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Development of the Anticholinergic Burden Calculator Web Tool

Desarrollo de la herramienta web *Anticholinergic Burden Calculator*

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The anticholinergic burden is defined as the cumulative effect of concomitantly taking multiple drugs with anticholinergic properties. It estimates the risk of suffering anticholinergic adverse effects. Anticholinergic scales are lists that rank the anticholinergic potential of drugs into categories. A patient's burden may be calculated from the sum of the score of each drug included in the scale. This assessment provides clinicians the opportunity to reconsider the pharmacotherapy in order to optimize treatment¹.

Our research group has designed and developed a tool which calculates the anticholinergic burden based on 10 anticholinergic scales which have been firstly identified in a review² with the aim to be used in clinical setting. The tool was named *Anticholinergic Burden Calculator (ABC)*. It is a web portal software program (www.anticholinergicscales.es/). (An app for smart phones is now in progress).

Anticholinergic risk scores are defined into three groups, low, medium and high, according to risk categorization made by the authors of each scale. The user can view a report that contains three tables and one graphic that describe the results (Fig. 1). Drug Burden Index scale is separately described because it is the only one based on a simple mathematical formula that takes into account the prescribed dose and the minimum effective dose³.

The *Anticholinergic Burden Calculator (ABC)* has been validated for accuracy. Medication data including drug name and dose were collected from 35 patients with multimorbidity included in the IMPACTO project

involving a total of 310 drugs⁴. The anticholinergic burden was calculated twice, manually and with *Anticholinergic Burden Calculator (ABC)*. The results showed a 100% agreement.

The hand made anticholinergic burden calculation may be a tedious process. The tool facilitates the calculation of the total burden using 10 scales in a single step. Moreover, the professionals obtain very valuable information about treatment identifying which patients are at risk. On the other hand, they know drugs associated with increased risk and their contribution to the total load (the higher score, the greater risk). Thus, it facilitates decision-making on patient pharmacotherapy, reconsidering the treatment to reduce the load, for example, by deprescription, decreasing doses or substituting one drug for another without anticholinergic properties.

Our research group is currently working to improve the functionality of the web. Specific recommendations to help clinicians to make better decisions are in progress.

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Conflicts of interests

The authors concerned declare that they do not have any conflicts of interest.



Anticholinergic burden results

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

Scale	Result	Risk
ACB	0	WITHOUT RISK
ARS	0	WITHOUT RISK
Chew	0	WITHOUT RISK
ADS	2	WITHOUT RISK
AAS	0	WITHOUT RISK
ALS	0	WITHOUT RISK
CrAS	0	WITHOUT RISK
Duran	0	WITHOUT RISK
ABC	0	WITHOUT RISK

Medication	Scales									
	ACB	ARS	Chew	ADS	AAS	ALS	CrAS	Duran	ABC	
ALFUZOSIN 10 mg	0	0	0	0	0	0	0	0	0	
CORTISONE	0	0	0	1	0	0	0	0	0	
LORAZEPAM 5 MG	0	0	0	1	0	0	0	0	0	

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

Medication	DBI
ALFUZOSIN 10 mg	0.80
CORTISONE	0.00
LORAZEPAM 5 mg	0.83
Result	HIGH RISK 1.63

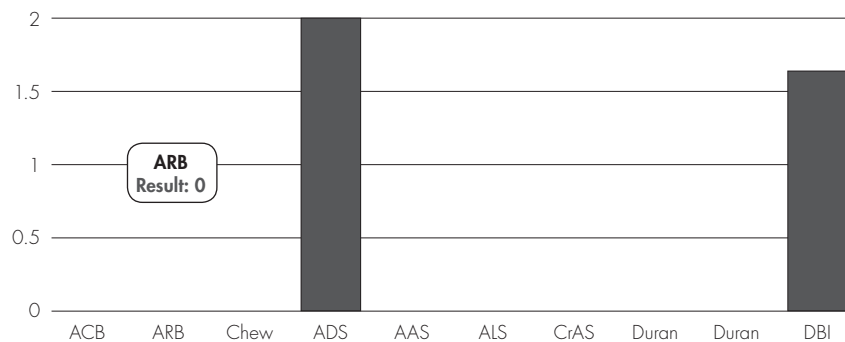


Figure 1. Tables and graphic according to risk score.

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