REVIEW ARTICLE

How to make prescriptions for the elderly: STOPP/START criteria

Luis Alberto Santos Pérez[1]*, Cándida Grisel Milián Hernández[1]

[1]"Arnaldo Milián Castro" University Clinical Surgical Provincial Hospital, Santa Clara, Villa Clara, Cuba

***Luis Alberto Santos Pérez.** santosla@infomed.sld.cu

Received: 07/20/2022 - Approved: 02/01/2023

ABSTRACT

Introduction: individual aging could be considered relative if it is known that in Imperial Rome young people of 20 years of age were already old and life expectancy did not exceed 27 years due to infectious diseases, the infant mortality rate was very high and the birth rate and mortality rate were very high. Perhaps half of the individuals died before the age of five and many who reached the age of 10 died while still young.
Objective: to summarize the literature on the subject.
Method: a review of literature related to aging, published in Spanish and English, was carried out. The information was searched using the Google Scholar search engine.
Conclusions: the application of STOPP/START criteria and rationalization of prescribing in elderly patients eliminates unnecessary prescriptions and reduces the average number of drugs administered to each patient and their prescription lines. In addition to improve care indicators (reduction of polypharmacy) and management indicators, pharmaceutical and economic savings are achieved and, above all, patient comfort is maintained.
Key words: aging; healthy aging; stop/start criteria; prescriptions

RESUMEN

Introducción: el envejecimiento individual podría considerarse algo relativo si se conoce que en la Roma Imperial ya eran viejos los jóvenes de 20 años y la esperanza de vida no pasaba de 27 años a causa de enfermedades infecciosas, la tasa de mortalidad infantil era muy elevada y la natalidad y la mortalidad muy altas. Tal vez la mitad de los individuos morían antes de los cinco años y muchos que alcanzaban los 10 años morían aún siendo jóvenes.
Objetivo: resumir en la literatura lo relacionado con el tema.
Método: se realizó una revisión de literatura relacionada con el envejecimiento, publicada en los idiomas Español e Inglés. Para buscar la información se usó el motor de búsqueda Google Académico.
Conclusiones: la aplicación de los criterios STOPP/START y la racionalización de la prescripción en pacientes con edad avanzada elimina las prescripciones innecesarias y rebaja el promedio de fármacos administrados a cada paciente y sus líneas de prescripción. Además de la mejoría de los indicadores asistenciales (reducción de

polifarmacia) y de gestión se consigue un ahorro farmacéutico y económico y se logra, sobre todo, mantener el confort del paciente.
Palabras clave: envejecimiento; envejecimiento saludable; criterios STOP/START; prescripciones

INTRODUCTION

In the 18th century, one was old at 30 years of age and, a little over a century ago, at 40. The author of this review, in his adolescence, in the second half of the last century, considered his parents old at 40 years of age. Nowadays people are young at 50 because human life expectancy has increased significantly in the last two hundred years, although people still die before their 80th birthday, so there are probably years left that are not used.

According to James Vaupel,[1] an expert in aging research and biodemographics, and in view of existing data, life expectancy began to increase in 1840 with the decline in infant and adolescent mortality and has continued unstoppably, with an average increase of two and a half years every decade. To age well is to grow old in health, with security and as active protagonists of their own lives and not just as deserving leisure or mere recipients of care from family members and society. In principle, all older people can actively contribute, in one way or another, to their well-being and that of those around them. The adoption of healthy lifestyles and active participation in self-care are important at all stages of the life course. The idea that, in old age, it is too late to adopt a healthy lifestyle should only be considered a myth.

The STOPP-START[2] criteria serve as a guide for rational drug prescribing, do not replace clinical judgment, but are a tool for detecting potentially inappropriate prescribing in older adults and for improving the quality of prescribing.

Few realities currently occupy the attention of individuals, governments and society in general, and in most countries of the world, as much as the extension of human life span. While the 20th century has been a century of population growth, the 21st century will be a century of population aging. The more longevity increases, the more we see that the real surprise of the new century is not so much the disappearance of age-related diseases, but their delay in time and the learning of the organism to live better in spite of a polypathology that has been latent for a long time. In this age of longevity, the number of elderly people is increasing every day and the educational, social, economic, health and psychological problems that this phenomenon raises for societies and for people of the "third age", of the "group of older adults" or "elderly people", as they are now called, are greater.

Pharmacological treatment of the elderly presents serious difficulties due to the important pathophysiological changes and modifications in the pharmacokinetics of the active ingredients associated with this age group. Polypharmacy and a high prevalence of inappropriate prescriptions lead to more frequent drug intoxications. American experts have proposed a guide to inappropriate prescribing, the Beers criteria,[2] as a reference tool in the health care context of the United States based on the idiosyncrasies of clinical practice and the drug catalog of this country. That is why in different European

countries there have been attempts to adapt guidelines on inappropriate drugs in the elderly to a more available version, including the STOPP/START criteria.[3,4]

In the bibliography consulted, there were not many publications in Cuban medical journals that provide information on how to adapt the prescription to the needs of the elderly. The STOPP/START criteria are suitable for application in the primary and secondary care setting in Cuba, although they should be reviewed periodically to adapt to scientific evidence and new drug formulations.

The purpose of this review is to summarize what has been presented in the literature on the subject to serve as a reference tool.

METHODS

A review of literature related to aging, published in Spanish and English, was carried out. The information was searched using the Google Scholar search engine and the keywords: aging, healthy aging, STOP/START criteria, prescriptions.

