

# Criterios de Laroche 2007

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SPECIAL ARTICLE

## **Potentially inappropriate medications in the elderly: a French consensus panel list**

**Marie-Laure Laroche · Jean-Pierre Charmes ·  
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# Justificación

Es importante la identificación de los medicamentos inapropiados en los Adultos Mayores, así como las interacciones posibles más frecuentes.

# Sobre otros criterios...

- Beers *et al* en el año 1991 desarrollaron criterios para determinar una lista de medicamentos inapropiados en AM en el contexto de hogares de ancianos.
- En 1997 se expanden los criterios para todo adulto mayor de 65 años.

# Sobre otros criterios...

- McLeod (1997): Propone una nueva lista que incluye interacciones droga-droga, droga-enfermedad.
- 2003: Actualización de criterios de Beers (Fick *et al*).

# Método

- Criterios se obtuvieron por revisión de la literatura, y cuestionarios a expertos en distintas áreas relacionadas con el tema.

# Respecto a guías norteamericanas...

Se añadieron 3 criterios:

1. Uso concomitante de 2 AINES,
2. Uso de 2 ó más antipsicóticos del mismo grupo terapéutico,
3. Uso de medicamentos con efecto anticolinérgico.

# Problemas de las guías

- Falta de método de consenso.
- Exclusión de algunos criterios: Dosis, medicamentos en condiciones médicas específicas.
- Obsolescencia de medicamentos en el mercado.
- No se sugieren alternativas de tratamiento.



# Laroche

- Criterios en Francia que nacen para la adaptación a la situación en Europa.

# Metodología

- Método Delphi: desarrollado en 1950
- Logra consenso en opiniones de expertos
- Usa cuestionarios en rondas

# 6 fases

1. Creación de cuestionario luego de la revisión de la literatura
2. Reclutamiento de expertos
3. Entrega de primera ronda de cuestionarios
4. Análisis de respuestas y creación de nuevo cuestionario
5. Entrega de segunda ronda de cuestionarios
6. Análisis final

# Cuestionario Preliminar

- 1er Cuestionario construido a partir de otros criterios: Beers (1991, 1997, 2003), Criterios Canadienses (1997), Criterios adaptados a la práctica Francesa (2001), y las guías de la Agencia de Medicina Francesa sobre Prescripción de Medicación en los Adultos Mayores (AM) 2005.
- 2 Categorías:
  - a) medicamentos que deberían ser evitados en AM y
  - b) medicamentos que deberían ser evitados en ciertas condiciones médicas.
- Panel de farmacólogos, farmacoepidemiólogos, geriatras, farmacéuticos, médicos generales, de todo Francia.

# Resultados

- Expertos consideran lista aplicable a personas mayores de 75 años
- Se retiraron medicamentos ya no utilizados en Francia.
- Sesgo: basado en opinión en expertos.

# Criteria Laroche 2007

**Table 1** Final list of potentially inappropriate medications (IMs) for the French population 75 years of age and older

Criteria	Reasons	Alternative drugs
<b>Unfavourable benefit/risk ratio</b>		
<b>Analgesics</b>		
1 Indomethacin	Severe CNS adverse effects. Second-choice drug	NSAIDs except phenylbutazone
2 Phenylbutazone	Severe haematological adverse effects. To be avoided	NSAIDs except indomethacin
3 Concomitant use 2 or more NSAIDs	No enhancement of efficacy, albeit increase of adverse effect risk	Use only one NSAID
<b>Drugs with anticholinergic properties</b>		
4 Anticholinergic antidepressants: clomipramine, amoxapine, amitriptyline, maprotiline, dosulepin, doxepin, trimipramine, imipramine	Muscarinic-blocking agents with cardiotoxicity when overdosed. Tricyclics at times more active than SSRIs, but their benefit/risk ratio is less favourable in the elderly. Second-choice drugs	SSRIs, SNRIs
5 Antipsychotic drugs: chlorpromazine, fluphenazine, propericiazine, levomepromazine, pipotiazine, cyamemazine, perphenazine	Muscarinic-blocking drugs. Second choice drugs	Atypical antipsychotics with less anticholinergic activity (clozapine, risperidone, olanzapine, amisulpride, quetiapine), meprobamate
6 Anticholinergic hypnotic drugs: doxylamine, aceprometazine, alimemazine	Muscarinic-blocking drugs. Cognition impairment	Dose of short- or intermediate half-life hypnotic benzodiazepine $\leq$ half the dose given to young subjects
7 Anticholinergic antihistamines: promethazine, mequitazine, alimemazine, carbinoxamine, hydroxyzine, brompheniramine, dexchlorpheniramine, dexchlorpheniramine-betamethasone, cypheptadine	Muscarinic-blocking drugs. Sedation, drowsiness	Cetirizine, desloratadine, loratadine...
8 Anticholinergic muscle relaxants and antispasmodic drugs: oxybutynin, tolterodine, solifenacin	Muscarinic-blocking drugs. To be avoided when possible	Trospium or other drugs with less anticholinergic activity
9 Concomitant use of drugs with anticholinergic properties	Enhanced adverse effects	No association

