ISSN: 2304-2354
Number 3, Volume 44, 2013

ADAPTATION OF STOPP-START CRITERIA TO IDENTIFY POTENTIALLY INAPPROPRIATE PRESCRIPTIONS IN THE ELDERLY IN ALBANIA

Klejda Hudhra[1,2], Driton Shabani[3], Marta García-Caballos[2,4], Delina Xhafaj (Hudhra)[1], Enida Balla[1,5], Besnik Jucja[1], Aurora Bueno-Cavanillas[2,6,7]

[1]Faculty of Pharmacy. University of Medicine, Tirana, Albania.
[2]Department of Public Health and Preventive Medicine. University of Granada. Spain
[3]Department of Pharmacy, Faculty of Medicine, University of Prishtine, Kosovo
[4]Primary Care Health Center "Algarinejo", Granada, Andalusian Health Service, Spain.
[5]Service of Pharmacy, University Hospital "Mother Theresa", Tirana, Albania
[6]CIBER Epidemiology and Public Health (CIBERESP), Spain
[7]Service of Preventive Medicine, University Hospital San Cecilio. Granada, Spain.

Abstract

Aims: The objective of our study is to develop an adapted version of the STOPP-START criteria used in identifying potentially inappropriate prescribed drugs, for being an effective and valuable instrument in clinical practice in Albania and other Albanian-speaking countries.

Methods: The original STOPP-START criteria along with their adapted versions in other countries were taken into consideration. A first translation was performed independently by two authors from Albania and one from Kosovo. Discrepancies were resolved by discussion and a fourth person was also consulted to reach a consensus. Afterwards, a check regarding drugs available in Albania and Kosovo was conducted to establish the final version.

Results: The final document in Albanian language included all 65 STOPP and 22 START criteria. To allow their spread and research in our language, we have compiled a detailed adapted version.

Conclusion: The challenge to mitigate potentially inappropriate prescriptions can be addressed only if there is a dissemination of the methods and tools to identify them among the medical community. This first attempt to adapt the criteria will be followed by their application in clinical practice, for research and preventive reasons, and their subsequent validation in our country.

Keywords: potentially inappropriate prescriptions, STOPP-START, Albania

Introduction

About 11.5% of the population in the Republic of Albania is aged over 65 years and it is estimated that this age group will increase in the coming years [1], along with the health problems associated with it. Treatment of multiple pathologies in the elderly is inevitably associated with the prescription of many drugs simultaneously (polypharmacy), which are often inappropriate and one of the main causes of adverse effects due to drugs [2-4]. Such effects related to the prescription of potentially inappropriate drugs in the elderly include hospitalization, death [5] and unnecessary increase of the cost of treatment [6]. It is considered as potentially inappropriate a prescription for which the risk of an adverse effect exceeds the clinical benefit, especially when there is evidence in favor of a more effective or safer alternative for the same condition, which is not cost-effective or which holds not enough scientific evidence to use. Recent studies highlight the high prevalence of inappropriate prescribing among older patients in different health settings (up to 70% of the patients) [7-9] but also their high preventability [10,11]. Several tools have been developed for the identification and prevention of these prescriptions [12].

STOPP-START (Screening Tool of Older People´s potentially inappropriate Prescriptions-Screening Tool to Alert doctors to Right Treatment) belong to the explicit methods used for measuring the inappropriateness of drugs prescribed in the elderly [13,14]. They have been developed in Ireland by Gallagher et al. and are widely used in Europe [9,14].

