

NUMLIL KHAIRA RUSDI- Identification of Potentially Inappropriate Prescribing in Outpatient Geriatric using STOPP/START Criteria at X Hospital Jakarta

by Numlil Khaira Rusdi Uploaded By Mas'ud Syaiful

Submission date: 31-Mar-2023 01:06PM (UTC+0700)

Submission ID: 2051799366

File name: prosiding_scitepress,_2018_-_numlil_khaira_rusdi.pdf (195.85K)

Word count: 3103

Character count: 17900

Identification of Potentially Inappropriate Prescribing in Outpatient Geriatric using STOPP/START Criteria at X Hospital Jakarta

Numlil Khaira Rusdi¹, Dini Indah Komariah¹, Nora Wulandari¹, and Arya Govinda Roosheroe²

¹Faculty of Pharmacy and Science, University Muhammadiyah Prof. DR. Hamka, Delima Street II/IV, Jakarta, Indonesia

²Divisi of Geriatric, Department of Internal Medicines, Cipto Mangunkusumo Hospital, Pangeran Diponegoro Street 71, Jakarta, Indonesia

Keywords: Geriatrics, STOPP/START Criteria, Potentially Inappropriate Medicine (PIM), Adverse Drug Reactions.

Abstract: Chronic diseases and decreased physiological function in geriatric patients play a role in the increased Potentially Inappropriate Prescribing (PIP) and Adverse Drug Reactions (ADR). STOPP/START Criteria (Screening Tool of Older Person's Prescriptions/Screening Tool to Alert to Right Treatment) is one of the screening tools to identify Potentially Inappropriate Prescribing. The purpose of this study was to find out how much Potentially Inappropriate Medicines (PIM) potential and Potency Prescribing Omissions (PPO) at X hospital using STOPP START toolkit. This is a non-experimental descriptive study. Samples were collected retrospective in January-March 2017. STOPP/START criteria were used as a screening tool to identify Potentially Inappropriate Medication (PIM) and Potential Prescribing Omissions (PPO). In 91 samples of outpatient geriatric at X hospital, the potential for PIM according to the STOPP Criteria was 1.9% of a total of 560 drugs with criteria were for the administration of benzodiazepines in patients with a history of falls, anticholinergics and antipsychotics in dementia patients, glimepiride administration in geriatric patients with DM type 2. For the potential of negligence in drug administration according to the START Criteria, there was 3.8% with the most occurrence being the administration of acetylcholinesterase inhibitors in dementia patients. Of the 560 medications administered to outpatient geriatric patients, 1.9% were included in the STOPP criteria and 3.8% included in the START criteria.

1 INTRODUCTION

The phenomenon of population ageing is a phenomenon that has occurred worldwide. Between 2015 and 2050, the population of 60 years or older is expected to increase from 12% to 22%. By 2050 it is estimated that the number of elderly people in the world reaches 2 billion inhabitants (Iona *et al.* 2015). In Indonesia, the elderly population in 2017 numbered approximately 23.66 million people (9.03%) and is estimated to increase to 48.19 million in 2035 (Kementrian Kesehatan RI 2017).

A large number of elderly population in Indonesia will have an impact on the health sector in the form of health decline which resulting in increased service costs (Kementrian Kesehatan RI 2017). Increasing age in the elderly can alter the body's physiological system, but it may also alter the pharmacokinetic and pharmacodynamic profile of the drug. The elderly group has multiple comorbidities and is more often hospitalized, which

increases the risk of polypharmacy and the potential for inappropriate prescribing (Corsonello *et al.* 2009).