# Criteria

Criteria	Reasons	Alternative drugs
<b>Sedative or hypnotic drugs</b>		
10 Long-acting benzodiazepines (half-life $\geq 20$ h : bromazepam, diazepam, chlordiazepoxide, prazepam, clobazam, nordazepam, loflazepate, nitrazepam, flunitrazepam, clorazepate, clorazepate-acepromazine, acepromazine, estazolam	Protracted activity, increased likelihood of adverse effects occurrence (drowsiness, fall...)	Dose of short- or intermediate-life benzodiazepine $\leq$ half the dose given in young subjects
<b>Antihypertensives</b>		
11 Centrally acting antihypertensives: methyldopa, clonidine, moxonidine, rilmenidine, guanfacine	The aged are more sensitive to sedation, hypotension, bradycardia, syncope	Other antihypertensive drugs, except short-acting calcium-channel blockers and reserpine
12 Short-acting calcium-channel blockers: nifedipine, nicardipine	Postural hypotension, myocardial infarction or stroke	Other antihypertensive drugs, except centrally acting antihypertensives and reserpine
13 Reserpine	Drowsiness, depression, GI disturbance	Other antihypertensive drugs, except short-acting calcium-channel blockers and centrally acting antihypertensives

# Criteria

Criteria	Reasons	Alternative drugs
<b>Antiarrhythmics</b>		
14 Digoxin > 0.125 mg/day or digoxin serum concentration > 1.2 ng.ml <sup>-1</sup>	Increased sensitivity of the elderly. The dose should remain ≤ 0.125 mg/day or preferably should be adapted to maintain serum concentration < 1.2 ng.ml <sup>-1</sup>	Digoxin ≤ 0.125 mg/day or serum concentration between 0.5 and 1.2 ng.ml <sup>-1</sup>
15 Disopyramide	Heart failure, anticholinergic effect	Amiodarone, other antiarrhythmics
Antiplatelet drugs		
16 Ticlopidine	Blood and liver adverse effects	Clopidogrel, aspirin
Gastrointestinal drugs		
17 Cimetidine	Confusion. More interactions than with other H <sub>2</sub> -blocking drugs	Proton-pump inhibitors and other H <sub>2</sub> antagonists: ranitidine, famotidine, nizatidine,
18 Stimulant laxatives: bisacodyl, docusate, castor oil, sodium picosulfate, cascara, sennosides, aloe...	Worsening of irritable bowel syndrome	Osmotic laxatives
<b>Hypoglycaemic</b>		
19 Long-acting sulfonylureas: carbutamide, glipizide	Protracted hypoglycaemia	Short- or intermediate-acting sulfonylureas, insulin, metformin, alpha-glucosidase inhibitors



# Criteria

Criteria	Reasons	Alternative drugs
Other muscle relaxants		
20 Methocarbamol, baclofen, tetrazepam	Drowsiness, amnesia, fall	Thiocolchicoside, mephenesine
With clinical conditions		
21 Prostate adenoma, chronic urinary retention: drugs with anticholinergic properties (criteria 4-9, 15, 29, 30, 34)	Urinary retention risk increased	
22 Closed-angle glaucoma : drugs with anticholinergic properties (criteria 4-9, 15, 29, 30, 34)	Acute-angle glaucoma risk increased	
23 Urinary incontinence: urapidil, prazosin	Aggravation of urinary incontinence, postural hypotension	
24 Dementia: drugs with anticholinergic properties (criteria 4-9, 15, 29, 30, 34), trihexyphenidyl, tropatepine, biperiden, neuroleptics except olanzapine and risperidone, benzodiazepines	Aggravation of cognitive impairment	
25 Chronic constipation: drugs with anticholinergic properties (criteria 4-9, 15, 29, 30, 34) , centrally acting antihypertensives (criteria 11)	Bowel-occlusion risk, postural hypotension	

