

CARGA ANTICOLINÉRGICA (MEDICAMENTOS): DETERIORO COGNITIVO Y CAÍDAS

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I JORNADA

DIRIGIDO A MIEMBROS DE LA SEGG Y SEFH

**GERIATRIA
FARMACIA HOSPITALARIA**

SEDE:


Hospital Universitario
Ramón y Cajal

ORGANIZA:


Sociedad Española
de Geriatria y Gerontologia


sefh
Sociedad Española
de Farmacia Hospitalaria


fefh
Fundación Española
de Farmacia Hospitalaria

INDICE

- Papel juega la acetilcolina en el organismo
- Fármacos con efectos anticolinérgicos y qué efectos adversos tienen ?
- ¿Qué pacientes son más susceptibles a los efectos anticolinérgicos?
- ¿Cuál es la asociación con el deterioro cognitivo y la caídas?
- Carga anticolinérgica: Evaluación del riesgo anticolinérgico

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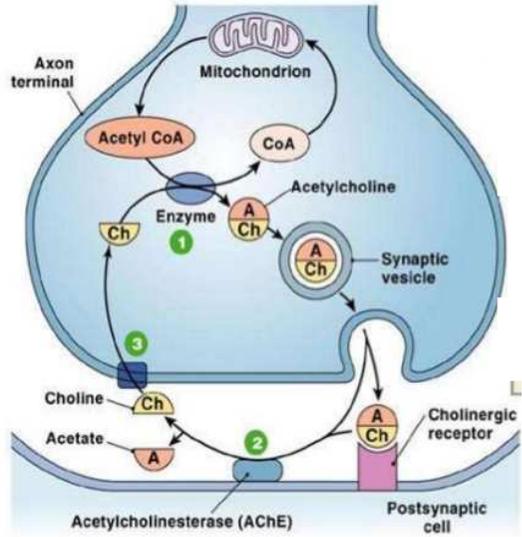

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Acetilcolina

Receptores colinérgicos

Receptores nicotínicos

Receptores muscarínicos



- Placa motora
- Células ganglionares S y PS
- Diversas localizaciones del SNC

SNC: M1, M4 Y M5

Corazón: M2

Músculo liso: M3

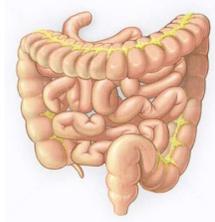
Participa en la memoria, función cognitiva y aprendizaje

