatrics Society Panel on Persistent Pain in Older Persons 2002].
2. Regular opiates for more than 2 weeks in those with chronic constipation without concurrent use of laxatives (*risk of severe constipation*) [Walsh 1999].
3. Long-term opiates in those with dementia unless indicated for palliative care or management of moderate/severe chronic pain syndrome (*risk of exacerbation of cognitive impairment*) [American Geriatrics Society Panel on Persistent Pain in Older Persons 2002].

J. Duplicate drug classes

Any duplicate drug class prescription, e.g. 2 concurrent opiates, NSAIDs, SSRIs, loop diuretics, ACE inhibitors (*optimization of monotherapy within a single drug class should be observed prior to considering a new class of drug*).

START

Screening Tool to Alert doctors to Right Treatment

STOPP

Screening Tool of Older Person's Prescriptions

Representing the consensus views of a panel of experts, the **87 STOPP (65)/START (22)** criteria:

START criteria - *Example*

B. Respiratory system

1. Regular inhaled β_2-agonist or anticholinergic agent for mild-to-moderate asthma or COPD [Buist et al. 2006].
2. Regular inhaled corticosteroid for moderate/severe asthma or COPD, where predicted $FEV_1 < 50\%$ [Buist et al. 2006].
3. Home continuous oxygen with documented chronic type 1 respiratory failure ($pO_2 < 8.0$ kPa, $pCO_2 < 6.5$ kPa) or type 2 respiratory failure ($pO_2 < 8.0$ kPa, $pCO_2 > 6.5$ kPa) [Cranston et al. 2005, Buist et al. 2006].

C. Central nervous system

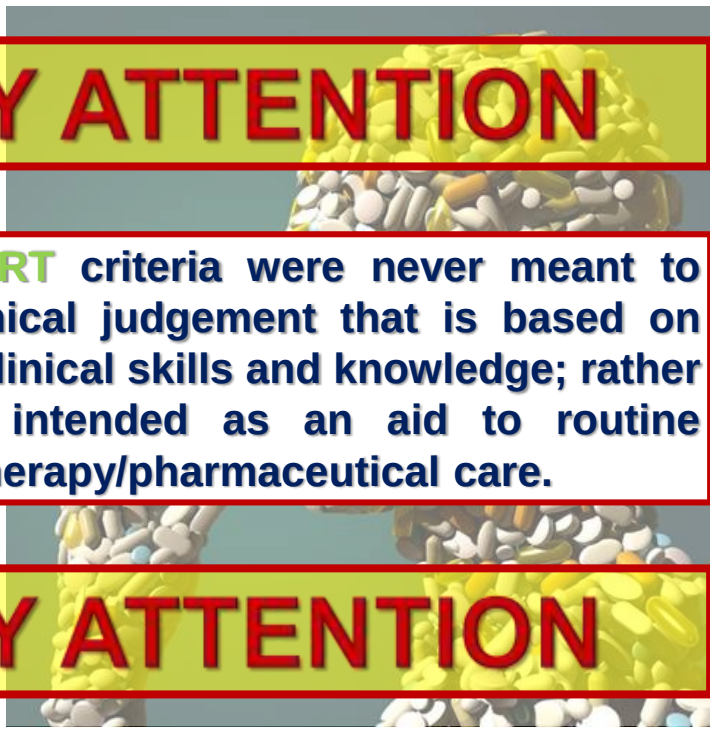
1. L-DOPA in idiopathic Parkinson's disease with definite functional impairment and resultant disability [Kurlan 1998, Danisi 2002].
2. Antidepressant drug in the presence of moderate/severe depressive symptoms lasting at least three months [Lebowitz et al. 1997, Wilson et al. 2006].

D. Gastrointestinal system

1. Proton pump inhibitor with severe gastroesophageal acid reflux disease or peptic stricture requiring dilation [Hungin and Raghunath 2004].
2. Fiber supplement for chronic, symptomatic diverticular disease with constipation [Aldoori et al. 1994].

START

Screening Tool to Alert doctors to Right Treatment



PAY ATTENTION

STOPP/START criteria were never meant to replace clinical judgement that is based on high-level clinical skills and knowledge; rather they were intended as an aid to routine pharmacotherapy/pharmaceutical care.

PAY ATTENTION

Since the first iteration of STOPP/START in 2008

- More than 111 publications describing the use of this set of criteria (>80 original research articles in various clinical scenarios, originate from 24 countries)
- **STOPP** criteria are associated with ADEs, unlike Beers 2003 criteria
- **STOPP**/**START** criteria as an intervention applied at single time improve medication appropriatness
- **STOPP**/**START** criteria as an intervention applied within 72h of admission reduce ADRs and average length of stay by 3 days
- This set of criteria has been adapted into different languages (Czech language, French, and Spanish)

In 2014, an updated version of STOPP/START.v2 has been published

- Some criteria were no longer considered completely accurate and relevant
- The licensing of important new drugs since 2008
- The recognition of a more extensive list of PIMs than originally included

Take home messages

- **IP** is a major public health problem and commonly presents in older population
- and **DRPs** can be effectively prevented
- by using a **systematic prescription review** + a **prescribing optimization.**
- In this objective, **STOPP**/**START** appears as tool:
  - that captures common instances of potentially IP, including PO;
  - that is well designed (according to physiological systems);
  - that is easy and quick to use (< 2 min/case);
  - with a good inter-rater reliability (geriatricians, pharmacist, primary care physicians, …)
  - that is still currently the unique set of explicit criteria addressing PO.

STOPP

START

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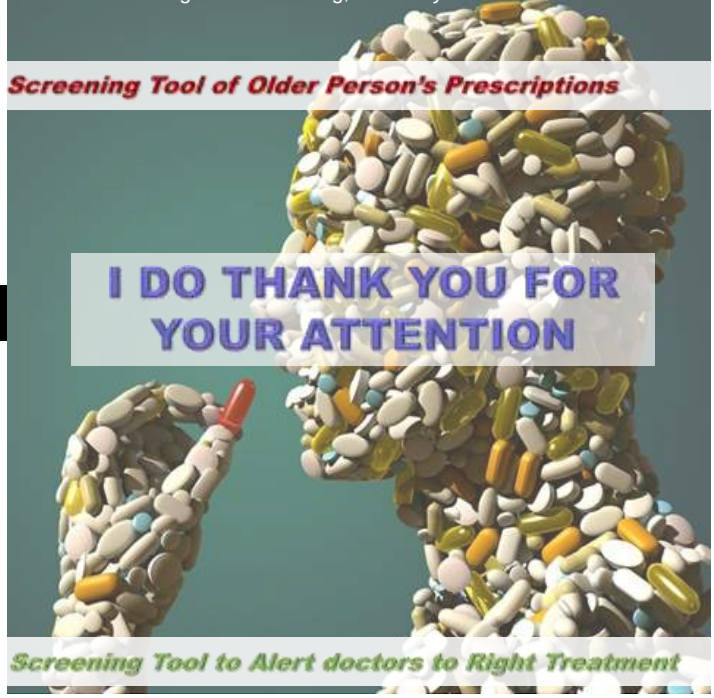
20th EAHP Congress – Hamburg, Germany – 25th & 26th March 2015

Screening Tool of Older Person's Prescriptions



I DO THANK YOU FOR YOUR ATTENTION

Screening Tool to Alert doctors to Right Treatment