Some lists of drugs have been made by experts for use by medical circles in the treatment of geriatric patients i.e. Beers Criteria (The American Geriatrics Society 2012) or Canadian Criteria (Leod *et al.* 1997). The STOPP/START Criteria (Screening Tool for Older Person's Prescriptions / Screening Tool to Alert to Right Treatment) were made to identify potentially inappropriate medication (PIM) (Gallagher *et al.* 2011). STOPP/START criteria were made according to the body's physiological system consisting of 80 STOPP Criteria and 34 START Criteria (O'Mahony *et al.* 2014). The STOPP/START criteria were created in 2003 with the aim of addressing the possible shortcomings of the Beers criteria. The criteria consist of Potentially Inappropriate Medication (PIM) described by STOPP, and Potential Prescribing Omissions (PPO) prescriptions,

Table 1. PIM Frequency According to STOPP Criteria

Criteria Code	Descriptions	N
K1	Benzodiazepin that increase the risk of falling in geriatric	4
27	Concurrent use of one class drug or its derivatives	2
D8	Anticholinergics in geriatric patients with delirium or dementia	1
D9	Antipsychotics in the elderly with BPSD (dementia)	1
C3	Aspirin in the elderly with uncontrolled hypertension	1
J1	Glimepiride in the elderly with type 2 diabetes mellitus	1
	Total	10

Table 2. The Frequency of PPO According to Criteria START

Criteria Code	Descriptions	N
C3	Acetylcholinesterase inhibitors in dementia patients	5
G1	Alpha 1 blocker in patients with BPH	5
14	5a reductase inhibitor in BPH patients	5
E3	Vitamin D and calcium in patients with osteoporosis	3
A4	Antihypertensive in patients with blood pressure > 140 / 90mmHg	1
E6	Xanthine oxidase inhibitors in gout arthritis patients	1
C4	Topical prostaglandin or prostamide or topical beta blockers in glaucoma patients	1
	Total	21

described by the START. This START method is intended to improve treatment success in geriatric patients (O'Mahony *et al.* 2014).

The result of PIM identification with STOPP and START screening tool has not been well documented in Indonesia especially in DKI Jakarta hospital. X Hospital (RSUPN DR. Cipto Mangunkusumo) is a government hospital located in Central Jakarta and is a referral of the National Geriatric Center. From the results of the survey to the hospital, the outpatient geriatric patients from January to March 2017 at X hospital were numbered 1047 patients.

2 METHOD

This experiment was a cross sectional study. Samples were collected retrospectively in January - March 2017. STOPP/START criteria were used as a screening tool to identify Potentially Inappropriate Medication (PIM) and Potential Prescribing Omissions (PPO). The total population of 1047 patients and samples taken according to Taro Yamane formula amounted to 91 using systematic sampling (Moch Imron 2011). Inclusion criteria were geriatrics aged 60 years or older, received the

medicine, diagnosis data, physical examination data and laboratory data required. The exclusion criteria were patients with forced home, and the patient died.

The data collected were secondary data in the form of medical record number, patient initials, age, sex, diagnosis, comorbidities, physical examination, drugs used and laboratory information. Data analyzed using STOPP/START Criteria to determine the precision of prescribing that adjusted to the medical record of the patients.

3 RESULTS

26
The results of the study showed that improper use of medicines according to STOPP criteria included giving benzodiazepines which could potentially cause a risk of falls in the elderly. Besides that, there were also the used of drug duplication, anticholinergics, antipsychotics and Glimepiride (Table 1).

The results study, the PPO according to the START Criteria numbered to 3.8% or 21 incidents. The highest incidence in this study was an omission of acetylcholinesterase inhibitor therapy in 5 dementia patients, alpha-1 blocker therapy and 5a reductase inhibitor in patients with BPH of 5 cases,

respectively. Furthermore, vitamin D and calcium therapy were given in 3 patients with osteoporosis, antihypertensive in 1 geriatric patient with blood pressure > 140 / 90mmHg, xanthine oxidase inhibitor therapy in 1 patient with gout arthritis and topical prostaglandin or prostamide or beta-blocker therapy in 1 patient with glaucoma (Table 2).