DEVELOPMENT

According to United Nations data, by 2030, one in six people in the world will be 60 years of age or older. At that time, the population of 60 years and older will have risen from 1 billion in 2020 to 1.4 billion. By 2050, the number of people aged 60 and over in the world will have doubled (2.1 billion).[5,6,7]

A significant number of people age with great difficulty and live with health problems, mobility difficulties, with few economic resources and without family support. Numerous theories have been proposed to explain the complexity of the changes that take place in aging. The truth is that aging is a phenomenon of great interest today because it is the only condition that all living beings share.

The aging is a process with a genetic substrate due to the fact that longevity has a high heritability. It has been demonstrated that there is a maximum life expectancy of 130 years for humans.[8,9] The data provided and verified by the Gerontology Research Group report that the French Jeanne Louise Calment, the dean of humanity, who lived 122 years and 164 days, died on August 4, 1997, was the longest-lived person to date.[10] The truth is that the number of supercentenarians, meaning people over 110 years of age, continues to increase decade by decade.

The various theories that try to explain why we get older consider this phenomenon from the biological point of view, but it is evident that most of them are not mutually exclusive, but emphasize the fact that there is no single mechanism responsible for aging and that, on the contrary, environmental factors have an impact on it and accelerate it.[9,11]

There are no genes that encode the decline of functions. The mechanisms involved in the loss of physiological functions depend on post-genetic processes. If aging is truly an expression of the interaction between the genetic program of the individual and his environment and 70% of the factors that influence its acceleration are a direct result of life habits and the

environment, while only 30% are due to purely genetic factors, then, in order to age in a healthy way, it would be important to adopt healthy lifestyles, accept the new role in the family and in society, carry out intellectual activities, rest, have hobbies, seek new interests, avoid isolation and try to be useful to others.[11]

In the 1960s, the idea was born that keeping the activity patterns of adulthood in old age constituted the means for optimal aging. A new way of understanding aging then emerged, which is active aging, a term that is still relatively new and little known, despite its widespread diffusion in recent years, adopted by the World Health Organization (WHO) at the end of the 20th century, with the intention of conveying a more complete message than that of healthy aging.[8]

Active aging is the process that enables people to develop their potential for physical, social and mental well-being throughout their life cycle and to participate in society in accordance with their needs, wishes and capabilities, while society provides them with adequate protection, security and care when they need assistance.[8,12]

It is necessary for the elderly to become aware of the importance of healthy eating habits and special nutritional needs that have a favorable impact on their quality of life. Most studies recommend a diet rich in vegetables, fruits, cereals, products rich in omega-3 such as oily fish, fiber, drinking eight glasses of water a day and substances containing antioxidant elements such as vitamins E, C, B, beta-carotene and minerals. One of the methods known for half a century to delay the biological clock of aging is calorie restriction.[11] Probably those who eat less and eat better will live longer.

Excessive consumption of alcohol and tobacco is currently highly prevalent in the elderly. These habits conspire against healthy aging and considerably increase the risk of general mortality, especially from liver cirrhosis, alcoholic hepatitis, alcoholic intoxication and alcoholic hemorrhagic gastritis. Also as a consequence of infections due to the immune deterioration caused by alcohol, added to the senescence of the immune system, which causes a progressive limitation to fulfill its surveillance and defense role. This results, among other things, in an increase in the rate of circulating autoantibodies and a greater ease of acquiring infectious, tumor and autoimmune diseases.

Lack of sleep is also one of the factors leading to the use of sedative-hypnotic drugs that can alter the motor and intellectual functioning of the elderly, with harmful consequences for the organism such as Parkinsonism, daytime sleepiness, falls and fractures, particularly hip fractures.[13,14]

Stress causes discomfort, uneasiness and accelerates aging. The effective management of emotions and an adequate emotional education offer, at present, one of the measures to increase the possibility of aging more slowly. Physical exercise at any age contributes to maintaining functional abilities and improving the physical, mental and emotional state and quality of life of the elderly.

At this unique moment in the present century, in which the demographic dynamics in the world and in Cuba, in particular, with 24% of older adults in Villa Clara Province, 21.9% in Havana Province, 21.8% in Sancti Spíritus Province and 21, 6% in Pinar del Río,[15] has caused that, for the first time in the history of mankind, several generations coexist, which is an achievement

of public health and at the same time a challenge for society in general and for health policies in particular.[16,17]

The physiological changes associated with age, malnutrition, sarcopenia and cachexia, and the multiple comorbidities that make the elderly person a pluripathological patient can affect the ability of these individuals to function and their survival. The consequences of comorbidity are multiple: it modulates the evolution of concurrent diseases, increases the risk of hospitalization, prolongs hospital stay, worsens the quality of life, increases the risk and severity of disability and dependence, increases the risk of death, alters the efficacy of treatments, is associated with polypharmacy and increases the chances of iatrogenic and adverse events.[18]

The different pharmacokinetic and pharmacodynamic behavior of chemical compounds, as well as polypharmacy resulting from the necessary care by several specialists at different levels, make older adults more exposed to adverse drug reactions. This increases morbimortality and determines a greater number of hospital admissions, with an increase in the use of health resources and health expenses.[18,19]

Implicit and explicit tools have been developed to optimize drug prescription in the elderly. The explicit STOPP-START criteria, published in 2008 and updated in 2014, with the participation of 19 experts in Geriatrics and Geriatric Pharmacology from 13 European countries, have been imposed as a reference and have been applied in different care settings.[19]

