

Chapter 4 Brief interventions

Brief interventions represent an important and effective way to reduce alcohol related harm, especially in primary care (Kaner et al. 2007, 2009). This treatment strategy has been shown to be as effective for heavy drinkers as more intensive interventions, more cost-effective due to their length and can be used in a wide variety of primary care settings to reach a large number of patients. Significant reductions of up to 30% in alcohol consumption have been achieved in a variety of health care settings, including hospital and general practice (Bertholet et al. 2005; Kaner et al. 2007) (Kaner et al. 2009). Brief interventions in primary care are also cost-effective (Wutzke et al. 2001).

What are brief interventions?

Brief interventions comprise clinical interventions that include screening and assessment, and provide information and advice designed to achieve a reduction in risky alcohol consumption, and/or alcohol-related problems (Bien et al. 1993). They typically target individuals drinking at risky levels before they develop into abuse or dependence disorders (Babor et al. 2000).

Opportunistic brief interventions are usually delivered to people who have not sought help for a problem with alcohol but are identified as drinking at risk levels via screening. They are viewed as a component of a public health approach to alcohol-related harm; at least one study showed long-term effects of up to 9 years (Nilssen 2004), and while the effect shown in another study had faded at 10 years (Wutzke et al. 2002), this is still a worthwhile strategy. However, despite years of research and positive evidence for their effect, routine screening, identification of alcohol use disorders, and the implementation of brief intervention remains remarkably low (Cheeta et al. 2008).

Who to target for brief interventions?

Brief interventions are a recognised treatment approach to responding to individuals with risky patterns of drinking who may or may not already have experienced alcohol related harms, but without a diagnosis of alcohol dependence (Kaner et al. 2007). There is strong scientific evidence for their effectiveness in reducing levels of alcohol intake in people who drink above recommended levels and are at risk of developing alcohol related problems, but do not seek treatment (Moyer et al. 2002).

This effectiveness has been demonstrated across a variety of settings.

Meta-analyses

In the first meta-analysis of brief interventions in various settings, Bien, Miller and Tonigan pooled the findings of 18 studies that compared opportunistic brief interventions to a control condition and 13 studies comparing less-intensive treatments with more extended therapy (Bien et al. 1993). The mean pooled effect size (values above zero indicate higher effect) for brief interventions versus a control condition favoured brief interventions (0.38), indicating that brief interventions were more effective than usual care (no intervention) in reducing alcohol consumption. The mean pooled effect size for less-intensive treatment versus extended treatment was negligible (0.06), indicating that the interventions were effective regardless of

intensity. However, in this review, mean effect sizes were not weighted by study size/variance and no homogeneity tests or significance tests for overall effect sizes were conducted, thus making it unclear as to whether the types of studies examined were comparing similar treatment interventions. Nevertheless, this was the first meta-analysis that has clearly demonstrated that brief intervention is effective in reducing alcohol consumption when compared to no intervention.

Wilk et al reviewed 12 randomised controlled trials of brief interventions (i.e. less than 1 hour) focusing on studies with adult participants and sample sizes greater than thirty, conducted in a variety of settings (Wilk et al. 1997). Only eight of these reported outcome data that allowed calculation of individual odds ratios. These odds ratios were calculated based on the estimate that the heavy drinkers had moderated their drinking six or 12 months after intervention compared to the untreated control group. The odds ratio was 1.95. Heavy drinkers were defined as those who were drinking more than 2 or 3 drinks daily, but were non-dependent. This level of drinking is shown to increase the risk of accidents, injuries and subsequent alcohol-related problems (Saunders et al. 1993). Conclusions were that heavy drinkers who received an intervention were twice as likely to moderate their drinking 6 to 12 months post-intervention as controls. The results of Wilk’s meta-analysis also confirm that brief interventions are effective in reducing alcohol consumption when compared to no intervention.

The more recent meta-analyses and randomised controlled studies are discussed below and are classified according to the settings in which the studies were conducted. The results are consistent in suggesting that opportunistic brief interventions are effective in reducing alcohol consumption compared to screening alone or to no intervention. There is no consistent evidence that less-intensive treatments are less effective than more intensive treatment interventions for more severe cases of alcohol abuse and dependence.