Many studies have shown the supremacy of the STOPP-START criteria compared to other explicit methods (such as Beers, Priscus list) as a tool for

ISSN: 2304-2354
Number 3, Volume 44, 2013

the detection of clinically important potentially inappropriate prescriptions [15-17]. It is clear that these criteria are not a substitute for clinical judgment and evaluation, but they encourage doctors to consider medication as a possible cause of adverse effects in elderly patients, thus avoiding unnecessary and potentially harmful prescriptions [15]. 65 STOPP criteria and 22 START criteria are grouped according to physiological systems and can be implemented in less than 5 minutes (90 + / -35 seconds in a multicentric study conducted in six European countries) [9], facilitating their application. STOPP criteria identify potentially inappropriate prescriptions, whereas START the omitted prescriptions of indicated drugs in the clinical situation of the patient; thus, their combined use can help in assessing both excessive and insufficient drug treatment. To enable their use as a helping tool in the everyday clinical practice, these criteria should be adapted (tailored) to the local characteristics of drug availability and prescriptions. Adapted versions of them are compiled in the majority of the European countries, such as the Netherlands [18], Spain [19] and France [20], but currently, it lacks a version in the Albanian language. Using the same method in different European countries to identify potentially inappropriate prescriptions in the geriatric population promotes consistency and comparability of the results, but also arise the need for their adaptation to the local context. Furthermore, the criteria should be updated periodically not to become obsolete, integrating the latest data in the literature. It is still pending the publication of the first actualization of these criteria elaborated in 2011 by an international working group under the auspices of the European Union Geriatric Medicine.

The aim of our study is to develop an adapted version of the STOPP-START criteria for being an effective and valuable instrument in clinical practice in Albania and other Albanian-speaking countries.

Methods

The original STOPP-START criteria [13,21] along with their adapted versions in other countries were taken into consideration [18-20]. Two authors from Albania (K.H. and E.B.) and one from Kosovo (D.Sh.) performed independently a first translation in a blind manner to determine which should be the final version. Their translations were compared and discrepancies were resolved by discussion. When necessary, a fourth person was also consulted (D.Xh.) to reach a consensus. Afterwards, a check regarding drugs available in Albania and Kosovo was conducted, to exclude possible unnecessary criteria. The required information was obtained from the *National Center* for the Control of *Drugs of Albania and the Kosovo Agency for Medicinal Products.*

This research was not supported by any specific source of funding.

Results

The final document in Albanian included all 65 STOPP and 22 START criteria. To allow their spread and research in our language, we have compiled a detailed adapted version of STOPP-START in Albanian language.

STOPP – Screening Tool of Older People´s potentially inappropriate Prescriptions

The following drug prescriptions are potentially inappropriate in persons aged e" 65 years of age:

A. Cardiovascular system

1.Digoxin at a long-term dose 125>µg/day with impaired renal function[a] (increased risk of toxicity).
2. Loop diuretic for dependent ankle edema only i.e. no clinical signs of heart failure (no evidence of efficacy, compression hosiery usually more appropriate)
3. Loop diuretic as first-line monotherapy for hypertension (safer, more effective alternatives available).
4. Thiazide diuretic with a history of gout (may exacerbate gout)
5. Non-cardioselective β-blocker with Chronic Obstructive Pulmonary Disease (COPD) (risk of increased bronchospasm).
6. β-blocker in combination with verapamil (risk of symptomatic heart block)
7. Use of diltiazem or verapamil with NYHA class III or IV heart failure (may worsen heart failure).
8. Calcium channel blockers with chronic constipation (may exacerbate constipation)
9. Use of aspirin and warfarin in combination without histamine H_2-receptor antagonist (except cimetidine because of interaction with warfarin) or proton pump inhibitor (high risk of gastrointestinal bleeding).
10. Dipyridamole as monotherapy for cardiovascular secondary prevention (no evidence for efficacy).
11. Aspirin with a past history of peptic ulcer disease without histamine H_2-receptor antagonist or proton pump inhibitor (risk of bleeding).
12. Aspirin at dose > 150 mg/day (increased bleeding risk, no evidence for increased efficacy)

ISSN: 2304-2354
Number 3, Volume 44, 2013

13. Aspirin with no history of coronary, cerebral or peripheral vascular symptoms or occlusive event (not indicated).
14. Aspirin to treat dizziness not clearly attributed to cerebrovascular disease (not indicated)
15. Warfarin for first uncomplicated venous thrombosis for longer than 6 months duration (no proven added benefit).
16. Warfarin for first uncomplicated pulmonary embolus for longer than 12 months duration (no proven benefit).
17. Aspirin, clopidogrel, dipyridamole or warfarin with concurrent bleeding disorder (high risk of bleeding).
a. Serum creatinine > 150 μmol/l, or estimated GFR < 50 ml/min.

