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### ▶ [Brief screening questionnaires to identify problem drinking during pregnancy: a systematic review.](#)

**Burns E., Gray R., Smith L.A.**

**Addiction: 2010, 105(4), p. 601–614.**

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*Heavy drinking by mothers-to-be threatens their unborn child – but for that very reason, stigma may mean women shy away from admitting their problem. This review found several brief screening questionnaires showed promise in identifying mothers who might need to cut back, while others seemed unsuitable for the antenatal care context.*

**SUMMARY** Heavy drinking during pregnancy is associated with adverse effects on the unborn child ranging up to foetal alcohol syndrome. Clinical guidelines recommend screening pregnant women to identify high-risk or problem drinking, which can then be followed by an appropriate intervention to help safeguard mother and child. However, there is no clear guidance on how to screen effectively. Direct questions may inhibit accurate reporting, and interpreting the responses is complicated by differences in glass sizes and in the strengths of alcoholic beverages.

Several brief screening questionnaires elicit information on alcohol consumption/problems and can be implemented in routine antenatal care, but most were designed for detecting alcohol dependence in men. The featured review analysed studies which tested how well these screening questionnaires identified risky drinking in pregnant women by comparing their results with those of a more in-depth questionnaire accepted as a standard way to assess risky drinking, alcohol abuse or dependence. Five such studies were found involving 6,724 pregnant women. All five were conducted in the United States and in four the women were assessed at antenatal care services during their first visit while pregnant; the remaining study focused on women who said they were pregnant while participating in a general population survey.

#### Main findings

Key statistics for each study included:

- the *sensitivity* of the screening test, eg, the proportion of risky drinkers in the sample who were correctly identified as such – the higher this proportion, the fewer at-risk women and babies are missed by the test;
- its *specificity*, eg, the proportion of non-risky drinkers who were identified as such – the lower this is, the more the test falsely identifies women and babies as at risk when in fact they are not;
- *positive predictive value* – the proportion of women the test indicates are (for example) risky drinkers who really are risky drinkers.

The screening tests TWEAK, T-ACE and AUDIT-C had the highest sensitivity for identifying risky drinking during pregnancy, each identifying about 7 to 9 out of 10 risky drinkers. However, good performance at not missing risky drinkers came at the cost of decreased specificity and positive predictive value. For every woman identified correctly as a risky drinker with T-ACE and TWEAK, as many as three could be falsely identified. This has resource implications, because all women who screen positive would require further tests and/or intervention. CAGE and SMAST were poor at identifying risky drinking. NET, while slightly better than CAGE, had lower sensitivity than T-ACE or TWEAK. More details below.

In the one study to investigate this test, AUDIT-C scores were derived from questions about how much and how often the respondent drinks embedded in a larger survey. These questions correctly identified 9 in 10 of the pregnant women in the survey who in the past year had been drinking in a risky or dependent manner or who met criteria for an alcohol use disorder. However, these questions overlapped with those used to establish whether the woman was identified correctly, an overlap which probably accounted for AUDIT-C's relatively high sensitivity and specificity. Other screening tests such as T-ACE and TWEAK try to identify risky drinking without directly asking how much the respondent drinks, an attempt to promote more honest responses.

CAGE did poorly at identifying risky drinking among pregnant women, and has been shown to be relatively poor at identifying alcohol abuse or dependence in women in general. It was developed to identify alcohol dependence and has demonstrated better accuracy in inpatient caseloads, but at the recommended cut-off score, is of limited value in primary care caseloads.

#### The authors' conclusions



#### Key points

The featured review analysed studies which tested how well brief screening questionnaires identify risky drinking in pregnant women by benchmarking their results against those of a more in-depth, 'gold standard' assessment.

In antenatal care contexts, the screening tests T-ACE, AUDIT-C and TWEAK showed promise for identifying risky drinking, and could be administered by practitioners during prenatal care, but CAGE, NET and SMAST did relatively poorly.

A maximally practice-relevant study would administer the benchmark questionnaire in confidence, while the screening test would be administered as in normal clinical practice. It is not clear that any of the studies adopted this methodology.

## THE AUTHORS' CONCLUSIONS

T-ACE, AUDIT-C and TWEAK show promise as screening tools for identifying risky drinking in pregnant women. Moreover, they can feasibly be administered by practitioners during prenatal care; a [Swedish study](#) has shown midwives can be trained to provide effective alcohol screening within routine resource constraints. Depending upon the severity of the problem, women should be offered advice and/or a [brief intervention](#) or referred to an alcohol treatment service. Despite the limitations described below, asking women either directly or indirectly about their drinking presents an opportunity to identify problems and advise them about prenatal alcohol consumption.

Overall, the included studies were of good quality and the women who joined the studies were likely to be representative of the population being sampled, bolstering confidence in the review's conclusions. However, all the studies were conducted in the USA and in two the participants were socially disadvantaged, raising questions about the applicability of the results to other populations. Also, screening questions were 'hidden' among other questions; it is unclear if the tests' performance would suffer from being administered alone. If women under-report their drinking in response to direct questions, they may also under-report in the structured interviews used as the 'gold standard' against which the screening tests were benchmarked. Assuming that direct questions do not lead to under-reporting, a brief questionnaire such as AUDIT-C would be an effective way to identify those at risk.

**FINDINGS COMMENTARY** The 'elephant in the room' pointed to by the reviewers is whether the standard questionnaires against which the screening tests were benchmarked were themselves adequately identifying risky drinking, or whether anticipating the stigma of being seen to risk their unborn child, women hid the extent of their drinking in this questionnaire as well as in the screening test. Then both tests may agree, but only because both are poorly identifying risk. This may be a particular concern in the USA where the studies were conducted, where attitudes to drinking in pregnancy [seem stricter](#) than in some European nations.

To address this concern, and for maximum relevance to usual care, studies would administer the benchmark questionnaire in a way in which the results could be guaranteed to be confidential (and possibly also anonymous) and not available to clinical services, while the screening test would be administered as it would be in normal clinical practice, such as by midwives who know the results and are in a position to act on them. It is not clear that any of the studies adopted this methodology. For example, in [one of the major studies](#) both benchmark and screening questionnaires were administered at a prenatal clinic, but by research interviewers trained in eliciting alcohol history and consumption information, not by the clinic's usual staff. In [another](#) women completed the questionnaires themselves and handed them in sealed envelopes to the receptionist, assured that their responses were confidential and "would have no impact on their care". Respondents assured their responses can have no consequences for them seem likely to respond differently to when their responses could have serious consequences.

AUDIT-C seems to have performed particularly well both in terms of specificity and sensitivity, but the single study to have tested it did so outside the context of an antenatal care service as part of a general population survey, raising questions about the applicability of the results to routine care.

## Experience in Scotland

Antenatal clinics were one of three types of sites prioritised by Scottish [national policy](#) on screening and brief intervention, backed by a health service target for 2008/09–2010/11 to deliver 149,449 brief interventions supported by dedicated funding. The target [was exceeded](#) and similar targets [were set](#) for the following years.

Of the three settings, [only primary care](#) practices really accepted the challenge; head-count financial incentives, the ability to seamlessly advise after screening, and more of a feeling that this was an appropriate activity, lifted their performance way above emergency departments and antenatal clinics. But in the clinics the report noted "considerable enthusiasm ... in many local areas with some [NHS] board leads describing work in this setting as 'particularly successful'," and "midwives [were] described as one of the most engaged and enthusiastic practitioner groups targeted by the [training] programme."

It seems, however, that initial implementation was patchy: in one of the three case study areas investigated for the [national evaluation](#), only six brief interventions were delivered in antenatal care, while in another area antenatal care accounted for nearly 9% of all brief interventions recorded as delivered as part of the programme. Since these early days of the national initiative, throughput may have improved; at first work in antenatal care seems to have been slowest to get off the ground, hampered by limited current practice or prior experience to draw on.

Staff also commonly felt their pregnant patients were unwilling to admit to drinking and the vast majority claimed abstinence, the reason why the featured review thought screening tests which did not directly ask about how much the woman drank might be most suitable for this setting. Some midwives sidestepped this blockage by asking about pre-pregnancy drinking, and advising about drinking in the future, indirectly offering guidance on drinking during pregnancy even if the woman claimed she was not now drinking at all. Such advice should not have counted as an antenatal brief intervention for the purpose of the recording system, perhaps partly accounting for low throughput. [Interviews](#) with midwives in the Lothian area of Scotland suggested that by the time women knew they were pregnant and were seen by a midwife, many had stopped drinking, though they may have been drinking in the first stages when unaware they were pregnant. Other reasons why few brief interventions were delivered were the competing priorities of for example smoking and child protection, and concern that raising the issue would damage the relationship with the patient.

For more on the degree to which brief alcohol interventions can improve population health see this Effectiveness Bank [hot topic](#).

*Thanks for their comments on this entry in draft to research author Lesley Smith of Oxford Brookes University in England. Commentators bear no responsibility for the text including the interpretations and any remaining errors.*

Last revised 28 June 2015. First uploaded 26 May 2015

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