Contrae la vejiga



Interviene en la postura y el movimiento

Estimula la digestión

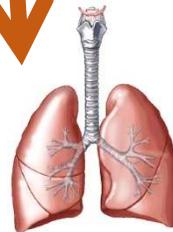


Ach

Disminuye la frecuencia cardíaca



Contrae los bronquios



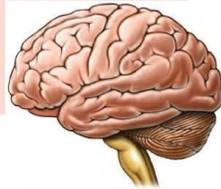
Contrae la pupila



Fármacos con mecanismo de acción anticolinérgico

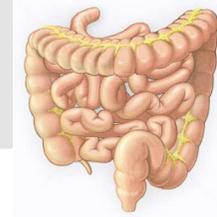
Antiparkinsonianos

- Biperideno
- Prociclidina
- Trihexifenidilo



Espasmolíticos digestivos

- Butilescopolamina
- Bromuro de otilonio



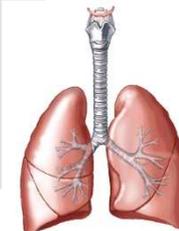
Antiespasmódicos urinarios

- Oxibutinina
- Trospio
- Solifenazina
- Tolterodina



Anticolinérgicos inhalados

- Ipratropio
- Tiotropio
- Glicopirronio
- Aclidinio



Fármacos con efecto colateral anticolinérgico

ATC

- Amitriptilina
- Clomipramina
- Imipramina
- Nortriptilina

Antipsicóticos

- Clorpromazina
- Clozapina
- Olanzapina

Antihistam1ª gen

- Difenhidramina
- Dexclorfeniramina
- Hidroxizina

A nivel
periférico

A nivel
central



Visión borrosa
Sequedad ocular



Sequedad de boca



Taquicardia



Estreñimiento
Retención urinaria



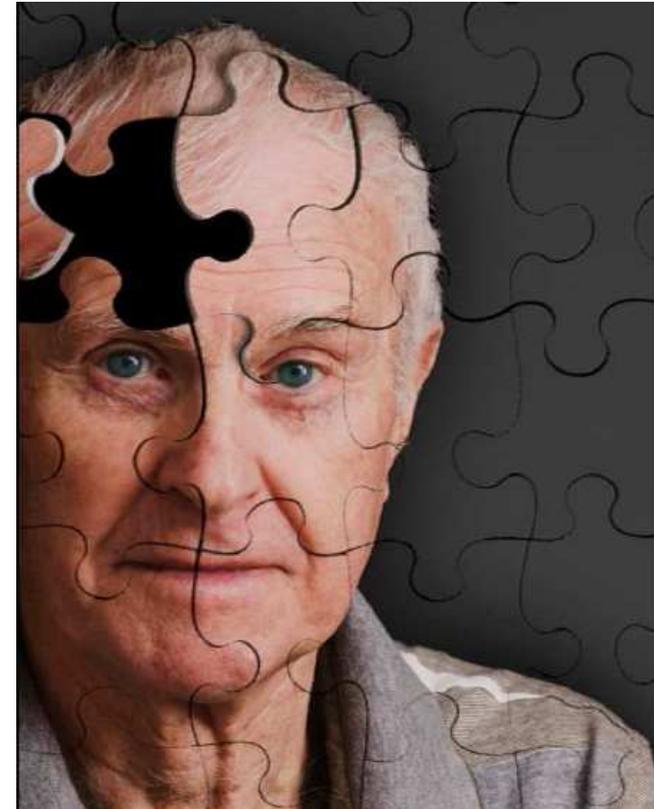
**Mareo, sedación,
confusión y delirio.**



**Demencia y enfermedad
de Alzheimer**

El riesgo aumenta con mayores
dosis y duración del tratamiento

Los **ANCIANOS** tienen mayor riesgo por **cambios farmacocinéticos, menor actividad colinérgica basal**



Aproximadamente el 50% de la población anciana toma **al menos un fármaco** con actividad anticolinérgica

(Pfistermeister B et al, 2017).

PACIENTE PLURIPATOLÓGICO



POLIMEDICACIÓN



- RIESGO DE INTERACCIONES
- EFECTOS ADVERSOS

Aquellos que presenta 2 o más enfermedades crónicas que conllevan la aparición de reagudizaciones y patologías interrelacionadas que condicionan una especial fragilidad clínica que se agrava con un deterioro progresivo, y una disminución gradual de su autonomía y capacidad funcional, generando una frecuente demanda de atención a diferentes ámbitos asistenciales (*Ollero et al 2007*)

La mayor actividad anticolinérgica se ha relacionado con el aumento de:

Deterioro cognitivo y funcional

Ingresos por caídas

Institucionalización

Mortalidad



Association of Anticholinergic Burden with Cognitive Impairment and Health Care Utilization Among a Diverse Ambulatory Older Adult Population

[Campbell NL](#)^{1,2}, [Perkins A](#)

Un aumento de la exposición global a medicamentos AC **pueden aumentar el riesgo** de deterioro cognitivo, funcional, caídas

Role of anticholinergic drugs in cognitive impairment.

[Grande G](#)^{1,2}, [Tramacere R](#)

nts.

[grata per le Demenze](#)).

Measuring anticholinergic drug exposure in older community-dwelling Australian men: a comparison of four different measures.

[Pont LG](#)^{1,2}, [Nielen JT](#)^{3,4,5}, [McLachlan AJ](#)^{6,7}, [Gnjidic D](#)^{6,7}, [Chan L](#)⁸, [Cumming RG](#)^{7,9}, [Taxis K](#)³.