The application of the STOPP/START criteria in nursing homes reduced the use of antipsychotics, the risk of delirium and falls, and reduced health care resources and hospitalizations.[20] Moreover, their application within 72 hours of hospital admission of older adults significantly reduced adverse drug reactions.[20,21]

In relation to the START criteria, unless the patient is terminally ill and needs a palliative approach, the incorporation of certain treatments should be considered when they have been omitted without a clear clinical reason. It is assumed that the prescriber will observe all the specific contraindications of these drugs before recommending them in older adults.[19,22,23]

Update of the STOPP (Screening Tool of Older Person's Prescriptions) criteria. Actions that are potentially inappropriate if the corresponding statement or statements are fulfilled.[22,23]

It is a list of potentially inappropriate prescribing criteria that seeks to help physicians discontinue those medications in older patients (≥ 65 years) who fulfill ALL the following criteria:

1. End stage of an irreversible disease
2. Poor prognosis of survival at one year
3. Severe functional impairment, severe cognitive impairment, or both
4. Treatment priority is symptom control rather than prevention of disease progression.

Section A. Medication indication

1. Any drug prescribed **without an indication based on clinical evidence**
2. Any medication prescribed for a **longer duration than indicated**, when the duration of the treatment is well-defined

3. Any concomitant prescription of **two drugs in the same class**, such as two NSAIDs, selective serotonin reuptake inhibitors (SSRIs), loop diuretics, angiotensin-converting enzyme inhibitors (ACE inhibitors) and anticoagulants (monotherapy within that drug class should be optimized before considering a new drug).

Section B. Cardiovascular system

1. Digoxin for congestive heart failure (CHF) with preserved ventricular systolic function
2. Amiodarone as first choice antiarrhythmic therapy in supraventricular tachyarrhythmias (higher risk of toxicity than rate control)
3. Thiazide diuretics when there is hypokalemia (kalemia < 3mEq/l), hyponatremia (natremia < 130mEq/l) or hypercalcemia or with a history of gout
4. Centrally acting antihypertensives (methyldopa, clonidine) unless intolerance or lack of efficacy to other classes of antihypertensives
5. ACE inhibitors or angiotensin II receptor antagonists (ARA-II) in patients with hyperkalemia
6. Aldosterone antagonists (spironolactone, splerenone) together with other drugs that can increase potassium levels (ACE inhibitors, amiloride ARA-II, triamterene) without potassium monitoring (should be monitored every six months)
7. 5-phosphodiesterase inhibitors (sildenafil, tadalafil, verdenafil) in severe CHF with hypotension or associated with nitrates (risk of cardiovascular collapse)
8. Loop diuretics for malleolar edema without evidence of CHF, nephrotic syndrome or renal failure
9. Loop diuretics as first-line treatment for arterial hypertension or when urinary incontinence is present (worsens incontinence)
10. Beta-blockers in the presence of bradycardia (heart rate <50 beats per minute) or second or third degree atrioventricular block
11. Beta-blockers in combination with verapamil or diltiazem (risk of heart block).

Section C. Anti-aggregants/anticoagulants

1. Acetylsalicylic acid (ASA) in doses higher than 160 mg/day (increased risk of bleeding without greater efficacy)
2. ASA in patients with a history of peptic ulcer disease without proton pump inhibitors (PPIs)
3. ASA, clopidogrel, dipyridamole, vitamin K antagonists, thrombin inhibitors, or factor Xa inhibitors in the presence of significant bleeding risk (e.g., severe uncontrolled hypertension, bleeding diathesis, or recent significant spontaneous bleeding)
4. ASA plus clopidogrel for secondary stroke prevention unless the patient has a coronary stent, acute coronary syndrome, or severe and symptomatic carotid stenosis (no evidence of benefit of clopidogrel alone)
5. ASA combined with vitamin K antagonists, thrombin inhibitor or factor Xa inhibitor in patients with chronic atrial fibrillation (no benefit of ASA)

6. Anti-aggregants combined with vitamin K antagonists, direct thrombin or factor Xa inhibitor in patients with stable coronary, cerebrovascular or peripheral arterial disease (combination therapy does not provide benefit)
7. Ticlopidine in all circumstances (clopidogrel and prasugrel have similar efficacy and fewer adverse effects)
8. Vitamin K antagonists, direct thrombin inhibitor or factor Xa inhibitor for a first episode of uncomplicated deep vein thrombosis for more than six months
9. Vitamin K antagonists, direct thrombin inhibitor or factor Xa inhibitor for a first uncomplicated pulmonary embolism for more than 12 months
10. NSAIDs in combination with vitamin K antagonists, direct thrombin inhibitor or factor Xa inhibitor (risk of severe gastrointestinal bleeding).