# Criteria

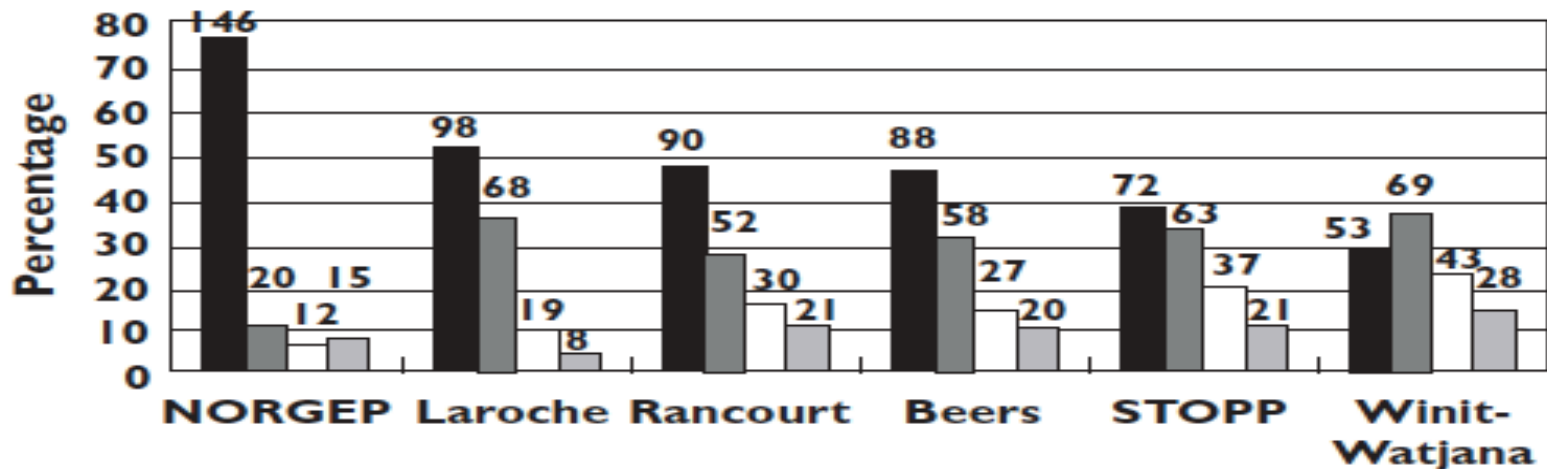
Criteria	Reasons	Alternative drugs
<p><b>Questionable efficacy</b></p> <p>26 Cerebral vasodilators: dihydroergocristine, dihydroergocryptine, dihydroergotoxine, ginkgo-biloba, moxisylyte, naftidrofuryl, nicergoline, pentoxifylline, piracetam, piribedil, raubasine-dihydroergocristine, troxerutin-vincamine, vinburnine, vincamine, vincamine-rutoside</p>	No really proven efficacy while postural hypotension and fall risks are increased with most vasodilators	Therapeutic abstention
<p><b>Unfavourable benefit/risk ratio and questionable efficacy</b></p> <p><u>Sedative or hypnotic drugs</u></p> <p>27 Dose of short- or intermediate- half-life benzodiazepines &gt; half the dose given in young subjects: lorazepam &gt; 3 mg/j, oxazepam &gt; 60 mg/j, alprazolam &gt; 2 mg/j, triazolam &gt; 0,25 mg/j, temazepam &gt; 15 mg/j, clonazepam &gt; 5 mg/j, lorazepam &gt; 0,5 mg/j, lormetazepam &gt; 0,5 mg/j, zolpidem &gt; 5 mg/j, zopiclone &gt; 3,75 mg/j</p>	No proven improvement of efficacy when the daily dose is above half that prescribed to young adults and increase of adverse effects	Dose of short- or intermediate- half-life benzodiazepine ≤ half the dose given in young subjects
<p><u>Gastrointestinal drugs</u></p> <p>28 Meprobamate for gastro-intestinal dysfunction</p> <p>29 Gastrointestinal antispasmodic drugs with anticholinergic properties: association with belladonna, clidinium bromure-chlordiazepoxide, dihexyverine, diphenoxylate-atropine, scopolamine, tiemonium</p>	<p>Drowsiness, confusion</p> <p>No proven efficacy. Muscarinic-blocking agents</p>	Mebeverine, phloroglucinol