Anticholinergic drugs and cognitive impairment: a review of biological plausibility and clinical evidence.

[Collamati A](#)¹, [Martone AM](#)¹, [Poscia A](#)², [Br](#)

MUCHOS DE ELLOS NO SON CONCLUYENTES

Drug Burden Index and change in cognition over time in community-dwelling older men: the CHAMP study.

[Jansen KM](#)^{1,2}, [Gnjidic D](#)^{3,4}, [Hilmer SN](#)^{2,5}, [Ilomäki J](#)¹, [Le Couteur DG](#)^{3,6,7}, [Blyth FM](#)^{3,6}, [Handelsman DJ](#)^{6,7}, [Naganathan V](#)^{3,6}, [Waite LM](#)^{3,6}, [Cumming RG](#)^{3,8}, [Bell JS](#)^{1,2}.

Drugs with anticholinergic effects and cognitive impairment, falls and all-cause mortality in older adults: A systematic review and meta-analysis

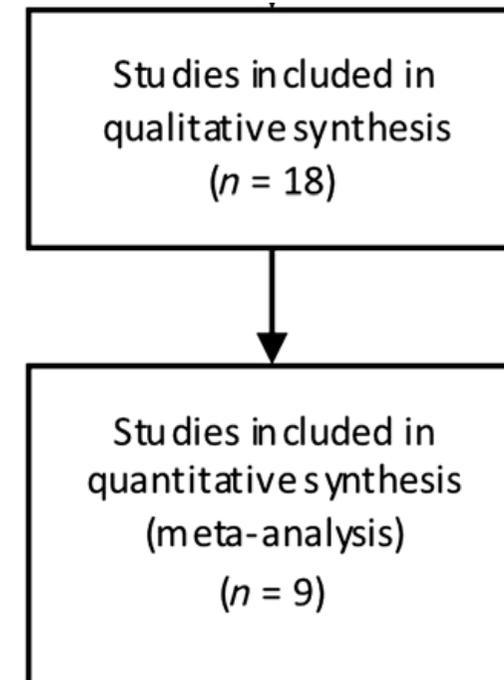
Kimberley Ruxton,¹ Richard J. Woodman² & Arduino A. Mangoni¹

INCLUSIÓN

- Adultos > 65 años
- Ensayos clínicos, cohorte o casos-control
- Comparación:
AC individual o como grupo vs no AC o placebo