Section D. Central Nervous System and Psychotropic Drugs

1. Tricyclic antidepressants (TCAs) in patients with dementia, glaucoma, cardiac conduction disorders, prostatism or with a history of acute urinary retention
2. TCAs as first-line treatment in depression (higher risk of adverse effects than with SSRIs)
3. Neuroleptics with moderate to severe anticholinergic effect (chlorpromazine, clozapine, flifenazine) in patients with a history of prostatism or acute urinary retention (high risk of urinary retention)
4. Benzodiazepines for more than four weeks (no indication for longer treatment) risk of prolonged sedation, confusion, falls, traffic accidents (if treatment exceeds four weeks, discontinue gradually to avoid withdrawal syndrome)
5. Antipsychotics (other than quetiapine or clozapine) in patients with parkinsonism or Lewy body dementia (risk of extrapyramidal effects)
6. Anticholinergics/antimuscarinics to treat extrapyramidal effects of neuroleptics
7. Neuroleptics in demented patients with behavioral disorders, unless severe and unresponsive to other non-pharmacologic treatments (increased risk of stroke)
8. Anticholinergics in patients with delirium or dementia (worsening of cognition)
9. Neuroleptics as hypnotics unless the sleep disorder is due to dementia or psychosis (risk of confusion, falls, hypotension, extrapyramidal effects)
10. Acetylcholinesterase inhibitors in patients with a history of persistent bradycardia (heart rate less than 60 beats per minute), heart block or recurrent syncope of unclear etiology or receiving concurrent treatment with drugs that lower heart rate such as beta-blockers, digoxin, diltiazem, verapamil (cardiac conduction disturbances, syncope or lesions)
11. Phenothiazides as first-line treatment because there are safer and more effective alternatives (they are sedatives and have relevant antimuscarinic toxicity in the elderly, with the exception of prochlorperazine in the treatment of nausea, vomiting and vertigo; chlorpromazine for persistent hiccups and levomepromazine as an antiemetic in palliative care)
12. Levodopa or dopaminergic agonists for essential tremor (no evidence of efficacy)

13. First generation antihistamines (other safer and less toxic antihistamines are available)
14. SSRIs in patients with concurrent or recent hyponatremia (natremia <130mg/dl).

Sección E. Sistema renal

Los siguientes medicamentos son potencialmente inapropiados en el adulto mayor con enfermedad renal aguda o crónica por debajo de determinado nivel de filtrado glomerular (consultar vademécum locales y fichas técnicas).

1. Digoxina en dosis mayores a 125mg/día con tasa de filtrado glomerular (TGF) <30ml/min (riesgo de intoxicación digitálica si no se realiza monitoreo)
2. Inhibidores directos de la trombina (ejemplo: dabigatran) con TFG <30ml/min (riesgo de sangrado)
3. Inhibidores del factor Xa (ejemplo: rivaroxaban) con TFG <15ml/m (riesgo de sangrado)
4. AINE con TFG <50ml/m (riesgo de deterioro de la función renal)
5. Colchicina con TFG <10ml/m (riesgo de toxicidad)
6. Metformina con TFG <30ml/m (riesgo de acidosis láctica).

Section F. Gastrointestinal System

1. Oral iron in elemental doses above 200mg/day (e.g., iron fumarate and sulfate >600mg/day, iron gluconate >1,800mg/day; there is no evidence of increased absorption above these doses)
2. Medications that usually cause constipation (e.g. anticholinergic drugs, oral iron, opioids, verapamil, antacids with aluminum) in patients with chronic constipation when there are other alternatives that do not constipate
3. PPIs for peptic ulcer disease or erosive peptic esophagitis at full therapeutic doses for more than eight weeks
4. Metoclopramide in patients with parkinsonism (worsens parkinsonism).

Section G. Respiratory system

1. Antimuscarinic bronchodilators (e.g., ipratropium, tiotropium) in patients with a history of narrow-angle glaucoma (may exacerbate glaucoma) or lower urinary tract obstruction (may cause urinary retention)
2. Non-cardioselective beta-blockers (oral or topical for glaucoma) in patients with a history of asthma requiring treatment (increases risk of bronchospasm)
3. Benzodiazepines in patients with acute and chronic respiratory failure (risk of respiratory failure)
4. Systemic corticosteroids instead of inhaled corticosteroids in moderate to severe chronic obstructive pulmonary disease (COPD)
5. Theophylline as monotherapy for COPD (safer alternatives exist).

Section H. Musculoskeletal system

1. NSAIDs (except selective COX-2 inhibitors) in patients with a history of peptic ulcer disease or gastrointestinal bleeding, except with simultaneous use of H2 antagonists or PPIs

2. NSAIDs in patients with severe hypertension or heart failure (risk of exacerbation)
3. Long-term NSAIDs (> three months) for symptomatic treatment of osteoarthritis when paracetamol has not been tried
4. Selective COX-2 inhibitors in patients with cardiovascular disease (increased risk of infarction and stroke)
5. NSAIDs with corticosteroids without PPI in prophylactic doses (increased risk of peptic ulcer disease)
6. Oral bisphosphonates in patients with present or previous upper digestive diseases (example: esophagitis dysphagia, gastritis, duodenitis, peptic ulcer disease or upper gastrointestinal bleeding, due to the risk of recurrence or exacerbation)
7. Long-term corticosteroids (more than three months) as monotherapy in rheumatoid arthritis
8. NSAIDs with corticosteroids without PPIs (increases the risk of peptic ulcer disease)
9. Corticosteroids for the treatment of osteoarthritis (except periodic intra-articular injections in monoarticular pain).

Section I. Urogenital system

1. Antimuscarinic bladder drugs in patients with dementia (increased risk of confusion, agitation) or narrow-angle glaucoma (exacerbation of glaucoma) or chronic prostatism (risk of urinary retention)
2. Selective alpha-1-adrenergic blockers in patients with symptomatic orthostatic hypotension or voiding syncope (risk of recurrence of syncope).