# Criteria

Criteria	Reasons	Alternative drugs
<p><b>Other drugs with anticholinergic properties</b></p> <p>30 Antiemetics, cough suppressants, nasal decongestants, or antidrowsiness drugs with anticholinergic properties: alizapride, buclizine, dimenhydrinate, diphenhydramine, meclozine, metopimazine, oxememazine, pheniramine, pimehixene, promethazine, association triprolidine, chlorphenamine...</p>	No proven efficacy. Muscarinic-blocking agents. Confusion, sedation	Nausea: domperidone Cough: clobutinol, olexadine Drowsiness: acetyl-leucine, beta-histine, Rhinitis: saline
<p><b>Antiplatelet drugs</b></p> <p>31 Dipyridamole</p>	Less efficient than aspirin. Vasodilation and postural hypotension	Antiplatelet drugs except ticlopidine
<p><b>Antimicrobial</b></p> <p>32 Nitrofurantoin</p>	Can induce renal insufficiency, pneumopathy, peripheral neuropathy, allergic reaction. Bacterial resistance in case of protracted use	Antibiotics with renal elimination according to the antibiogram
<p><b>Drug-drug associations</b></p> <p>33 Concomitant use of two or more psychotropic drugs from the same therapeutic class</p> <p>34 Concomitant use of anticholinesterase drugs and drugs with anticholinergic properties</p>	<p>No improved efficacy but increase of adverse effects</p> <p>Illogical association of two antagonistic mechanisms</p>	<p>No association</p> <p>No association</p>

# Potentially inappropriate medications in geriatric out-patients with polypharmacy: application of six sets of published explicit criteria

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**Figure 1**

Prevalence of potentially inappropriate medications from six sets of explicit criteria (total  $n = 193$ ). Numbers of patients are shown above the bars. Abbreviations: NORGE, Norwegian General Practice criteria; STOPP, the Screening Tool of Older Person's Prescriptions. No PIM (■); 1 PIM (▒); 2 PIMs (□); >3 PIMs (◻)

The leading three potentially inappropriate medications identified among geriatric outpatients prescribed with multiple medications (total number of patients = 193)

	NORGEF [14]	Laroche [13]	Rancourt [17]	Beers [4]	STOPP [16]	Winit-Watjana [15]
<b>First ranking, n (%)</b>	Aminophylline 17 (8.8)	Zolpidem 17 (8.8)	Alprazolam 18 (9.3)	Doxazocin 24 (12.4)	Aspirin 24 (12.4)	Alprazolam 34 (17.6)
<b>Second ranking, n (%)</b>	Zolpiclone 11 (5.7)	Dipyridamole 14 (7.3)	Atovastatin 15 (7.8)	Alprazolam 15 (7.8)	Amlodipine 20 (10.4)	Aspirin 24 (12.4)
<b>Third ranking, n (%)</b>	Celecoxib 8 (4.1)	Pentoxifylline 13 (6.7)	Dipyridamole 14 (7.3)	Dipyridamole 14 (7.3)	Furosemide 16 (8.3)	Doxazocin 24 (12.4)

The ranking of each set of criteria was based on their prevalence in our study population, from low to high. Abbreviations: NORGEF, Norwegian General Practice criteria; STOPP, the Screening Tool of Older Person's Prescriptions.

La prevalencia de MPI varía significativamente según la aplicación de diferentes criterios.

Tener en cuenta la disponibilidad regional de cada medicamento, que es diferente; por lo cual NO se deberían extrapolar los resultados.

# Limitaciones de los Criterios

- Los criterios son una guía
- No sustituyen el juicio clínico
- Se deben tomar en cuenta la condición clínica, comorbilidades, estado funcional, pronóstico de vida y medicamentos.

# Limitaciones de las guías

- Guías son primero epidemiológicas, luego, son de apoyo a guías clínicas.
- No fueron realizadas desde el punto de vista económico, sin embargo, pueden reducir el costo en salud, al optimizar el uso de medicamentos.

# Potentially inappropriate drug prescription in the elderly in France: a population-based study from the French National Insurance Healthcare system

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Se creó una base de datos , conocida como “Echantillon Généraliste des Bénéficiaires” (EGB), con el objetivo de:

Evaluar la calidad de prescripción de medicamentos en Francia  
(Marzo 2007 a Febrero 2008) →

Prevalencia y Distribución de Medicación Potencialmente Inadecuada (MPI)  
en adultos > 75 años



# Resultados

- 53.6% (95% CI: 53.0–54.1) de los AM a 75 años, recibió al menos una MPI durante el período estudiado.
- Los 3 grupos mayoritarios de MPI:
  - 1) Vasodilatadores cerebrales (19,4%)
  - 2) Drogas con efectos antimuscarínico (19,3%)
  - 3) Benzodiazepinas de vida media larga (17,8%)

¡Muchas Gracias!

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