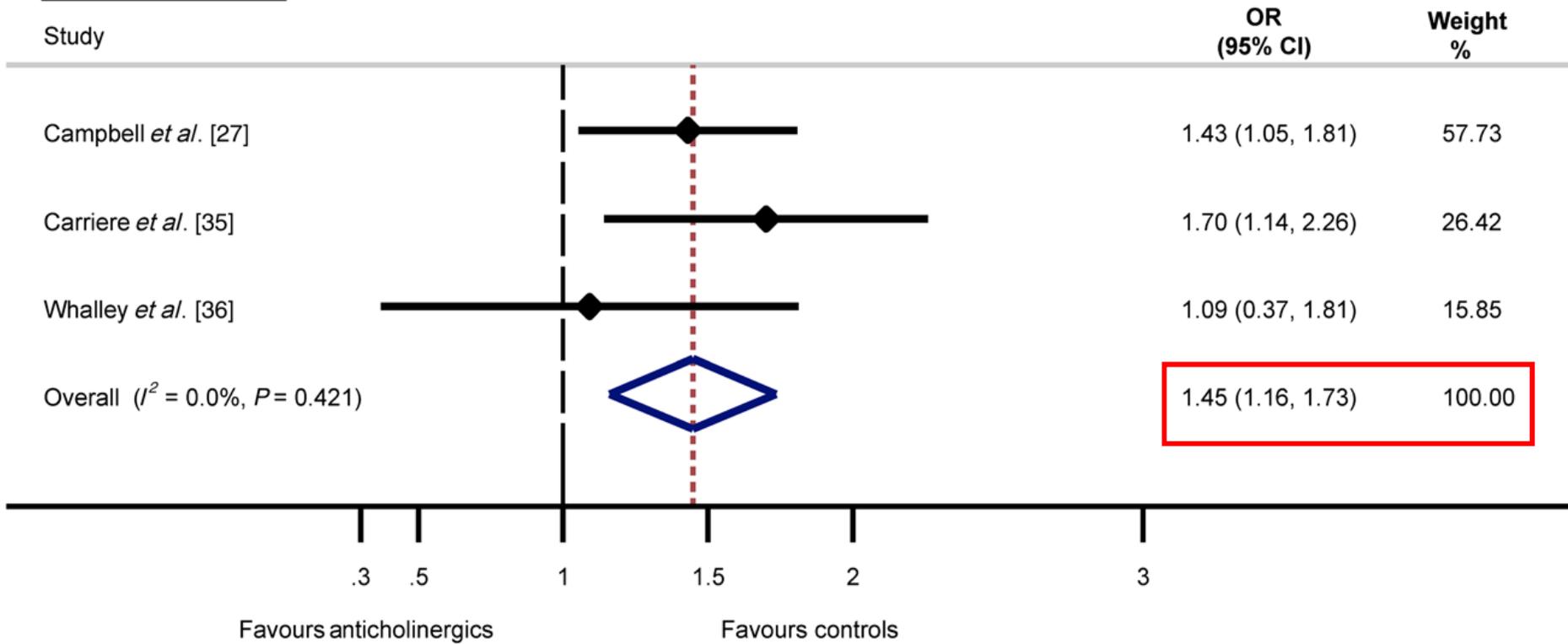
OBJETIVO

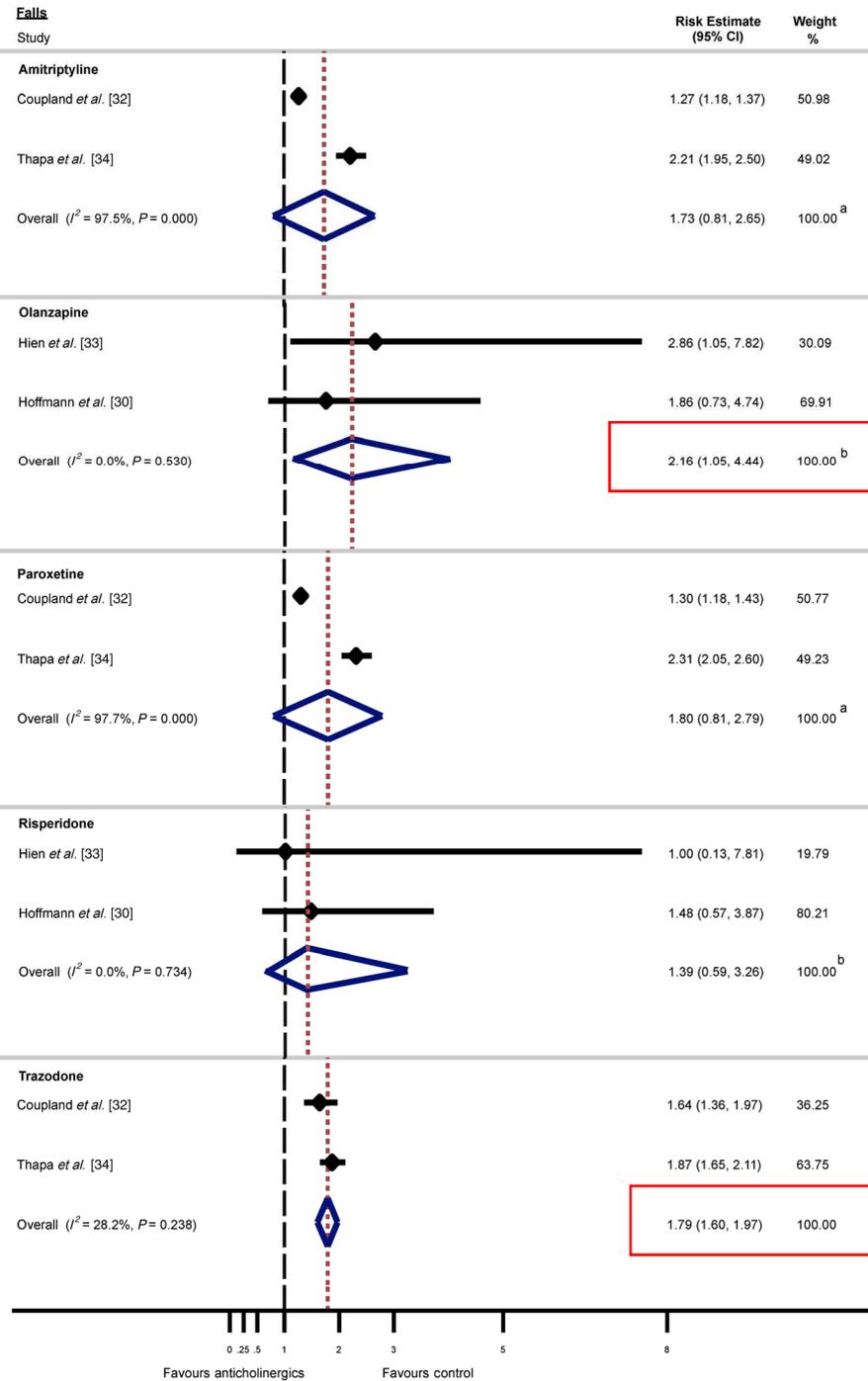
Examinar la asociación entre fármacos anticolinérgicos y fallo cognitivo, caídas y mortalidad