Section J. Endocrine System

1. Long-acting sulfonylureas (e.g., glibenclamide, chlorpropamide, glimeperide) in patients with type 2 diabetes mellitus (risk of prolonged hypoglycemia)
2. Thiazolidinediones (e.g. rosiglitazone, pioglitazone) in patients with CHF (risk of exacerbation of CHF)
3. Androgens in the absence of primary or secondary hypogonadism (risk of androgen toxicity; have not demonstrated benefit outside of the indication of hypogonadism)
4. Estrogens with a history of breast cancer or venous thrombosis (risk of recurrence)
5. Oral estrogens without progestins in women with intact uterus (risk of uterine cancer)
6. Beta-blockers in patients with diabetes mellitus with frequent episodes of hypoglycemia (masks episodes).

Section K. Drugs that predictably increase the risk of falls in older people

1. Benzodiazepines (sedatives, may reduce the level of consciousness, impair balance)
2. Neuroleptics (may produce dyspraxia in gait, parkinsonism)
3. Vasodilators (e.g. alpha-1-adrenergic blockers, calcium antagonists, long-acting nitrates, ACE inhibitors, ARBs-II) in patients with persistent postural

hypotension (recurrent systolic pressure drop greater than 20 mmHg, risk of syncope and falls)
4. Z-hypnotics (e.g., zoplicone, zolpidem, zaleplon; may cause prolonged daytime sedation, ataxia).

Section L. Analgesics

1. Use of potent oral or transdermal opioids (morphine, oxycodone, fentanyl, buprenorphine, methadone, tramadol) as first-line treatment for mild pain (non-compliance with the WHO analgesic scale)
2. Use of prescribed opioids (not on demand) without laxatives (risk of severe constipation)
3. Long-acting opioids without fast-acting opioids for breakthrough pain (risk of persistence of pain).

Section N. Antimuscarinic/Anticholinergic Burden

1. Use of two or more antimuscarinic/anticholinergic drugs (example: bladder or intestinal antispasmodics, first generation antihistamines; due to the risk of anticholinergic toxicity).

Update of the START (Screening Tool to Alert Doctors to Right Treatment) criteria. Interventions to be initiated if the corresponding statement(s) is/are met.[22,23]

22 indicators are incorporated that detect omissions in the prescription of drugs that could benefit patients over 65 years of age; however, the initiation of prescription in these frequently polymedicated patients requires a diagnostic and clinical approach. They represent a tool to draw attention to indicated and appropriate treatments based on available evidence. It is assumed that the prescriber will observe all specific contraindications of the prescribed drugs before recommending them in older patients.

Section A. Cardiovascular system

1. Vitamin K antagonists, thrombin inhibitors or factor Xa inhibitors in the presence of chronic atrial fibrillation
2. ASA in the presence of chronic atrial fibrillation, when vitamin K antagonists, thrombin inhibitors or factor Xa inhibitors are contraindicated
3. Anti-aggregants (ASA, clopidogrel, prasugrel or ticagrelor) in patients with a well-documented history of coronary, cerebral or peripheral arterial disease
4. Antihypertensive treatment when systolic blood pressure is usually higher than 160mmHg or diastolic pressure is usually >90mmHg -or both- (>140mmHg and >90mmHg if they have diabetes mellitus)
5. Statins in patients with a well-documented history of coronary, cerebral or peripheral arterial atherosclerotic disease, unless the patient is in an end-of-life situation or is older than 85 years of age
6. ACE inhibitors in well-documented systolic heart failure or ischemic heart disease (or both)
7. Beta-blockers in ischemic heart disease
8. Appropriate beta-blockers (bisoprolol, nebivolol, metoprolol or carvedilol) in stable systolic CHF.

Section B. Respiratory System

1. Inhaled corticosteroids prescribed in moderate to severe asthma or COPD, when the forced expiratory volume (FEV1) is less than 50% and there are frequent exacerbations requiring oral corticosteroids
2. Continuous home oxygen therapy in chronic hypoxemia (PO_2 <60mmHg or O_2 saturation <89%)
3. Beta-2 agonist or prescribed inhalation antimuscarinics (e.g., ipratropium) in mild to moderate asthma or COPD.

Section C. Central nervous system and eyes

1. Levodopa or a dopaminergic agonist in idiopathic Parkinson's disease with functional impairment and secondary disability
2. Non-tricyclic antidepressants in the presence of persistent major depressive symptoms
3. Acetylcholinesterase inhibitors (donepezil, rivastigmine, galantamine) for mild-to-moderate Alzheimer's disease or Lewy body dementia (rivastigmine)
4. Prostaglandins, prostamine, or topical beta-blockers for primary open-angle glaucoma
5. SSRIs (selective norepinephrine reuptake inhibitors or pregabalin if SSRIs are contraindicated) for persistent severe anxiety that interferes with functional independence
6. Dopaminergic antagonists (pramipexole) for restless legs syndrome once iron deficiency and severe renal disease have been ruled out as causes.

Section D. Gastrointestinal System

1. Fiber supplementation (e.g., bran, methylcellulose) in chronic symptomatic diverticulosis with a history of constipation
2. PPIs in severe gastroesophageal reflux disease or peptic stricture requiring dilatation.

