


DRUG & ALCOHOL FINDINGS *Review analysis*

This entry is our analysis of a review or synthesis of research findings considered particularly relevant to improving outcomes from drug or alcohol interventions in the UK. The original review was not published by Findings; click [Title](#) to order a copy. Free reprints may be available from the authors – click [prepared e-mail](#). [Links](#) to other documents. [Hover over](#) for notes. [Click to](#) highlight passage referred to. [Unfold extra text](#) . The Summary conveys the findings and views expressed in the review. Below is a commentary from Drug and Alcohol Findings.

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► [Meta-analysis: Are 3 questions enough to detect unhealthy alcohol use?](#)

Kriston L., Hölzel L., Weiser A.K., et al.

Annals of Internal Medicine: 2008, 149(12), p. 879–888.

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Both AUDIT and AUDIT-C are known to accurately detect unhealthy drinking, but is one more accurate than the other? This paper looks for answers in 14 studies from across Europe and in the United States.

SUMMARY The [Alcohol Use Disorders Identification Test \(AUDIT\)](#) was developed in 1993 by the World Health Organization, and is one of the most frequently recommended and researched diagnostic tests for detecting unhealthy drinking, alongside the [Cut-Down, Annoyed, Guilty, and Eye-opener \(CAGE\)](#) questionnaire and the [Michigan Alcoholism Screening Test \(MAST\)](#).

An abbreviated version of AUDIT, the [Alcohol Use Disorders Identification Test-Consumption \(AUDIT-C\)](#), was introduced a few years later. AUDIT-C is made up of three questions about alcohol intake from the full AUDIT, which also asks another seven questions about alcohol-related problems and symptoms indicative of dependence.

Evidence shows that AUDIT-C can be a useful and valid screening test for unhealthy drinking, as demonstrated in this study with patients in a [Brazilian emergency department](#), and this study in three [Veterans Affairs general medical clinics](#) in the United States. Some differences have been found in the performance of AUDIT compared with AUDIT-C, but the authors of the present paper argue that the *accuracy* of one versus the other has not (until this study) “undergone systematic examination”.

This paper is based on a [meta-analysis](#), amalgamating results from 14 studies which directly compared the accuracy of AUDIT-C with AUDIT for the detection of unhealthy drinking. The authors selected these studies as directly relevant and meeting pre-defined inclusion and quality criteria from a systematic search of six online databases, within a date range of 1998 and 2008.

Main findings

The reported findings focus on primary care, as this was the most intensively researched setting. Eight of 14 studies were based in primary care, compared with four in general population samples, two in inpatient samples, and zero studies in an emergency department. The ‘target conditions’ of the 14 studies varied, but included risky drinking, harmful drinking, alcohol abuse, alcohol dependence, alcohol use disorder and unhealthy drinking (the latter covering the full spectrum from risky drinking to any alcohol use disorder).

Accuracy of the two tests was measured in a range of ways. For the purposes of this account, those easiest to interpret and most meaningful were “sensitivity” and “specificity”. In the current context, sensitivity can be

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Key points From summary and commentary

The Alcohol Use Disorders Identification Test (AUDIT) is a popular test for detecting unhealthy drinking. This paper compares the accuracy of AUDIT with AUDIT-C, an abbreviated version of the original test.

Evidence suggests that the full AUDIT may be slightly (but not significantly) more accurate than AUDIT-C in some settings for identifying unhealthy drinking in adults.

However, in practice clinicians should be encouraged to use whichever of the two tests they can effectively integrate into their practice.

understood as the proportion of respondents identified as risky drinkers by AUDIT or AUDIT-C who really are (normally as judged by a more comprehensive assessment) risky drinkers, while specificity is the proportion found *not* to be risky drinkers by these questionnaires who really are abstinent or drinking in a non-risky manner. Together these measures tell us how well the questionnaires pick up on risky drinking without also drawing into the net large numbers of non-risky drinkers.

The authors found considerable variation in the results of the tests, and variation in the way the tests were implemented. For example, the proportions of primary care patients identified as risky drinkers ranged from 11% to 35%, and the choice of threshold scores for risky drinking in primary care settings varied between 4 and 8 for the AUDIT test, and between 3 and 5 for AUDIT-C.


Overall, the accuracy of AUDIT and the AUDIT-C did not differ to a significant degree for screening for risky drinking, alcohol use disorders, or unhealthy drinking in primary care settings. However, one of the ways of comparing the tests did indicate a significant if small advantage for AUDIT over AUDIT-C in the identification of risky drinking (ie, above recommended maximums) in primary care settings. This measure was the ratio between the proportion of patients correctly identified as risky drinkers versus those incorrectly identified – the so-called 'positive likelihood ratio'. The higher this ratio, the better the test is at correctly distinguishing who really is a risky drinker. For AUDIT the ratio was over twice as high (6.6 versus 3.0), a statistically significant difference.

With any such test there is trade-off between setting the threshold high so that nearly all those identified as risky drinkers really are, versus the increased chance that many risky drinkers will score below this threshold and fail to be spotted. This trade-off worked differently for the two tests. AUDIT-C's ability to spot risky drinkers suffered less when such a high threshold was set that at least 85% of those who scored as risky drinkers really were. An alternative strategy is to set a low threshold, effectively casting a wide net so that nearly all drinkers in need of intervention are identified, while accepting that at the same time more people will be falsely identified as risky drinkers. In this scenario AUDIT was the more robust test, its ability to correctly exclude non-risky drinkers suffering less.

The authors' conclusions

Although this study found no significant difference between the accuracy of AUDIT and AUDIT-C in primary care settings, this does not mean that it provides evidence of equivalent levels of accuracy of the two tests. It could be the case that with so few studies and with so many variations between the studies, the tests really do differ in accuracy, but research has yet to establish this. Indeed, some results (such as the difference between positive likelihood ratios when screening for risky drinking in primary care) indicated that AUDIT may be superior to AUDIT-C.

There are also some features beyond the degree of accuracy that may influence a practitioner's choice of a diagnostic test. For example, the authors argue that the full AUDIT may "serve as a starting point for the exploration of the alcohol problem in a general practice situation because of its questions about the consequences of alcohol use. The MAST can provide a detailed description of a potential alcohol problem in settings where time constraints are not crucial. Finally, the CAGE test, with its 4 easily memorisable yes-or-no questions, may be preferable to both the AUDIT and the AUDIT-C, which have several response categories".

 **FINDINGS COMMENTARY** The authors found 14 studies directly comparing the accuracy of AUDIT with AUDIT-C in the decade following the publication of AUDIT-C. The number of studies undertaken peaked in the latter three years of the selection period (more than half were published during this time), suggesting that more evidence is likely to have become available in later years not covered by the review.

This study was impacted by the typical challenges of a meta-analysis. The findings the authors were seeking to combine were from independently conducted studies, with different methodologies and different approaches to reporting. There were also some challenges unique to this study context. For example, the recommendations regarding the best threshold score for AUDIT and AUDIT-C varied considerably depending on the target condition, country, setting, patient characteristics, and trade-off between sensitivity and specificity.

Understanding the accuracy of diagnostic tests is important. Beyond this, it is crucial to think about the use of diagnostic tests and the impact of test results – what uses will the test result be put to, and what are the consequences of getting a wrong result (either falsely identifying lots of non-risky drinkers as risky and wasting resources on counselling them, or missing many risky drinkers and failing to take steps which could moderate their drinking)? Ultimately, clinicians should be encouraged to use whichever of the two test they

can practically and consistently integrate into their clinical practice. AUDIT-C has the advantage of being short and potentially cost-saving, and offers essential information about typical consumption. Because it takes less time to administer, it may particularly appeal to practitioners working in busy settings. AUDIT benefits from its inclusion of items on alcohol adverse consequences that can be used as a starting point for more in-depth discussions with patients. However, both can be (and are) used together – for example, where patients screen positive with AUDIT-C, practitioners have the option to extend the brief assessment by asking questions four to ten of the full AUDIT.

This draft entry is currently subject to consultation and correction by the study authors and other experts.

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