4 DISCUSSION

The most prevalent PIM criteria were the use of benzodiazepine-class drugs in 4 geriatric patients (40%). The use of benzodiazepines class of drugs may lead to reduced sensory and impaired balance (O'Mahony *et al.* 2014). In the elderly the benzodiazepine profile may undergo changes related to altered cytochrome P450 enzyme activity (Sotaniemi *et al.* 1997) otherwise it may be caused by other things such as diminished albumin which leads to increased concentrations of benzodiazepines in a free form (Hammerlein *et al.* 1998). In the elderly there is also an increase in the sensitivity of benzodiazepines to the central nervous system (Hillmer *et al.* 2007; Sera *et al.* 2012; Naranjo *et al.* 1995). In a previous study, more than 40% of elderly who received benzodiazepine-class drugs entered emergency care after falling out (Cengotitabengoa *et al.* 2018).

Concurrent use of one class of drugs or the derivatives occurred to 2 patients (20%), i.e. the use of dopamine agonist (pramipexole and levodopa) drugs. Drug duplication will increase as patients develop chronic illness and the range can reach 40.38% to 43.50% with 1.45-1.62 duplications (Cheng *et al.* 2014). Drug duplication were associated with polypharmacy which may increase the risk of adverse drug reactions (Bushardt *et al.* 2008). Constipation, nausea, headache and excessive daytime sleepiness are among adverse drug reactions of dopamine (Pagano *et al.* 2014; Tholfsen *et al.* 2015). Other adverse drug reactions such as hallucinations (both visual and audio), peripheral edema, heart valve disorders to heart failure have been reported as an adverse drug reaction of dopamine agonist therapy (Lockett *et al.* 2015; Wood 2010).

There is one incident (10%) of anticholinergics administered to dementia patients. The provision of anticholinergic prescriptions should be done cautiously given the side effects to the elderly. Adverse drug reactions of anticholinergic will worsen the state of dementia (O'Mahony *et al.* 2014; Gerretsen *et al.* 2011). There is one incident (10%)

of antipsychotics given in elderly patients. The antipsychotic administration was included in the STOPP Criteria as it may increase the risk of stroke in the elderly (O'Mahony *et al.* 2014). In previous studies, the use of antipsychotics in older adults may increase the cardiovascular risk to death. The risk increase if the elderly develop dementia (Mittal *et al.* 2011).

The use of aspirin in the elderly was one incident (10%). When aspirin was given to uncontrolled hypertension (> 140 mmHg and > 90 mmHg) patients, it will increase the risk of bleeding (O'Mahony *et al.* 2014; Lip 2011; Pisters *et al.* 2010).

Glimepiride used with caution in elderly patients as it may lead to hypoglycemia (Katzung *et al.* 2012). In this study, there was one incident (10%), and in previous studies, there was an incidence of hypoglycemia in 23 patients out of a total of 143 patients (Shihara *et al.* 2017).

According to the START Criteria, there were three most potential Omissions in drug administration: acetylcholinesterase inhibitor therapy in dementia patients (23.8%), alpha 1 blocker therapy and reductase inhibitor in patients with BPH (23.8%), vitamin D and calcium therapy in geriatric patients with osteoporosis. Study on the comparison of the use of acetylcholinesterase inhibitors with placebo found a significant difference seen from the value of ADAS-Cog (The Alzheimer's Disease Assessment Scale-Cognitive subscale) and MMSE (Mini Mental State Exam) after patients were given therapy for six months (Mochammad *et al.* 2017). Acetylcholinesterase inhibitors not only improve cognitive function but can also increase psychological function and habits (DiSanto *et al.* 2013).

Alpha 1 blockers administered together with a 5α reductase inhibitor are the START Criteria in BPH patients. In elderly who had moderate to severe prostate disturbance when given a combination of both drugs resulted in much better improvement compared with tamsulosin or dutasteride monotherapy (Roehrborn *et al.* 2008). Vitamin D and calcium therapy were PPO in 5 geriatric patients with osteoporosis. Vitamin D and calcium therapy are strongly recommended to improve the state of osteoporosis and prevent fractures (Weaver *et al.* 2016). In the study had found that the used Vitamin D and calcium in osteoporosis patients can reduce the risk of fracture in the elderly group (Weaver *et al.* 2016).

Geriatric patients with blood pressure > 140 / 90mmhg included to the START Criteria for not

getting antihypertensive (O'Mahony *et al.* 2014). Blood pressure target for elderly (< 140/90mmHg), the treatment may be based on JNC8 guidelines and may be combined with expert consensus guidelines ACCF/AHA 2011 (Arthur *et al.* 2015).

In this study, xanthine oxidase inhibitor therapy in gout patients include to the START Criteria. Febuxostat was recommended if elderly patients have moderate to severe renal impairment (Fravel *et al.* 2011).

Geriatric patients with glaucoma who are not receiving antiglaucoma therapy (topical prostaglandin, prostamide or beta-blockers) included to the STOPP Criteria. Comparison of the effectiveness of topical prostaglandin (latanoprost bunod 0.024%) once d₂₄ in the afternoon showed better results than the topical beta blocker (timolol 0.5%) twice daily give to glaucoma patients for three months (Medeiros *et al.* 2016).

5 CONCLUSIONS

From the results of this study, it could be concluded from 560 drugs given to outpatient geriatric patients at X hospital, there is 1.9% of PIM incidence for STOPP criteria and 3.8% incidence of PPO for START criteria.

REFERENCES

- Arthur, Miranda, Lindsay Saum, Jessica E Wilhoite. 2015. Hypertension Management: Making Sense of Guidelines and Therapy Options for the Elderly. In *Butle University Libraries*. Vol 3.
- Bushardt, Reamer L, Emily B Massey, Temple W Simpson, Jane C Ariail, Kit N Simpson. 2008. Polypharmacy: Misleading, but manageable. In *Clinical Intervention in Aging*. Vol 3. 383-389.
- Cengotitabengoa, Monica Martinez, Maria Jose Diaz Gutierrez, Ariadna Besga, Cristina Bermudez-Ampudia, Purificacion Lopez, Marta B. Rondon, Donna E. Stewart, Patricia Perez, Miguel Gutierrez, y Ana Gonzales-Pinto. 2018. Prescripcion de Benzodiazepinas y Caidas en Mujeres y hombres Ancianos. In *Rev Psiquiatr Salud Ment (Barc.)*. Vol 11.12-18.
- Cheng, Shou-Hsia, Chen Chi Chen. Effects of Continuity of Care on Medication Duplication Among the Elderly. In *Medical Care*. Vol 52. 149-156.
- Corsonello, Andrea, Luigi Pranno, Sabrina Garasto, Paolo Fabietti, Silvia Bustacchini, Fabrizia Lattanzio. 2009. Potentially Inappropriate Medication in Elderly Hospitalized Patients. In *Drugs Aging*. Vol 26. 31-39.
- Disanto, Simona Gabriella, Federica Prinelli, Fulvio Adoni, Carlo Caltagirone, Massimo Musicco. 2013. A Meta-Analysis of the Efficacy of Donepezil, Rivastigmine, Galantamine and Memantine in Relation to Severity of Alzheimer's Disease. In: *Journal of Alzheimer's Disease*. Vol 35. 349-361.