Section E. Musculoskeletal system

1. Disease-modifying antirheumatic drugs in disabling active rheumatoid arthritis
2. Calcium and vitamin D supplementation in patients with known osteoporosis or previous fragility fractures or bone mineral density with T score below -2.5 at multiple points
3. Antiresorptives or bone anabolic agents (e.g. bisphosphonates, strontium ranelate, teriparatide, denosumab) in patients with known osteoporosis when there are no contraindications for their use
4. Vitamin D supplementation in elderly patients who do not leave the house, suffer falls or have osteopenia (T score -1 to -2.5 at multiple points)
5. Xanthine oxidase inhibitors (example: allopurinol) in patients with a history of recurrent gout episodes
6. Folic acid supplementation in patients taking methotrexate.

Section F. Endocrinological system

1. ACEI or ARB-II in patients with diabetes mellitus with evidence of renal disease (proteinuria in a dipstick or micro albuminuria (>30mg/24h) with or without biochemical data of renal disease.

Section G. Genitourinary system

1. Alpha-1 blockers (tamsulosin, terazosin as an alternative) for symptomatic prostatism when prostatectomy is not considered necessary
2. 5-alpha-reductase inhibitors for symptomatic prostatism when prostatectomy is not considered necessary
3. Topical vaginal estrogens or estrogen pessary for symptomatic atrophic vaginitis.

Section H. Analgesics

1. Potent opioids in moderate or severe pain when paracetamol, NSAIDs or low potency opioids are not appropriate for the severity of pain
2. Laxatives in patients receiving regular opioids.

Section I. Vaccines

1. Annual trivalent seasonal influenza vaccine
2. Pneumococcal vaccine every five years.

Since the revolutionary triumph, Cuba has given high priority to improving the health of its citizens and has devoted considerable resources to the National Health System. In Cuba, life expectancy at birth is 78.4 years (76.5 for men and 80.4 for women), which has conditioned, among other factors, an accelerated pace of aging, closely related to the increase of risk factors at these ages, so it is imperative to identify good practices and their dissemination with family medicine as the axis, primary health care as a philosophy and social commitment to the right to health as values.[24]

Due to the aging population and the high prevalence of multimorbidity, which is more the rule than the exception, medical practice and research should be oriented towards changing the model based on individual diseases,[25] which is why this condition has become a problem that implies great challenges for health systems.

Pharmacological treatment of the elderly presents serious difficulties due to the important pathophysiological changes and modifications in the pharmacokinetics of the active ingredients associated with this age group. Prescribing in the elderly should avoid the moderate and severe risks of polymedication with more drugs than clinically appropriate without defined therapeutic objectives other than "treating an adverse drug effect with another drug", commonly described as "the prescribing cascade."[26]

It is important to always avoid the simultaneous use of drugs with similar effect and toxicity. It is necessary to start with lower doses than usual and increase them to the lowest effective dose, taking into account renal and hepatic function, but never under-prescribe, and also consider the assessment of drug-drug interactions and the important socioeconomic component added to the treatment, which often causes poor compliance.[20,21,22,23,26,27,28,29,30]

Adequate knowledge of comorbidity management can help to prioritize medical actions and avoid unnecessary treatments in advanced, progressive and incurable disease in terminally ill patients.[18,25,29,29,30,31]

Applying the STOPP/START criteria and rationalization of prescribing in elderly patients eliminates unnecessary prescriptions and reduces the average number of drugs administered to each patient, as well as their prescription lines. In

addition to improving care indicators (reduction of polypharmacy) and management indicators, pharmaceutical and economic savings are achieved and, above all, patient comfort is maintained.[19,20,21,22,23,26,27,28,29,30]

"To die sooner or later is not the question, to die well or badly, this is the real question; and just as the longer life is not always better, so the longer death is always worse."[32]

CONCLUSIONS

The application of the STOPP/START criteria and the rationalization of prescriptions in elderly patients eliminates unnecessary prescriptions and reduces the average number of drugs administered to each patient and their prescription lines. In addition to improving care indicators (reduction of polypharmacy) and management indicators, pharmaceutical and economic savings are achieved and, above all, patient comfort is maintained.

REFERENCIAS BIBLIOGRÁFICAS

1. Vaupel JW. Post-Darwinian Longevity. MPIDR Working Paper WP 2002-043 [Internet]. Rostock, Germany: Max Planck Institute for Demographic Research; 2002 [citado 23/02/2021]. Disponible en: https://www.demogr.mpg.de/papers/working/wp-2002-043.pdf
2. Pastor Cano J, Aranda García A, Gascón Cánovas JJ, Rausell Rausell VJ, Tobaruela Soto M. Adaptación española de los criterios Beers. Anales Sis San Navarra [Internet]. 2015 [citado 23/02/2021];38(3):375-85. Disponible en: https://scielo.isciii.es/scielo.php?script=sci_arttext&pid=S1137-66272015000300002. https://dx.doi.org/10.4321/S1137-66272015000300002
3. Fernández Alonso C, González Armengol JJ, Perdigones García FJ, Fuentes Ferrer ME, González del Castillo J, Martín Sánchez FJ. La utilidad de la escala Identification of Seniors at Risk (ISAR) para predecir los eventos adversos a corto plazo en los pacientes ancianos dados de alta desde una unidad de corta estancia. Emergencias [Internet]. 2015 [citado 23/02/2021];27(3):181–84. Disponible en: https://dialnet.unirioja.es/servlet/articulo?codigo=5386841
4. Markota M, Rummans TA, Bostwick JM, Lapid MI. Benzodiazepine Use in Older Adults: Dangers, Management, and Alternative Therapies. Mayo Clin Proc [Internet]. 2016 [citado 23/02/2021];91(11):1632-1639. Disponible en: https://pubmed.ncbi.nlm.nih.gov/27814838/. https://doi.org/10.1016/j.mayocp.2016.07.024
5. Organización Mundial de la Salud. Envejecimiento activo: un marco político. Rev Esp Geriatr Gerontol [Internet]. 2002 [citado 23/02/2021];37(S2):74-105. Disponible en: https://ccp.ucr.ac.cr/bvp/pdf/vejez/oms_envejecimiento_activo.pdf
6. Organización Mundial de la Salud [Internet]. Ginebra: OMS; 2022 [actualizado 01/10/2022; citado 26/11/2022]. Envejecimiento y salud [aprox. 5 pantallas]. Disponible en: https://www.who.int/es/news-room/fact-sheets/detail/ageing-and-health
7. Organización Mundial de la Salud. Informe Mundial sobre el envejecimiento y la salud [Internet]. Ginebra: OMS; 2015 [citado 23/02/2021]. Disponible en: https://apps.who.int/iris/bitstream/handle/10665/186471/WHO_FWC_ALC_15.01_spa.pdf