DETERIORO COGNITIVO

Cognitive Impairment





CAIDAS

OLANZAPINE

TRAZODONA

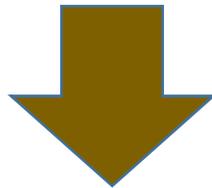
**AMITRIPTILINA
PAROXETINA
RISPERIDONA**

Cómo podemos evaluar el riesgo anticolinérgico

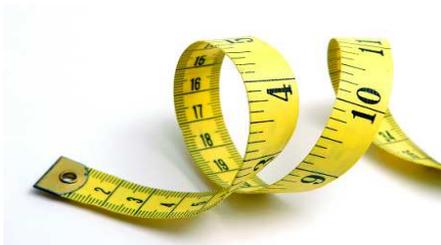
CARGA ANTICOLINÉRGICA

(Anticholinergic Burden)

Efecto acumulativo de tomar uno o más medicamentos con capacidad para desarrollar efectos adversos anticolinérgicos *(Tune y cols 2001)*



ESCALAS ANTICOLINÉRGICAS



Listas de medicamentos que clasifican a los fármacos según su potencial AC

NO HAY UNA HERRAMIENTA ESTANDARIZADA PARA MEDIR EL RIESGO ANTICOLINÉRGICO

Comparison of Nine Instruments to Calculate Anticholinergic Load in a Large Cohort of Older Outpatients: Association with Cognitive and Functional Decline, Falls, and Use of Laxatives.

[Mayer T](#)¹, [Meid AD](#)², [Saum KU](#)³, [Brenner H](#)⁴, [Schöttker B](#)⁵, [Seidling HM](#)¹, [Haefeli WE](#)⁶.

Anticholinergic burden quantified by anticholinergic risk scales and adverse outcomes in older people: a systematic review

[Salahudeen et al.](#) *BMC Geriatrics* (2015) 15:31|

Concordance Between Anticholinergic Burden Scales.

[Naples JG](#)^{1,2,3}, [Marcum ZA](#)⁴, [Perera S](#)^{1,5}, [Grav SL](#)⁴, [Newman AB](#)^{1,6}, [Simonsick EM](#)⁷, [Yaffe K](#)^{8,9,10,11}, [Shorr RI](#)¹², [Hanlon JT](#)^{1,2,3,6}, [Health, Aging and Body Composition Study.](#)

Measuring anticholinergic drug exposure in older community-dwelling Australian men: a comparison of four different measures.

