

**Foundations · Educational evidence summary**

How anticholinergic burden is measured

This foundation article explains how anticholinergic burden is measured.

UnifiedACB · Published October 3, 2026 · Updated October 4, 2026

[Read the current article](#)

<https://unifiedacb.com/articles/002-how-anticholinergic-burden-is-measured/>

Start with the quantity you want to describe

“Measure anticholinergic burden” sounds like one task, but it can mean classifying medicines, estimating exposure, testing biological activity or studying an outcome. Choosing a method before defining the question can produce a precise-looking answer to the wrong problem. A comparison of medication lists, for example, needs different inputs from a study of the effect of cumulative exposure on future function.

Four broad approaches are useful to separate. Published scales assign categories to medicines. Laboratory assays examine activity under defined conditions. Dose-aware indices incorporate specified medication exposure information. Clinical studies evaluate associations or interventions in people. These approaches can inform one another; none automatically replaces the others.

Published lists: categories with a development history

A list-based scale offers a relatively accessible starting point: identify a medicine, locate it in a particular source version and retain the published classification. Some instruments use ordinal categories. The ordering carries meaning within the instrument, but the distance between adjacent categories is not necessarily an equal biological interval.

Scale development also determines which medicines enter the list. The [original Korean Anticholinergic Burden Scale development report](#) explicitly considered medication availability in Korea and excluded topical agents from its candidate list. A missing topical product in that setting is therefore a coverage issue, not a negative experiment establishing no activity. The source’s selection rules are part of its measurement method.

Applying a scale requires its actual published version. A later supplement, a secondary transcription and the original medication list can differ. A reproducible result records which document supplied the value. Simply naming a scale family is not enough when more than one source document is available.



Assays: a biological signal under specified conditions

An assay can measure activity in a sample or experimental preparation. In the [107-medication radioreceptor study](#), the measurement depended on the tested concentrations and assay conditions. Its units and reference standard belong to that experiment. The findings should not be renamed as an ordinal clinical scale or assumed to represent a person's brain exposure.

The [ADS investigation by Carnahan and colleagues](#) assessed correspondence with serum anticholinergic activity. That is an example of examining a relationship between two measures. Even when two measures are associated, they are not identical. A drug-list score remains a classification based on the included medications; the serum assay reflects what was measured in the sampled material.

This distinction prevents several common overextensions. A positive laboratory signal does not specify the probability of delirium. A negative result under one assay condition does not prove absence of every relevant clinical effect. A threshold in one experimental method cannot be transferred to another method without supporting work.

Dose-aware indices: additional inputs, additional assumptions

Some approaches incorporate dose rather than assigning each medicine a fixed contribution regardless of exposure. The [Drug Burden Index development study](#) examined a model of anticholinergic and sedative medication exposure in relation to function. It is a separate instrument with its own definition; its components should not be relabeled as ACB, ADS or another source scale.

A dose-aware method requires reliable dose information. An ordered maximum for an as-needed medicine may differ from the amount actually taken. A single medication-list snapshot may not describe a study's exposure window. When dose or timing is uncertain, that uncertainty belongs in the analysis instead of being concealed by the availability of a formula.

Adding dose does not automatically create a complete pharmacokinetic model. Actual concentration can depend on formulation, administration and patient factors that a simple index does not model. The method can still be useful within its intended scope, provided its assumptions and required inputs are explicit.

Outcome studies: testing a particular use of a measure

An outcome study asks whether a defined measure relates to an observed endpoint in a defined population. Cognitive test performance, incident delirium, mobility and hospitalization are different endpoints. A measure studied against one of them has not thereby been established as a universal predictor of all the others.

It also matters whether a study observes existing treatment or tests an intervention. The [longitudinal Health ABC analysis](#) evaluated exposure in relation to subsequent physical function. The [randomized burden-reduction trial](#) asked a different question about changing exposure and cognition. Using the first type of evidence to promise the result of the second skips an essential evidentiary step.



A reproducible measurement record

For a source-based assessment, keep enough information that someone else can repeat the classification. The record should identify the instrument and document version, the medication ingredient and source label, route or formulation where relevant, the exposure period, and the rule used for medicines without a verified value. Report the covered and uncovered portions of the list.

If several scales are compared, keep their results in parallel columns. Define whether the comparison concerns shared medicines, full source coverage or changes between versions. These are different denominators. A comparison based only on shared entries should not be described as agreement across the entire formulary.

UnifiedACB's [public observation file](#) stores medication-level source values and their provenance. It does not turn laboratory concentrations, geriatric criteria and ordinal classifications into a new common metric. That separation allows a reader to inspect the source evidence without mistaking the display for a validated exposure-to-outcome model.

Interpreting the result at the right level

A sound measurement statement says what was measured and what remains unknown. “Classified using this source version, with these unmatched medicines” is reproducible. “The patient’s anticholinergic risk is this number” makes a much broader claim unless an appropriately validated prediction method supports it. The goal is a method whose meaning can be checked, not merely a total that can be calculated.



References

1. Vennard O, Stewart C, Tolia M, Soiza RL, Myint PK. Anticholinergic Medication Burden Scales: A Systematic Review. J Am Geriatr Soc. 2026;74(6):1771-1784. [Source](#)
2. Chew ML, et al. Anticholinergic activity of 107 medications commonly used by older adults. J Am Geriatr Soc. 2008;56:1333-1341. [Source](#)
3. Carnahan RM, et al. The Anticholinergic Drug Scale as a measure of drug-related anticholinergic burden: associations with serum anticholinergic activity. J Clin Pharmacol. 2006;46:1481-1486. [Source](#)
4. Rudolph JL, et al. The anticholinergic risk scale and anticholinergic adverse effects in older persons. Arch Intern Med. 2008;168:508-513. [Source](#)
5. Boustani M, et al. Impact of anticholinergics on the aging brain: a review and practical application. Aging Health. 2008;4:311-320. [Source](#)
6. Lisibach A, Benelli V, Ceppi MG, et al. Quality of anticholinergic burden scales and their impact on clinical outcomes: a systematic review. Eur J Clin Pharmacol. 2021;77(2):147-162. [Source](#)
7. Jun K, Hwang S, Ah YM, Suh Y, Lee JY. Development of an Anticholinergic Burden Scale specific for Korean older adults. Geriatr Gerontol Int. 2019;19:628-634. doi:10.1111/ggi.13680. [Source](#)
8. Hilmer SN, et al. A drug burden index to define the functional burden of medications in older people. Arch Intern Med. 2007;167:781-787. [Source](#)
9. Hilmer SN, et al. Drug burden index score and functional decline in older people. Am J Med. 2009;122:1142-1149.e1-2. doi:10.1016/j.amjmed.2009.02.021. [Source](#)
10. Kersten H, et al. Cognitive effects of reducing anticholinergic drug burden in a frail elderly population: a randomized controlled trial. J Gerontol A Biol Sci Med Sci. 2013;68:271-278. doi:10.1093/gerona/gls176. [Source](#)
11. UnifiedACB. Preserved public source-observation dataset, v3.0 RC12 final; inspected for this editorial revision. [Source](#)

Explore the evidence

[Ask UnifiedACB](#) about a medication or source, browse the [Medication Library](#), or read the [methodology](#).

Disclosure

Funding: None. Conflict of interest: None declared for the UnifiedACB educational project.

Educational evidence summary. This content does not provide patient-specific medical advice and does not replace clinical judgment, medication reconciliation, or prescribing guidance.