8. Limón MR, Ortega MC. Envejecimiento activo y mejora de la calidad de vida en adultos mayores. Rev Psicol Educ [Internet]. 2011 [citado 23/02/2021];(6):225-238. Disponible en: https://www.revistadepsicologiayeducacion.es/pdf/68.pdf
9. Wilmoth JR, Deegan LJ, Lundström H, Horiuchi S. Increase of maximum life-span in Sweden, 1861-1999. Science [Internet]. 2000 [citado 23/02/2021];289(5488):2366-2368. Disponible en: https://pubmed.ncbi.nlm.nih.gov/11009426/. https://doi.org/10.1126/science.289.5488.2366
10. Bassets M. El enigma de Jeanne Calment, la "decana de la humanidad". El País [Internet]. Madrid: Ediciones El País [actualizado 14/04/2019; citado 23/02/2021]. Disponible en: https://elpais.com/sociedad/2019/04/13/actualidad/1555173895_840524.html
11. Mora Bautista G. El envejecimiento y la actividad física. Mov Cient [Internet]. 2008 [citado 23/02/2021];2(1):1-19. Disponible en: https://revmovimientocientifico.ibero.edu.co/article/view/mct.02109/284
12. Yuni JA, Urbano CA. Envejecer aprendiendo. Claves para un envejecimiento activo. Uruguay: Editorial Brujas; 2016.
13. Reeve E, Thompson W, Farrel B. Deprescribing: A narrative review of the evidence and practical recommendations for recognizing opportunities and taking action. Eur J Intern Med [Internet]. 2017 [citado 23/02/2021];38:3-11. Disponible en: https://pubmed.ncbi.nlm.nih.gov/28063660/. https://doi.org/10.1016/j.ejim.2016.12.021
14. Donnelly K, Bracchi R, Hewitt J, Routledge PA, Carter B. Benzodiazepines, Z-drugs and the risk of hip fracture: A systematic review and meta-analysis. PLoS One [Internet]. 2017 [citado 23/02/2021];12(4):e0174730. Disponible en: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5407557/. https://doi.org/10.1371/journal.pone.0174730
15. Godefoy Núñez E, Cristiá Lara S, Ramos García I. Vulnerabilidad social y percepción del riesgo en la población cubana expuesta a la sequía. Pers Soc [Internet]. 2022 [citado 26/11/2022];36(1):9-28. Disponible en: https://personaysociedad.uahurtado.cl/index.php/ps/article/view/356. https://doi.org/10.53689/pys.v36i1.356
16. Martínez Pérez TJ, González Aragón CM, Castellón León G, González Aguiar B. El envejecimiento, la vejez y la calidad de vida: ¿éxito o dificultad? Rev Finlay [Internet]. 2018 [citado 23/02/2021];8(1):59-65. Disponible en: https://www.revfinlay.sld.cu/index.php/finlay/article/view/569
17. Amaro Cano MC. El envejecimiento poblacional en Cuba, desde el prisma de la epidemiología social y la ética. Anales de la ACC [Internet]. 2016 [citado 23/02/2021];6(2):[aprox. 24 p.]. Disponible en: http://www.revistaccuba.cu/index.php/revacc/article/view/340/340
18. Roy Torales TE, Peralta Giménez R, González Aquino LA, Backer W, Dias Camillo I, Llatas Zapata RH, et al. Índice de comorbilidad de Charlson aplicado a pacientes de Medicina Interna: estudio multicéntrico. Rev Virtual Soc Parag Med Int [Internet]. 2019 [citado 23/02/2021];6(2):47-56. Disponible en: http://scielo.iics.una.py/scielo.php?script=sci_arttext&pid=S2312-38932019000200047. https://doi.org/10.18004/rvspmi/2312-3893/2019.06.02.47-056
19. O'Mahony D, O'Sullivan D, Byrne S, O'Connor MN, Ryan C, Gallagher P. STOPP/START criteria for potentially inappropriate prescribing in older people: version 2. Age Ageing [Internet]. 2015 [citado 23/02/2021];44(2):213-218. Disponible en: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4339726/. https://doi.org/10.1093/ageing/afu145
20. Garcia Gollarte F, Baleriola Júlvez J, Ferrero López I, Cuenllas Díaz A, Cruz Jentoft AJ. An educational intervention on drug use in nursing homes improves health

outcomes resource utilization and reduces inappropriate drug prescription. J Am Med Dir Assoc [Internet]. 2014 [citado 23/02/2021];15(12):885-891. Disponible en: https://pubmed.ncbi.nlm.nih.gov/24895001/. https://doi.org/10.1016/j.jamda.2014.04.010