[Pont LG](#)^{1,2}, [Nielen JT](#)^{3,4,5}, [McLachlan AJ](#)^{6,7}, [Gnjidic D](#)^{6,7}, [Chan L](#)⁸, [Cumming RG](#)^{7,9}, [Taxis K](#)³.

The Association Between Anticholinergic Medication Burden and Health Related Outcomes in the ‘Oldest Old’: A Systematic Review of the Literature

[K. Cardwell et al.](#) *Drugs Aging* (2015) 32:835–848



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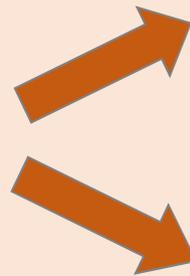
Review

Systematic review on the use of anticholinergic scales in poly pathological patients



Angela M^a Villalba-Moreno^{a,*}, Eva Rocío Alfaro-Lara^b, M^a Concepción Pérez-Guerrero^c,
M^a Dolores Nieto-Martín^d, Bernardo Santos-Ramos^e

OBJETIVOS



Identificar todas las Escalas AC descritas en la bibliografía que puedan ser aplicables a PP

Analizar los resultados clínicos de los estudios que usan estas escalas

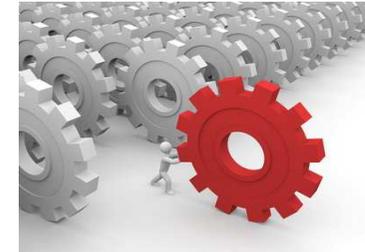
ALTA VARIABILIDAD

	ACB	ARS	CrAS	Duran	Chew	ADS	ABC	ALS	AAS	DBI
Revisión sistemática sobre fcos AC y opiniones de expertos	X	X	X	X		X	X	X	X	
Análisis in vitro de actividad AC					X					
Desarrollo de una fórmula (grupo de expertos) mediante un modelo aditivo simple.										X
Validado-aplicado a una población		X	X			X	X	X	X	X
Validado-análisis sérico e in vitro					X					
Clasificación categórica o numérica	X	X	X	X	X	X	X	X	X	
Fórmula matemática										X
Fármacos incluidos	88	49	60	100	107	117	27	49	99	128

Table 2
Overview of anticholinergic scales characteristics identified in the included studies.

	Study	Anticholinergic Scale	Study design	Methodology	Participants	Validation (Yes/No)	Basis for validation	Number of drugs	Grading system
DURAN	Durán et al. (2013)	Duran's scale	Systematic review	Systematic review of previously published scales.	-	No	-	100	Scores: 0-2
ACB	Boustani et al. (2008)	Anticholinergic Cognitive Burden Scale	Systematic review	Systematic review of drugs with anticholinergic activity and expert opinions	-	No	-	88	Scores: 1-3:
ADS	Carnahan et al. (2006)	Anticholinergic Drug Scale	Cross-sectional study	Based on a scale previously published and expert opinions	Older residents in centers long-term care	Yes	Serum anticholinergic activity	117	Scores: 0-3
ARS	Rudolph et al. (2008)	Anticholinergic Risk Scale	Cohort study	Review of drugs with potential anticholinergic effects and expert opinion	Patients over 65 years in geriatrics clinics and primary care	Yes	Applied to the study population: frequency of anticholinergic adverse effects	49	Scores: 0-3
CHEW	Chew et al. (2008)	Serum anticholinergic activity	Experimental study	It developed a relationship between estimated dose of drugs and anticholinergic activity	Prescribed drugs in older patients	Yes	In vitro analysis of anticholinergic activity by radioreceptor assay	107	Scores: 0, 0/+,+,++ y +++
CrAS	Han et al. (2008)	Clinician-Rated Anticholinergic Score	Longitudinal study	Based on a scale previously published and expert opinions	Hipertensive men over 65 years in primary care	Yes	Applied to the study population: memory performance and executive function	60	Scores: 0-3
ABC	Ancelin et al. (2006)	Anticholinergic Burden Classification	Longitudinal study	Review of serum anticholinergic activity through published trials with radioreceptor assays and expert opinions	Subjects >60 years without dementia in centers long-term care	Yes	Applied to the study population: cognitive function and neurological evaluation	27	Scores: 0-3
ALS	Sittironnarit et al. (2011)	Anticholinergic Load Scale	Cross-sectional study	Review of serum anticholinergic activity, scales previously published and expert opinions	Subjects >60 years. Three groups: healthy adults, with mild cognitive impairment and Alzheimer's disease	Yes	Applied to the study population: cognitive performance	49	Scores: 0-3
AAS	Ehrt et al. (2010)	Anticholinergic Activity Scale	Longitudinal study	Review of serum anticholinergic activity, a scale previously published and expert opinions	Older patients with Parkinson's disease	Yes	Applied to the study population: cognitive performance	99	Scores: 0-4
DBI	Hilmer et al. (2007b y 2009)	Drug Burden Index	Cross-sectional study	It developed a formula with a simple additive model by a group of experts	Older patients	Yes	Applied to the study population: physical and cognitive performance	128 ^a	Formula: 0, <1y>1.