B. Central nervous system and psychotropic drugs
1. Tricyclic antidepressants (TCAs) with dementia (risk of worsening cognitive impairment).
2. TCAs with glaucoma (likely to exacerbate glaucoma).
3. TCAs with cardiac conductive abnormalities (pro-arrhythmic effects).
4. TCAs with constipation (likely to worsen constipation).
5. TCAs with an opiate or calcium channel blocker (risk of severe constipation).
6. TCAs with prostatism or prior history of urinary retention (risk of urinary retention).
7. Long-term (i.e. > 1 month) long-acting benzodiazepines, e.g. chlordiazepoxide, fluazepam, nitrazepam, chlorazepate and benzodiazepines with long-acting metabolites, e.g. diazepam (risk of prolonged sedation, confusion, impaired balance, falls).
8. Long-term (i.e. > 1 month) neuroleptics as long-term hypnotics (risk of confusion, hypotension, extra-pyramidal side effects, falls).
9. Long-term neuroleptics (> 1 month) in those with parkinsonism (likely to worsen extra-pyramidal symtoms).
10. Phenotiazines in patients with epilepsy (may lower seizure threshold).
11. Anticholinergics to treat extrapyramidal side effects of neuroleptic medications (risk of anticholinergic toxicity).
12. Selective serotonin re-uptake inhibitors (SSRIs) with a history of clinically significant hyponatremia (non-iatrogenic hyponatremia < 130mmol/l within the previous 2 months).
13. Prolonged use (> 1week) of first-generation antihistamines, i.e. diphenhydramine, chlorpheniramine, cyclizine, promethazine (risk of sedation and anti-cholinergic side effects).

C. Gastrointestinal system
1. Diphenoxilate, loperamide or codeine phosphate for treatment of diarrhea of unknown cause (risk of delayed diagnosis, may exacerbate constipation with overflow diarrhea, may precipitate toxic megacolon in inflammatory bowel disease, may delay recovery in unrecognized gastroenteritis).
2. Diphenoxilate, loperamide or codeine phosphate for treatment of severe infective gastroenteritis, e.e. bloody diarrhea, high fever or severe systemic toxicity (risk of exacerbation or protraction of infection).
3. Prochlorperazine (Stemetil) or metoclopramide with parkinsonism (risk of exacerbation of constipation).
4. PPI for peptic ulcer disease at full therapeutic dosage for > 8 weeks (dose reduction or earlier discontinuation indicated).
5. Anticholinergic antispasmodic drugs with chronic constipation (risk of exacerbation of constipation).

D. Respiratory system
1. Theophylline as monotherapy for COPD (safer, more effective alternative, risk of adverse effects due to narrow therapeutic index).
2. Systemic corticosteroids instead of inhaled corticosteroids for maintenance therapy in moderate-to-severe COPD (unnecessary exposure to long-term side effects of systemic steroids)
3. Nebulized ipratropium with glaucoma (may exacerbate glaucoma).

E. Musculoskeletal system
1. Non-steroidal anti-inflammatory drug (NSAID) with history of peptic ulcer disease or gastrointestinal bleeding, unless with concurrent histamine H_2-receptor antagonist, PPI or misoprostol (risk of peptic ulcer relapse).
2. NSAID with moderate-to-severe hypertension (risk of exacerbation of hypertension).
3. NSAID with heart failure (risk of exacerbation of heart failure).
4. Long-term use of NSAID (> 3 months) for symptom relief of mild osteoarthritis (simple analgesic preferable and usually as effective for pain relief).
5. Warfarin and NSAID together (risk of gastrointestinal bleeding).
6. NSAID with chronic renal failure[b] (risk of deterioration in renal function).