- Fravel, Michelle A, Michael E. 2011. Management of Gout in the Older Adult. In: *The American Journal of Geriatric Pharmacotherapy*. 271-285.
- Gallagher PF, MN O'Connor, D O'Mahony. 2011. Prevention of Potentially Inappropriate Prescribing for Elderly Patient: A Randomized Controlled Trial Using STOPP/START Criteria. In *Clinical Pharmacology & Therapeutics*. Vol 89. 845-854.
- Gerretsen, Philip, Bruce G. Pollock. 2011. Drugs with anticholinergic properties: a current perspective on use and safety. In: *Expert Opinion*. 751.
- Hammerlein A, Derendorf H, Lowenthal DT. 1998. Pharmacokinetic and Pharmacodynamic changes in the Elderly: Clinical Implication. In *Clin Pharmacokinetic*. Vol 35. 49-64.
- Hilmer SN, McLachlan AJ, Le Couteur DG. 2007. Clinical Pharmacology in the geriatric patient. In *Fundam Clin Pharmacol*. Vol 21. 217-230.
- Iona, Murdoch, Sarah Turpin, Bree Johnston, Alasdair MacLulich, Eve Losman. 2015. *Geriatric Emergencies*. John Willey & Sons, Ltd. United Kingdom. 1.
- Katzung, Bertram G, Susan B. Masters, Anthony J. Trevor. 2012. *Basic & Clinical Pharmacology*. Edisi XII. Mc Graw-Hill. New York. 738, 754.
- Kemnterian Kesehatan RI. 2017. *Analisis Lansia di Indonesia*. Pusat Data dan Informasi. Jakarta. 1-3.
- Lip, Gregory Y. H. 2011. Implications of the CHA₂DS₂-VASc and HAS-BLED Scores for Thromboprophylaxis in Atrial Fibrillation. In: *The American Journal of Medicine*. Elseiver. 1-4.
- Lockett, Katrina, Danielle DeBacker, Kimberly AB Cauthon. 2015. The Link Between Non-Ergot-Derived Dopamine Agonists and Heart Failure: How Strong Is It?. In *The Consultant Pharmacist*. Vol 30. 136-140.
- McLeod, Peter J, Allen R. Huang, Robyn M. Tamblyn, David C. Gayton. 1997. Defining Inappropriate Practices in Prescribing for Elderly People: A National Consensus Panel. In: *Canadian Medical Association*. Vol 156. 385-391.
- Medioros FA, Martin KR, Peace J, Scassellati Sforzolini B, Vittitow JL, Weinreb RN. 2016. Comparison of Latanoprostene Bunod 0,024% and Timolol Maleate 0,5 in Open-Angle Glaucoma or Ocular Hypertension: The LUNAR Study. In: *Am J Ophthalmol*. Volume 168, 250 - 259
- Mittal, Vikrant, Lekshminarayana Kurup, Deena Williamson, Sunanda Muralee, Rajesh R. Tampi. 2013. Risk of Cerebrovascular Adverse Events and Death in Elderly Patients With Dementia When Treated With Antipsychotic Medications: A Literature Review of Evidence. In: *American Journal of Alzheimer's Disease and Other Dementias*. 1-11.

- Moch, Imron. 2011. *Statistika Kesehatan*. Sagung Setyo. Jakarta.
- Mohammad, Dana, Parco Chan, Janelle Bradley, Krista Lancot, Nathan Herrman. 2017. Acetylcholinesterase Inhibitor for Treating Dementia Symptoms – A Safety Evaluation. In: *Expert Opinion on Drug Safety*, 16:9, 1009-1019
- Naranjo CA, Herrmann N, Mittmann N, Bremner KE. Recent Advances in Geriatric Psychopharmacology. In: *Drug Aging*. Vol 7. 184-202.
- O'Mahony, Denis, David O'Sullivan, Stephen Byrne, Marie Noelle O'Connor, Cristin Ryan, Paul Gallagher. 2014. STOPP/START Criteria for Potentially Inappropriate Prescribing in Older People: Version 2. In: *Age and Ageing*. Vol 44. 213-218.
- Pagano, Gennaro, Echo E tan, Janelle M Haider, Alyssa Bautista, Michele Tagliati. 2014. Constipation is reduced by beta-blockers and increased by dopaminergic medications in Parkinson's disease. In: *Parkinsonism and Related Disorders*. 1-6.
- Pisters, Ron, Deirdre A. Lane, Robby Nieuwlaat, Cees B. De Vos, Harry J. G. M. Crijns, Gregory Y. H. Lip. 2010. A Novel User-Friendly Score (HAS-BLED) To Assess 1-Year Risk of Major Bleeding in Patient With Atrial Fibrillation: The Euro Heart Survey. In: *American College of Chest Physicians*. United States. 1-10.
- Roehrborn, Claus G, Paul Siami, Jack Barkin, Ronaldo Damião, Kim Major-Walker, Betsy Morrill, Francesco Montorsi. 2008. The Effects of Dutasteride, Tamsulosin and Combination Therapy on Lower Urinary Tract Symptoms in Men With Benign Prostatic Hyperplasia and Prostatic Enlargement: 2-Year Results From the CombAT Study. In *The Journal of Urology*. Vol 179. 616-621.
- Sera LC, McPherson ML. 2012. Pharmacokinetics and Pharmacodynamic changes Associated with Aging and Implications for Drug Therapy. In *Clin Geriatric Med*. Vol 28. 273-286.
- Shihara, Nobuyuki, Yasuo Terauci, Hitoshi Ishida, Masafumi Kitaoka, Jo Satoh, Daisuke Yabe, Yuichiro Yamada, Yutaka Seino. 2016. Efficacy and Safety Comparison of Sitagliptin and Glimepiride in Elderly Japanese Patients with type 2 Diabetes: Start J. In: *Diabetes Research and Clinical Practice*. 1-2.
- Sotaniemi EA, Arranto AJ, Pelkonen O, Pasanen M. 1997. Age and Cytochrome P450-linked drug metabolism in humans: an analysis of 226 subjects with equal hispatologic conditions. In: *Clin Pharmacol Ther*. Vol 61. 331-339.
- The American Geriatrics Society 2012 Beers Criteria Update Expert Panel. 2012. Americans Geriatrics Society Updated Beers Criteria for Potentially Inappropriate Medication Use in Older Adults. In: *JAGS*. Vol 60. 616-631.
- Tholfsen, Lena K, Larsen Jan P, Jorn Schulz, Ole Bjorn Tysnes, Michaela D Gjerstad. 2015. Development of excessive daytime sleepiness in early Parkinson disease. In: *Neurology* Jul 2015, 85 (2) 162-168
- Weaver CM, D Alexander, CJ Boushey, B Dawson-Hughes, JM Lappe, MS LeBoff, S Liu, AC Looker, TC Wallace, DD Wang. 2016. Calcium plus vitamin D supplementation and risk of fractures: an updated meta-analysis from the National Osteoporosis Foundation. In: *Osteoporosis International*. Vol 27. 367-376.
- Wood LD. Clinical review and treatment of select adverse effects of dopamine receptor agonists in Parkinson's disease. In: *Drugs Aging*. Vol 27. 295-310.

NUMLIL KHAIRA RUSDI-Identification of Potentially Inappropriate Prescribing in Outpatient Geriatric using STOPP/START Criteria at X Hospital Jakarta

ORIGINALITY REPORT

17%

SIMILARITY INDEX

11%

INTERNET SOURCES

13%

PUBLICATIONS

6%

STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to University of Brighton Student Paper	1%
2	research.ucc.ie Internet Source	1%
3	Daniel Jamrozik, Weronika Borymska, Ilona Kaczmarczyk-Żebrowska. "Hibiscus sabdariffa in Diabetes Prevention and Treatment—Does It Work? An Evidence-Based Review", Foods, 2022 Publication	1%
4	sro.sussex.ac.uk Internet Source	1%
5	web.archive.org Internet Source	1%
6	Submitted to Northwestern State University Student Paper	1%
7	ejhp.bmj.com Internet Source	1%

8	bmartinmd.com Internet Source	1 %
9	www.ncbi.nlm.nih.gov Internet Source	1 %
10	Putsadeeporn Thammajaruk, Supanee Buranadham, Massimiliano Guazzato, Michael V. Swain. "Influence of ceramic-coating techniques on composite-zirconia bonding: Strain energy release rate evaluation", <i>Dental Materials</i> , 2022 Publication	1 %
11	Ilona Csoti, Wolfgang H. Jost, Heinz Reichmann. "Parkinson's disease between internal medicine and neurology", <i>Journal of Neural Transmission</i> , 2015 Publication	<1 %
12	Keady, John, Clarke, Charlotte, Page, Sean. "Partnerships in Community Mental Health Nursing & Dementia Care", <i>Partnerships in Community Mental Health Nursing & Dementia Care</i> , 2007 Publication	<1 %
13	<i>Pharmacovigilance in Psychiatry</i> , 2016. Publication	<1 %
14	Bastiaan T. G. M. Salleveld, Corlina J. A. Huibers, Jody M. J. Op Heij, Toine C. G. Egberts et al. "Frequency and Acceptance of Clinical	<1 %

Decision Support System-Generated STOPP/START Signals for Hospitalised Older Patients with Polypharmacy and Multimorbidity", *Drugs & Aging*, 2021

Publication

15

Hill-Taylor, B., I. Sketris, J. Hayden, S. Byrne, D. O'Sullivan, and R. Christie. "Application of the STOPP/START criteria: a systematic review of the prevalence of potentially inappropriate prescribing in older adults, and evidence of clinical, humanistic and economic impact", *Journal of Clinical Pharmacy and Therapeutics*, 2013.

Publication

<1 %

16

May PS Lam, Bernard MY Cheung. "The use of STOPP/START criteria as a screening tool for assessing the appropriateness of medications in the elderly population", *Expert Review of Clinical Pharmacology*, 2014

Publication

<1 %

17

pureadmin.qub.ac.uk

Internet Source

<1 %

18

www.frontiersin.org

Internet Source

<1 %

19

Formiga, F., X. Vidal, A. Agustí, D. Chivite, B. Rosón, J. Barbé, A. López-Soto, O. H. Torres, A. Fernández-Moyano, J. García, N. Ramírez-Duque, and A. San José. "Inappropriate

<1 %

prescribing in elderly people with diabetes admitted to hospital", Diabetic Medicine, 2015.

Publication

20

Joseph T. Hanlon. "Suboptimal Prescribing in Older Inpatients and Outpatients", Journal of the American Geriatrics Society, 2/2001

Publication

<1 %

21

Submitted to Queen's University of Belfast

Student Paper

<1 %

22

Submitted to University of College Cork

Student Paper

<1 %

23

hdl.handle.net

Internet Source

<1 %

24

link.springer.com

Internet Source

<1 %

25

opus.lib.uts.edu.au

Internet Source

<1 %

26

www.atlantis-press.com

Internet Source

<1 %

27

www.soutain.fr

Internet Source

<1 %

28

Medication-Related Falls in Older People, 2016.

Publication

<1 %

29

"Oral Session 5 - Defining the Pharmacists' Role in Prescribing for Older Persons - Chairs: Debi Bhattacharya and Helen May : International Journal of Pharmacy Practice 2011; Supplement 1", International Journal of Pharmacy Practice, 06/2011

Publication

<1 %

30

Carla Perpétuo, Ana I. Plácido, Daniela Rodrigues, Jorge Aperta et al. "Prescription of Potentially Inappropriate Medication in Older Inpatients of an Internal Medicine Ward: Concordance and Overlap Among the EU(7)-PIM List and Beers and STOPP Criteria", Frontiers in Pharmacology, 2021

Publication

<1 %

31

Preethy Manoj, Rosemarie Derwin, Sherly George. " What is the impact of daily oral supplementation of vitamin (cholecalciferol) plus calcium on the incidence of hip fracture in older people? A systematic review and meta - analysis ", International Journal of Older People Nursing, 2022

Publication

<1 %

Exclude quotes Off

Exclude matches Off

Exclude bibliography On