ANTICHOLINERGIC BURDEN CALCULATOR



Anticholinergic Burden Calculator

MY ACCOUNT LOGOUT

PATIENTS CALCULATE SCALES APP

Anticholinergic Burden Calculator



"Web Portal Software Anticholinergic Burden Calculator" is a program designed to measure fast and easily the anticholinergic burden a patient receives based on their pharmacotherapy.

"Anticholinergic burden" is defined as the cumulative effect of taking one or more drugs that are capable of developing anticholinergic adverse effects.

Peripheral manifestations may occur such as urinary retention, constipation, decreased secretions, amongst others and central manifestations such as delirium, cognitive and functional disorders.

Approximately 50% of the older population takes at least one anticholinergic drug.

This website is intended for healthcare professionals only.

This tool is currently under development and validation, therefore, its use is responsibility of health professionals.

<http://anticholinergicscales.es/>

[Home](#) / [Patients](#) / [Edit](#)

Code

1

Birthdate

03/23/1942

Observations

Paciente con deterioro cognitivo

Submit

Calculations

 New calculation

Date	Actions
2018-05-11, 11:25	  
2018-05-11, 11:25	  
2018-05-11, 11:24	  
2018-05-11, 11:23	  

CALCULATE



Home / Calculate

"Anticholinergic scales" are defined as medication lists that classify drugs according to their anticholinergic potential. A patient's burden is the sum of the score for each drug included in the scale.

A total of 10 anticholinergic scales have been identified in the literature search*. They are as follows: Duran's scale, Anticholinergic Cognitive Burden Scale (ACB), Anticholinergic Drug Scale (ADS), Anticholinergic Risk Scale (ARS), Chew's scale, Clinician-Rated Anticholinergic Scale (CRAs), Anticholinergic Burden Classification (ABC), Anticholinergic Load Scale (ALS), Anticholinergic Activity Scale (AAS) and Drug Burden Index (DBI).

Drug Burden Index is based on the calculation of a simple mathematical formula that takes into account the prescribed dose and the minimum effective dose of the drug. It is a scale developed to measure exposure to anticholinergic drugs and sedatives. The software calculate the total DBI. The delta values have been revised and adapted to the Spanish product information.

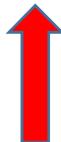
To calculate the anticholinergic load:

- You must enter the prescribed drugs.
- If it does not appear in the dropdown list, it is not included in any scale.
- In certain drugs, you must enter the total daily dose.

If you want to save results of your patients, register as a user and press Patients.

*A.M. Vialba-Morena, et al., Systematic review on the use of anticholinergic scales in poly pathological patients, Arch. Gerontol. Geriatr. (2015), <http://dx.doi.org/10.1016/j.archger.2015.10.002>

ACEPRIMAZINE



Lista de fármacos



Name	Total daily dose (mg)
------	-----------------------



Calculate

[Home](#) / [Calculate](#) / [Result](#)

Anticholinergic burden results - Patient: 1

The results of anticholinergic risk (low / medium / high) obtained with each scale are linked to the risk categorization made by the authors or developers of each one of them

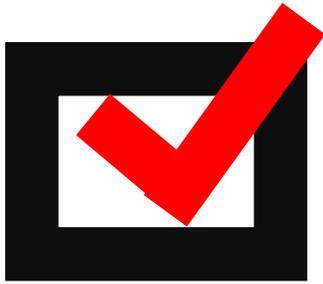
[Recalculate](#) [PDF](#) [XLS](#)

Scale	Result	Risk
ACB	4	HIGH RISK
ARS	1	LOW RISK
Chew	4	HIGH RISK
ADS	2	MEDIUM RISK
AAS	4	HIGH RISK
ALS	2	MEDIUM RISK
CrAS	2	MEDIUM RISK
Duran	1	LOW RISK
ABC	3	HIGH RISK

Medication	Scales									
	ACB	ARS	Chew	ADS	AAS	ALS	CrAS	Duran	ABC	
FUROSEMIDE	1	0	1	0	1	0	0	0	3	
PAROXETINE (20 mg)	3	1	3	2	3	2	2	1	0	

DBI Results (Note: This scale, unlike the above, considers drug dose prescribed in the calculation)

Medication	DBI
FUROSEMIDE	0.00
PAROXETINE (20 mg)	0.50
Results	MEDIUM RISK



FORMA RÁPIDA DE CUANTIFICAR LA CARGA ANTICOLINÉRGICA



- CRITERIOS DE INCLUSIÓN SUBJETIVOS: EXPERTOS
- FCOS INCLUIDOS DIFERENTES

- No se consideran factores fisiológicos y farmacológicos que modifican la respuesta

European Journal of Internal Medicine 26 (2015) e65–e66



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journal homepage: www.elsevier.com/locate/ejim

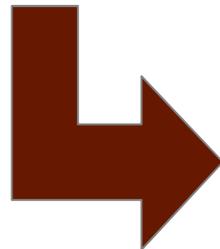


Letter to the Editor

Anticholinergic risk: Use and limitations of anticholinergic scales



scored 3 in one scale and 2 in one or more scales, and low-potency drugs when they scored 2 or 1 in two or more risk scales, or when drugs scored 2 in one risk scale and 1 in one or more scales. However



- Hay discrepancias sobre la calidad de las escalas
- La CA es distinta aplicando una u otra escala



La asociación de las escalas con el deterioro cognitivo y funcional debería ser interpretado con precaución

CÓMO DISMINUIR LA CARGA ANTICOLINÉRGICA

- **Retirar** (progresivamente) siempre que sea posible. Emplear alternativa no farmacológica. Monitorizar la retirada.
- **Sustituir** si el tratamiento farmacológico no puede ser suspendido.
- Disminuir la dosis → utilizar **dosis mínima eficaz** durante el menor tiempo posible.



PROYECTO DE INVESTIGACIÓN EN SALUD: PI-0195-2016

CONSEJERÍA DE SALUD

ANÁLISIS COMPARATIVO DE LA CORRELACIÓN PRONÓSTICA DE LAS ESCALAS ANTICOLINÉRGICAS SOBRE EL DETERIORO COGNITIVO Y CAÍDAS EN PACIENTES PLURIPATOLÓGICO.

ELABORACIÓN DE RECOMENDACIONES

SELECCIONAR LA/S ESCALA/S CON MAYOR CORRELACIÓN PRONÓSTICA DE DETERIORO COGNITIVO, FUNCIONAL Y CAIDAS EN EL PACIENTE PLURIPATOLÓGICO

ELABORAR UN LISTADO DE RECOMENDACIONES EN LA QUE SE PUEGAN BASAR LOS CLÍNICOS PARA LA TOMA DE DECISIONES QUE SEAN NECESARIAS EN CASO DE UN RIESGO ANTICOLINÉRGICO



**MUCHAS
GRACIAS**