ISSN: 2304-2354
Number 3, Volume 44, 2013

7. Long-term corticosteroids (> 3 months) as monotherapy for rheumatoid arthritis or osteoarthritis (risk of major systemic corticosteroid side-effects).
8. Long-term NSAID or colchicine for chronic treatment of gout where there is no contraindication to allopurinol (allopurinol first-choice prophylactic drug in gout).
b. Serum creatinine > 150 μmol/l, or estimated GFR 20 - 50 ml/min.

F. Urogenital system
1. Bladder antimuscarinic drugs with dementia (risk of increased confusion, agitation).
2. Antimuscarinic drugs with chronic glaucoma (risk of acute exacerbation of glaucoma).
3. Antimuscarinic drugs with chronic constipation (risk of exacerbation of constipation).
4. Antimuscarinic drugs with chronic prostatism (risk of urinary retention).
5. α-blockers in males with frequent incontinence, i.e. one or more episodes of incontinence daily (risk of urinary frequency and worsening of incontinence).
6. α-blockers with long-term urinary catheter in situ, i.e. more than 2 months (drug not indicated).

G. Endocrine system
1. Glibenclamide or chlorpropamide with type 2 diabetes mellitus (risk of prolonged hypoglycemia).
2. β-blockers in those with diabetes mellitus and frequent hypoglycemic episodes i.e. e" 1 episode per month (risk of masking hypoglycemic symptoms).
3. Estrogens with a history of breast cancer or venous thromboembolism (increased risk of recurrence).
4. Estrogens without progestogen in patients with intact uterus (risk of endometrial cancer).

H. Drugs that adversely affect failure
1. Benzodiazepines (sedative, may cause reduced sensorium, impair balance).
2. Neuroleptic drugs (may cause gait dyspraxia, Parkinsonism).
3. First-generation antihistamines (sedative, may impair sensorium).
4. Vasodilator drugs with persistent postural hypotension, i.e. recurrent > 20 mmHg drop in systolic blood pressure (risk of syncope, falls).
5. Long-term opiates in those with recurrent falls (risk of drowsiness, postural hypotension, vertigo).

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).
2. Regular opiates for more than 2 weeks in those with chronic constipation without concurrent use of laxatives (risk of severe constipation)
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).

J. Duplicate drug classes
Any duplicate drug class prescription, e.g. two 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, i.e. appropriate, indicated Treatments)
These medications should be considered for people e" 65 years of age with the following conditions, where no contraindication to prescription exists.

A. Cardiovascular system
1. Warfarin in the presence of chronic atrial fibrillation.
2. Aspirin in the presence of chronic atrial fibrillation, where warfarin is contraindicated, but not aspirin.
3. Aspirin or clopidogrel with a documented history of atherosclerotic coronary, cerebral or peripheral vascular disease in patients with sinus rhythm.
4. Antihypertensive therapy where systolic blood pressure consistently > 160 mmHg.
5. Statin therapy with a documented history of coronary, cerebral or peripheral vascular disease, where the patient's functional status remains independent for activities of daily living and life expectancy is greater than 5 years.
6. Angiotensin converting enzyme (ACE) inhibitor with chronic heart failure.
7. ACE inhibitor following acute myocardial infarction.
8. β-blocker with chronic stable angina.

B. Respiratory system
1. Regular inhaled β_2-agonist or anticholinergic agent for mild-to-moderate asthma or COPD
2. Regular inhaled corticosteroid for moderate/ severe asthma or COPD, where predicted FEV_1 < 50%.

ISSN: 2304-2354
Number 3, Volume 44, 2013

3. Home continuous oxygen with documented chronic type 1 respiratory failure (pO2 < 8.0 kPa, pCO2 < 6.5 kPa) or type 2 respiratory failure (pO2 < 8.0 kPa, pCO2 < 6.5 kPa).

C. Central nervous system

1. L-DOPA in idiopathic Parkinson's disease with definite functional impairment and resultant disability.
2. Antidepressant drug in the presence of moderate/severe depressive symptoms lasting at least three months.

D. Gastrointestinal system

1. Proton pump inhibitor with severe gastroesophageal acid reflux disease or peptic stricture requiring dilation.
2. Fiber supplement for chronic, symptomatic diverticular disease with constipation.

E. Musculoskeletal system

1. Disease-modifying antirheumatic drug (DMARD) with active moderate/severe rheumatoid disease lasting > 12 weeks.
2. Biphosphonates in patients taking maintenance corticosteroid therapy.
3. Calcium and vitamin D supplement in patients with known osteoporosis (previous fragility fracture, acquired dorsal kyphosis).

F. Endocrine system

1. Metformin with type 2 diabetes ± metabolic syndrome (in the absence of renal impairment[c]).
2. ACE inhibitor or angiotensin receptor blocker in diabetes with nephropathy, i.e. overt urinalysis proteinuria or microalbuminuria (> 30 mg/24 hours) ± serum biochemical renal impairment[c]).
3. Antiplatelet therapy in diabetes mellitus with coexisting major cardiovascular risk factors (hypertension, hypercholesterolemia, smoking history).
4. Statin therapy in diabetes mellitus if coexisting major cardiovascular risk factors present.

c. Serum creatinine > 150 μmol/l, or estimated GFR < 50 ml/min.

Discussion

Various criteria dealing with inappropriate prescriptions for the elderly have been developed, which reflect the relevance of the issue, often defined as "a modern epidemic" [22,23]. Among them, STOPP-START are widely spread and useful in different health levels with encouraging results regarding improvement of the prescriptions in the elderly [14,24,25].

There have been no previous attempts to adapt or implement any helping tool for identifying inappropriate prescription in the geriatric population in Albania, unlike other countries [18-20]. The challenge to mitigate potentially inappropriate prescriptions can be addressed only if there is a dissemination of the methods and tools to identify them among the medical community. This first attempt to adapt the criteria will be followed by their application in clinical practice, for research and preventive reasons, and their subsequent validation in Albania.

We believe that further research about prescription appropriateness in older people in our country would allow understanding the extent of the problem and contribute in the potential preventability of medication error.

There is no conflict of interests in our study.

References

1. Institute of Statistics, Republic of Albania, 2013 http://www.instat.Gov al/al/ themes/ popullsia.aspx
2. **Boparai MK, Korc-Grodzicki B.** Prescribing for older adults. Mt Sinai J Med. 2011 Jul-Aug; 78(4):613-26.
3. **Lin HY, Liao CC, Cheng SH, Wang PC, Hsueh YS.** Association of potentially inappropriate medication use with adverse outcomes in ambulatory elderly patients with chronic diseases: experience in a Taiwanese medical setting. Drugs Aging. 2008;25(1):49-59.
4. **Barry P. J., Gallagher P. and Ryan C.** Inappropriate prescribing in geriatric patients. Curr Psychiatry Rep, 2008, 10 (1), 37-43.
5. **Lau DT, Kasper JD, Potter DE, Lyles A, Bennett RG.** Hospitalization and death associated with potentially inappropriate medication prescriptions among elderly nursing home residents. Arch Intern Med, 2005, 165 (1), 68-74.
6. **Cahir C, Fahey T, Teeling M, Teljeur C, Feely J, Bennett K.** Potentially inappropriate prescribing and cost outcomes for older people: a national population study. Br J Clin Pharmacol, 2010, 69 (5), 543-52.
7. **O'Sullivan DP, O'Mahony D, Parsons C, Hughes C, Murphy K, Patterson S et al.** A

ISSN: 2304-2354
Number 3, Volume 44, 2013

prevalence study of potentially inappropriate prescribing in Irish long-term care residents. Drugs Aging. 2013 Jan;30(1):39-49.

8. **Soares MA, Fernandez-Llimos F, Cabrita J, Morais J.** [Tools to evaluate potentially inappropriate prescription in the elderly: a systematic review]. Acta Med Port. 2011 Sep-Oct; 24(5):775-84.
9. **Gallagher P, Lang PO, Cherubini A, Topinková E, Cruz-Jentoft A, Montero Errasquín B et al.** Prevalence of potentially inappropriate prescribing in an acutely ill population of older patients admitted to six European hospitals. Eur J Clin Pharmacol. 2011 Nov;67(11):1175-88.
10. **Gallagher PF, O'Connor MN, O'Mahony D.** Prevention of potentially inappropriate prescribing for elderly patients: a randomized controlled trial using STOPP/START criteria. ClinPharmacolTher. 2011 Jun;89(6):845-54.
11. **Keith SW, Maio V, Dudash K, Templin M, Del Canale.** A Physician-Focused Intervention to Reduce Potentially Inappropriate Medication Prescribing in Older People: A 3-Year, Italian, Prospective, Proof-of-Concept Study. Drugs Aging 2013 Feb;30(2):119-27.
12. **O'Connor MN, Gallagher P, O'Mahony D.** Inappropriate prescribing: criteria, detection and prevention. Drugs Aging. 2012 Jun 1;29(6):437-52.
13. **Gallagher P, Ryan C, Byrne S, Kennedy J, O'Mahony D.** STOPP (Screening Tool of Older Person's Prescriptions) and START (Screening Tool to Alert doctors to Right Treatment. Consensus validation. Int J Clin Pharmacol Ther. 2008 Feb;46(2):72-83.
14. **Lam MP, Cheung BM.** The use of STOPP/START criteria as a screening tool for assessing the appropriateness of medications in the elderly population. Expert Rev Clin Pharmacol. 2012 Mar; 5(2):187-97.
15. **Gallagher P, O'Mahony D.** STOPP (Screening Tool of Older Persons' potentially inappropriate Prescriptions): application to acutely ill elderly patients and comparison with Beers' criteria. Age Ageing. 2008 Nov;37(6):673-9.
16. **Siebert S, Elkeles B, Hempel G, Kruse J, Smollich M.** The PRISCUS list in clinical routine. Practicability and comparison to international PIM lists. Z Gerontol Geriatr. 2013 Jan;46 (1):35-47.
17. **Levy HB, Marcus EL, Christen C.** Beyond the beers criteria: A comparative overview of explicit criteria. Ann Pharmacother. 2010 Dec;44(12):1968-75.
18. **Vermeulen Windsant-van den Tweel AM, Verduijn MM, Derijks HJ, van Marum RJ.** Detection of inappropriate medication use in the elderly; will the STOPP and START criteria become the new Dutch standards? Ned Tijdschr Geneeskd. 2012;156(40:A5076.
19. **Delgado Silveira E, Muñoz García M, Montero Errasquin B, Sánchez Castellano C, Gallagher PF, Cruz-Jentoft AJ.** Inappropriate prescription in older patients: the STOPP/START criteria. Rev Esp Geriatr Gerontol. 2009 Sep-Oct;44(5):273-9.
20. **Lang PO, Hasso Y, Belmin J, Payot I, Baeyens JP, Vogt-Ferrier N et al.** STOPP-START: adaptation of a French language screening tool for detecting inappropriate prescriptions in older people. Can J Public Health. 2009 Nov-Dec;100(6):426-31.
21. **D. O'Mahony, Gallagher P, Ryan C, Byrne S, Hamilton H, Barry P.** STOPP & START criteria: A new approach to detecting potentially inappropriate prescribing in old age. European Geriatric Medicine 1 (2010) 45–51.
22. **Nyborg G, Straand J, Brekke M.** Inappropriate prescribing for the elderly-a modern epidemic? Eur J ClinPharmacol. 2012 Jul; 68(7): 1085-94.
23. **Frankenthal D, Lerman Y, Kalendaryev E, Lerman Y.** Potentially inappropriate prescribing among older residents in a geriatric hospital in Israel. Int J Clin Pharm. 2013 May 10.
24. **Wahab MS, Nyfort-Hansen K, Kowalski SR.** Inappropriate prescribing in hospitalized Australian elderly as determined by the STOPP criteria. Int J Clin Pharm. 2012 Dec; 34 (6):855-62.
25. **Petrarca AM, Lengel AJ, Mangan MN.** Inappropriate medication use in the elderly. Consult Pharm. 2012 Aug;27(8):583-6.