21. Rongen S, Kramers C, O'Mahony D, Feuth TB, Olde Rikkert MGM, Ahmed AIA. Potentially inappropriate prescribing in older patients admitted to psychiatric hospital. Int J Geriatr Psychiatry [Internet]. 2016 [citado 23/02/2021];31(2):137-145. Disponible en: https://pubmed.ncbi.nlm.nih.gov/26032252/. https://doi.org/10.1002/gps.4302
22. Gallo C, Vilosio J, Saimovici J. Actualización de los criterios STOPP-START: una herramienta para la detección de medicación potencialmente inadecuada en ancianos. Evid Act Pract Ambul [Internet]. 2015 [citado 23/02/2021];18(4):124-129. Disponible en: https://www.fundacionmf.org.ar/files/c408e5ff7e3a0178169d58286709f3f9.pdf
23. Delgado Silveira E, Montero Errasquín B, Muñoz García M, Vélez-Díaz-Pallarés M, Lozano Montoya I, Sánchez-Castellano C, Cruz-Jentoft AJ. Mejorando la prescripción de medicamentos en las personas mayores: una nueva edición de los criterios STOPP-START. Rev Esp Geriatr Gerontol [Internet]. 2015 [citado 23/02/2021];50(2):89–96. Disponible en: https://www.elsevier.es/es-revista-revista-espanola-geriatria-gerontologia-124-articulo-mejorando-prescripcion-medicamentos-las-personas-S0211139X14002236. https://doi.org/10.1016/j.regg.2014.10.005
24. Organización Mundial de la Salud. Oficina Regional para las Américas. Estrategia de Cooperación País OPS/OMS. Cuba 2018-2022 [Internet]. Washington D.C: OMS. Oficina Regional para las Américas; 2018 [citado 23/02/2021]. Disponible en: https://apps.who.int/iris/handle/10665/275329
25. Camacho Caicedo A. Multimorbilidad [Internet]. XII Congreso Colombiano de Gerontología y Geriatría. Bogotá: Asociación Colombiana de Gerontología y Geriatría; 19-21/05/2016 [citado 23/02/2021]. Disponible en: http://acgg.org.co/pdfs_memorias/Multimorbilidad.pdf
26. González-Pedraza Avilés A, Sánchez Reyes A, González Domínguez R. Medicamentos potencialmente inapropiados: conceptos de utilidad clínica para el médico familiar. Aten Fam [Internet]. 2016 [citado 23/02/2021];23(3):113-115. Disponible en: https://www.revistas.unam.mx/index.php/atencion_familiar/article/view/56532
27. Pardo-Cabello AJ, Bermudo-Conde S, Manzano-Gamero V. Prescripción potencialmente inapropiada en pacientes hospitalizados con estudio comparativo entre la prescripción realizada por internistas y geriatras. Farm Hosp [Internet]. 2014 [citado 23/02/2021];38(1):65-68. Disponible en: http://scielo.isciii.es/scielo.php?script=sci_arttext&pid=S1130-63432014000100010&lng=es. https://dx.doi.org/10.7399/FH.2014.38.1.871
28. Rodríguez Blanco R, Álvarez García M, Villalibre Calderón C, Piña Ferreras LD, Junquera Alonso S, Alonso Lorenzo JC. Evaluación de la actualización de los criterios STOPP-START en atención primaria. Med Fam. Semergen [Internet]. 2019 [citado 23/02/2021];45(3):180-186. Disponible en: https://www.sciencedirect.com/science/article/pii/S1138359318304258. https://doi.org/10.1016/j.semerg.2018.06.004
29. García Orihuela M, Suárez Martínez R, Pérez Hernández B. Criterios STOPP-START y la prescripción inapropiada del anciano. Rev Haban Cienc Méd [Internet]. 2020 [citado 23/02/2021];19(6):e3765. Disponible en: http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S1729-519X2020000700005
30. Delgado Silveira E, Mateos Nozal J, Muñoz García M, Rexach Cano L, Vélez Díaz Pallarés M, Albeniz López J, et al. Uso potencialmente inapropiado de fármacos en

cuidados paliativos: versión en castellano de los criterios STOPP-Frail (STOPP-Pal). Rev Esp Geriatr Gerontol [Internet]. 2019 [citado 23/02/2021];54(3):151-155. Disponible en: https://www.elsevier.es/es-revista-revista-espanola-geriatria-gerontologia-124-articulo-uso-potencialmente-inapropiado-farmacos-cuidados-S0211139X18307170. https://doi.org/10.1016/j.regg.2018.11.008

31. Martínez N. Índices de comorbilidad y multimorbilidad en el paciente anciano. Med Clin [Internet]. 2011 [citado 23/02/2021];136(10):441–446. Disponible en: https://www.elsevier.es/es-revista-medicina-clinica-2-articulo-ndices-comorbilidad-multimorbilidad-el-paciente-S0025775310001508. https://doi.org/10.1016/j.medcli.2010.01.018
32. Séneca LA. Consolaciones. Diálogos. Epístolas morales a Lucilio. Madrid: Editorial Gredos; 2019.

CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest.