Systematic review and meta-analyses of strategies targeting alcohol problems in emergency departments: interventions reduce alcohol-related injuries

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CRD summary
The authors concluded that emergency department-based interventions were associated with a reduction in alcohol-related injuries, but there was no conclusive evidence about their effects on alcohol consumption. Evidence appeared to support the authors’ conclusions, but the lack of reporting of review methods made it difficult to assess their reliability.

Authors’ objectives
To evaluate the effectiveness of emergency department (ED) based interventions for alcohol problems.

Searching
ACP Journal Club, Cochrane databases (Cochrane Controlled Trials Register and Cochrane Database of Systematic Reviews), DARE, EMBASE, Global Health, MEDLINE, PsycINFO, SWAB, Current Contents Connect and Web of Science were searched for studies published in peer-reviewed journals between 1996 and July 2007. Search terms were reported. In addition, reference lists were handsearched.

Study selection
Studies that evaluated the effectiveness of ED-based interventions for alcohol problems on alcohol-related outcomes were eligible for inclusion. The review assessed the following most commonly reported outcomes: quantity/ frequency of alcohol consumption at 12 months follow-up; frequency of high-volume drinking at three and 12 months; consequences from drinking at six or 12 months; and alcohol-related injuries at six or 12 months.

Most of the included studies evaluated a single counseling session conducted by project staff with and without follow-up; session durations, where reported, ranged from five minutes to 60 minutes. Co-interventions included motivational interviewing, handouts and personalised feedback. Other evaluated interventions were laptop-based interactive program, print-out of computer generated feedback plus advice and a written generic handout. Control interventions, where these existed, included standard care and written generic advice with and without five minutes of advice or standard care. Studies selected patients based on a combination of alcohol-related measures and demographic characteristics. Where reported, the mean age ranged from 16 to 44 years and the percentage of males ranged from 44 to 88. The duration of follow-up ranged from three to 12 months.

The authors stated neither how papers were selected for the review nor how many reviewers performed the selection.

Assessment of study quality
The assessment of study quality was based on modification of two referenced checklists. Items included >80 per cent follow-up, use of standardised or objective outcome measures and reporting of characteristics of sample, eligibility criteria, intervention, control and effect size. The authors did not state how the validity assessment was performed.

Data extraction
Standardised mean differences (SMD) and odds ratios (OR) with confidence intervals (CI) were calculated for each randomised controlled trial (RCT) that reported sufficient information. SMDs used to express alcohol-related injury outcomes were converted to ORs. One reviewer extracted data using a standardised form.

Methods of synthesis
SMDs and ORs from RCTs were pooled using fixed-effect inverse variance methods (SMDs) and generic inverse variance methods (ORs). Heterogeneity was assessed using the $X^2$ statistic. The authors stated that there were too few studies to explore potential sources of heterogeneity.

Results of the review
Thirteen studies were included (n approximately 7,566). These included 10 RCTs, one non-randomised controlled study and two cohort studies. The number of patients in individual studies was not reported.

The authors stated that study quality was generally high. Where reported, participation rates ranged from 53 per cent to 95 per cent. Five studies reported follow-up rates >80 per cent at all data collection points. Twelve studies solely or partly used standardised scales or objective measures to assess outcomes. Only two studies reported an effect size.

ED-based interventions were associated with a statistically significant reduction in alcohol-related injuries at six to 12 months compared to control: OR 0.59, p=0.004; three studies; no significant heterogeneity was found.

There was no statistically significant difference between intervention and control for the quantity/frequency of drinking at 12 months (two studies, p=0.07) or frequency of heavy drinking at 12 months (five studies, p=0.83). No significant heterogeneity was found for either analysis.

Significant heterogeneity was found for analyses of frequency of heavy drinking at three months (three studies, heterogeneity p=0.05) and drinking consequences at six to 12 months (four studies, heterogeneity p=0.09).

**Authors’ conclusions**

ED-based interventions were associated with a reduction in alcohol-related injuries, but there was no conclusive evidence about their effects on alcohol consumption.

**CRD commentary**

The review question was clearly stated and appropriate inclusion criteria were specified. Several relevant sources were searched, but no attempts were made to minimise publication bias and it was not clear if any language restrictions had been applied. There was potential for reviewer error and bias in methods used to conduct the review (study selection and validity assessment methods were not described and only one reviewer extracted data). Study quality was assessed and results were reported. Some details of the included studies were presented, but numbers of patients in individual studies and meta-analyses were not reported; this and the lack of reporting of methods used for data collection made it difficult to assess the strength of the evidence. Only RCTs were included in meta-analyses and heterogeneity was assessed. Classifying heterogeneous studies as showing inconclusive evidence appeared appropriate. Findings were based on an unknown number of patients in a small number of studies. The evidence appeared to support the authors’ conclusions, but the lack of reporting of review methods made it difficult to assess their reliability.

**Implications of the review for practice and research**

Practice: the authors did not state any implications for practice.

Research: the authors stated that further research was required to evaluate harm minimisation interventions, less intensive ED interventions and interventions that have been found to be effective in other settings. Future studies should assess outcomes using consistent measures reported in previous research and report effect sizes for all outcomes or sufficient information to permit their calculation.

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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.