Brief interventions are not usually effective in individuals who have developed dependence, or who are experiencing severe alcohol related harms. For these individuals, more intensive treatment interventions are recommended (Heather et al. 2004). However, there is some evidence that brief interventions can be effective in dependent individuals (Guth et al. 2008). This study is discussed later in the text.

Recommendation	Strength of recommendation	Level of evidence
4.1 Brief interventions are effective in reducing alcohol use in people with risky pattern of alcohol use and in non-dependent drinkers experiencing alcohol-related harms and should be routinely offered to these populations.	A	1a
4.2 Brief interventions are not recommended for people with more severe alcohol-related problems or alcohol dependence.	A	1b

How to deliver brief intervention

As a general rule, brief interventions should include at least the five components identified in the acronym FLAGS, the two most crucial of which are Feedback and Advice (see Table 4.1) (Proude et al. 2005).

Table 4.1: FLAGS brief intervention structure

Feedback	<ul style="list-style-type: none"> • Provide individualised feedback about the risks associated with continued drinking, based on current drinking patterns, problem indicators, and health status. • Discuss the potential health problems that can arise from risky alcohol use.
Listen	<ul style="list-style-type: none"> • Listen to the patient's response. • This should spark a discussion of the patient's consumption level and how it relates to general population consumption and any false beliefs held by the patient.
Advice	<ul style="list-style-type: none"> • Give clear advice about the importance of changing current drinking patterns and a recommended level of consumption. • A typical five to 10 minute brief intervention should involve advice on reducing consumption in a persuasive but non-judgemental way. • Advice can be supported by self-help materials, which provide information about the potential harms of risky alcohol consumption and can provide additional motivation to change.
Goals	<ul style="list-style-type: none"> • Discuss the safe drinking limits and assist the patient to set specific goals for changing patterns of consumption. • Instil optimism in the patient that his or her chosen goals can be achieved. • It is in this step, in particular, that motivation-enhancing techniques are used to encourage patients to develop, implement and commit to plans to stop drinking.
Strategies	<ul style="list-style-type: none"> • Ask the patient to suggest some strategies for achieving these goals. • This approach emphasises the individual's choice to reduce drinking patterns and allows them to choose the approach best suited to their own situation. • The individual might consider setting a specific limit on alcohol consumption, learning to recognise the antecedents of drinking, and developing skills to avoid drinking in high-risk situations, pacing one's drinking and learning to cope with everyday problems that lead to drinking.

There are alternative acronyms such as FRAMES (Bien et al. 1993) and 5A's (Ask, Advise, Assess, Assist, Arrange, usually used in interventions for tobacco) (Zwar et al. 2005) with comparable structures for guiding an intervention, which can be used. However, for people who drink above recommended levels but are not experiencing alcohol-related harm, brief advice may be sufficient.

Recommendation	Strength of recommendation	Level of evidence
4.3 Brief interventions may consist of the five components of the FLAGS acronym: feedback, listening, advice, goals, and strategies (or equivalent).	A	1a
4.4 Brief advice may be sufficient for those drinking above NHMRC recommendations but not experiencing harm.	S	

Who can deliver brief interventions?

Any health professional or treatment provider with adequate training can deliver brief interventions.

Generalist health professionals can be successfully trained in the delivery of brief interventions within a 1-2 hour training program (Field et al. 2005).

Where should brief interventions be delivered?

Brief interventions can be effectively delivered in a variety of settings including general practice settings, general hospital wards, emergency departments, trauma centres and community counselling centres.

General practice setting

Universal screening in general practice can identify excessive drinkers suitable for brief interventions, as about 85 percent of the population visit their general practitioner each year (Beich et al. 2003b; AIHW 2004). General practitioners have the resources and skills to offer an intervention and thus, the general practitioner has the ability and potential to have a substantial effect on risky levels of drinking. The level of evidence for its effect is strong, especially for male patients (Kaner et al. 2007). However, about 25 percent of patients presenting to general practitioner settings in Australia who are drinking at risk levels are likely to remain undetected (Britt et al. 2003).

General practice setting: Meta-analyses

There have been a number of meta-analyses examining the effectiveness of brief interventions in various settings, the most recent of which was carried out by Kaner and colleagues (Kaner et al. 2007). The majority of these studies are in agreement that brief interventions are effective in this setting.

To demonstrate the depth of research in this area and the consistency of results this chapter briefly reviews each meta-analysis and has a more detailed explanation of the most recent and comprehensive one.

The first two meta-analyses of brief interventions conducted in various settings, including primary care (Bien et al. 1993; Wilk et al. 1997), are described above. Their results demonstrate that brief interventions are effective in reducing alcohol consumption when compared to no intervention.

The next review concentrated on randomised controlled trials of brief interventions delivered in primary health care (Poikolainen 1999). Results from the 7 publications selected, with the inclusion criterion of follow-up at 6-12 months, indicated that very brief interventions (5-20 minutes) did not result in a significant change in alcohol consumption; however, extended brief interventions (several visits) produced a significant pooled effect estimate of change in alcohol intake among women and among the whole sample. Among men, the statistical heterogeneity among studies meant that no significant conclusions could be reached. One of the author's conclusions was that 'excessive drinking' should be based in standard criteria so that trials could be compared more efficiently (Poikolainen 1999). Therefore, the results of this meta-analysis suggest that a single brief intervention may be less effective than an extended brief intervention delivered and reinforced over several sessions.

The next meta-analysis of brief interventions was a comprehensive examination of the brief intervention literature, resulting in 56 trials (Moyer et al. 2002). Studies were classified according to both the type of comparison (brief treatment compared to a control or a more extended treatment) and the type of patient population (treatment-seeking compared to non-treatment-seeking). Comparing brief intervention and control conditions, effect sizes were significant at less than 3 months ($p < 0.01$), more than 3-6 months ($p < 0.001$), and more than 6-12 months ($p < 0.001$) follow-up points for the composite variable of drinking related outcomes, and at a significance level of $p < 0.001$ at all follow-up points for reductions in alcohol consumption. Their results indicated that brief interventions were effective when compared to no intervention in reducing alcohol consumption. The effect was significant until twelve months after the intervention. The results also suggest that brief interventions are more effective in studies of treatment-seeking populations who do not have severe alcohol problems than in non-treatment-seeking people.

Beich et al conducted a meta-analysis of screening and brief intervention trials in general practice, with the aim of discovering the number needed to treat, proportion of patients positive to screening, proportion given brief intervention and effect of screening (as opposed to intervention) (Beich et al. 2003b). Their conclusions were that only two to three patients per thousand would benefit from screening, and therefore universal screening was not a viable proposition, a statement that was widely challenged in the online responses to the article (Vinson 2003; Conigrave et al. 2003).

Following this, Ballesteros et al published the results of a meta-analysis of thirteen studies of brief intervention with non-dependent patients in primary care (Ballesteros et al. 2004). One of their aims was to examine whether there was a dose-effect trend which aligned with the number or intensity of interventions. Studies were selected on the basis that intention-to-treat analyses were available and there was a six to 12 month follow-up. Studies were published between 1987 and 2003. The only measurable and reported effect was the change in proportion of hazardous drinkers 6-12 months after randomisation (i.e. decrease in numbers drinking at hazardous levels); other outcomes such as changes in consumption, biochemical markers and psychosocial outcomes were not used in the meta-analysis. No dose-effect of the intervention was found. Findings from this meta-analysis showed clear support for the efficacy of brief intervention at consultations in primary care (odds ratio = 1.41; NNT = 12).

Bertholet et al. also conducted a systematic review and meta-analysis, focussing on non-treatment-seeking patients in primary care, the setting and population group that is most recommended for brief interventions (Bertholet et al. 2005). Nineteen trials were selected that fulfilled the criteria. Follow-up rates ranged from 32.5% to 92.4%. No studies reported negative effects. Meta-analysis was restricted to those 10 trials for which the reduction of alcohol consumption could be calculated, and was the only outcome that was pooled for the analysis. The other variables were too disparate to allow pooling. The adjusted intention-to-treat analysis showed a mean pooled difference of -38 g of ethanol (approximately 4 drinks) per week (95% confidence interval, -51 to -24 g/wk) in favor of the brief alcohol intervention group. Results indicated that brief intervention is effective for both men and women in reducing alcohol consumption at 6 and 12 months; reductions were similar for both 6 and 12 months. Most studies they reviewed, however, also reported a 10-30% reduction of drinking in the control group, a common effect which can be caused by several reasons including natural changes over the course of time, regression to the mean, the Hawthorne effect, or just the effect of screening (McCambridge et al. 2008). Nine

studies also reported data related to mental or physical health perception, well-being and alcohol-related problems. There were significant differences among 9 of the 21 measures reported, showing a more improved quality of life in the intervention group than in the control group (Bertholet et al. 2005). Therefore, according to this review, brief intervention delivered in primary care setting is effective in reducing alcohol consumption by 4 standard drinks a week in a population of non-treatment-seeking patients (both in men and women) at 6 and 12 months post-intervention.

A high-quality review carried out for the U.S. Preventive Services Taskforce by Whitlock et al was published in the *Annals of Internal Medicine* (Whitlock et al. 2004). All studies in this review were published prior to 2002 and almost all of them were included in the above meta-analyses. In order to avoid repetition of results, the main findings only are summarised here. Twelve trials of intervention in primary care met the study criteria of randomised controlled trial with 6-12 month follow-up data. Results showed that intervention group participants reduced the average number of drinks per week by 13-34% more than the control group, and the proportion of patients drinking at moderate or safe levels was 10-19% greater than controls at follow-up.

The latest and most comprehensive meta-analysis of the effectiveness of brief alcohol interventions in primary care was a Cochrane review by Kaner et al (2007). The previous meta-analyses by Ballesteros, Bertholet, Moyer, and Poikolainen were, as they mention, similar and directly relevant to their review. While their exercise might be viewed as needless repetition, there are still evidence gaps, namely in subgroups, e.g. young people; in different countries and cultures; in identifying the 'active ingredient' of brief intervention; and lastly the efficacy/effectiveness issue. As mentioned above, while evidence for the efficacy of brief intervention is plentiful, the effectiveness (will it work in actual clinical practice?) is the sticking point. This review therefore undertook a secondary subgroup analysis to assess the impact of brief intervention in efficacy (ideal world) and effectiveness (real world) trials to account for variability in treatment exposure relating to frequency, duration and theoretical basis of the brief intervention. The main results: primary meta-analyses of 22 trials with 7.619 participants showed that, compared to controls, brief intervention reduced the quantity of alcohol consumed per week by 38g (95% CI: 23 to 54); which equates to between 4 to 5 (UK) units of alcohol. This analysis was repeated excluding trials of uncertain quality (e.g. insufficient reporting of procedures for randomisation) and excluding participants lost to follow-up, with the results still showing a statistically significant benefit of brief intervention. The secondary subgroup analysis of the issue of efficacy/effectiveness showed no evidence of any difference in effect of brief intervention between the two types of trials (Kaner et al. 2007). Final conclusions from the data were that: brief intervention in primary care results in significant reductions in weekly consumption for men, with an average drop of about 6 standard drinks per week; however there was no significant reduction in alcohol consumption for women. Although this may have been due to low statistical power (only 499 female participants), it seems from this analysis as though brief interventions in primary care for women are not yet justified. Further research should focus on women and on finding the most effective components of interventions.

General Practice Setting: Selected randomised controlled trials

As so many trials of rigorous quality have been published about brief intervention, we have selected only the most recent, significant, or unusual trials of methods or settings or with unexpected results for this section of the review.

General Practice: Negative outcome

Beich et al trialled screening and brief intervention in Danish general practices (Beich et al. 2007). Their aims were to conduct a pragmatic controlled trial aimed at evaluating the effectiveness of the WHO recommendations for screening and brief intervention in general practice. The trial involved 39 Danish general practitioners. Systematic screening of 6897 adults led to inclusion of 906 risky drinkers; 537 of whom were followed up at 12-14 months. Outcome measures focused on patients' acceptance of screening and intervention and their self-reported alcohol consumption. Their results showed that although all the intervention group subjects (n = 442) were exposed to an instant brief counselling session, only 18% (79/442) attended a follow-up consultation that was offered by their general practitioner. At one-year follow-up, average weekly consumption had increased by 0.7 drinks in both groups. Secondary findings were an indiscriminate absolute risk reduction (ARR = 0.08 (95% confidence interval, CI: 0.02-0.18)) in male binge drinking, but adverse intervention effects for women on the secondary outcomes (binge drinking ARR = 0.30 (95% CI: 0.47-0.09)). The authors' conclusions were that the results of systematic screening and brief interventions in everyday general practice fell short of their theoretical expectations and therefore could not be considered effective.

General Practice: Stepped-care approach

Another trial was conducted to look for gender differences in response to brief intervention with a stepped care approach (Reinhardt et al. 2008). In "Stepped Interventions for Problem Drinkers," 10,803 patients from 85 general practitioners were screened using alcohol related questionnaires; 408 patients (32% female) were randomised to a control (booklet only) or two different intervention groups: stepped care (feedback, manual, and up to three counselling sessions depending on the success of the previous intervention) and fixed care (four sessions). Response rate for the 12 month follow-up was 91.7%. Regression analysis revealed a significant effect size (R^2) only in women ($R^2 = 0.029$; $p = 0.039$) when both interventions together were compared with the control group. After excluding alcohol dependents and binge drinkers an effect size (R^2) of 0.031 ($p = 0.05$) in women and an effect size (R^2) of 0.069 ($p = 0.057$) in men was obtained. Among the patients in stepped care who, by the first assessment point, had reduced drinking to within safe drinking limits, there was a tendency for females to have achieved this more often than males (40% vs. 24%; $p = 0.09$). Authors did not report mean values. Number needed to treat (NNT) to achieve reduction in alcohol consumption as a result of an intervention (either fixed or stepped care) was 10 for women and 17 for men. Conclusions were that in a heterogeneous sample the intervention was only effective for women, and also that women tended to benefit more from the less intensive intervention than did men.

General Practice: Young adults

An article by Grossberg et al. (2004) reports the results of a subanalysis of young adults (aged 18 to 30 years) who participated in Project TrEAT (Trial of Early Alcohol Treatment) conducted in the offices of 64 primary care physicians located in 10 counties in southern Wisconsin. Project TrEAT was a randomised clinical trial designed to test the efficacy of a brief intervention protocol to reduce alcohol use, improve health status, and decrease health care utilisation. A total of 226 young adults were randomly assigned to either a usual care or brief intervention group. Results showed that during the 4-year follow-up period, there were significant

reductions in the intervention group in number of persons drinking more than 3 drinks per day, average 7-day alcohol use, number of persons drinking 6 or more drinks per occasion, and number of binge drinking episodes in the previous 30 days ($p < 0.01$ to $p < 0.001$). There were also significant differences ($p < 0.05$) in emergency department visits (103 vs. 177), motor vehicle crashes (9 vs. 20), total motor vehicle offences (114 vs. 149), and arrests for controlled substances or possession of liquor (0 vs. 8), between intervention and control groups. Conclusions were that long-term effects on drinking could be achieved by intervention with young adults and should be more widely implemented.

A University health care service in New Zealand was the setting for a randomised controlled trial of a web-based screening and intervention (Kypri et al. 2008). Participants were 975 students (aged 17-29 years) screened using AUDIT. Of 599 students who scored in the hazardous or harmful range, 576 (50% male) consented to the trial and were randomised to receive an information pamphlet (control group), a web-based motivational intervention (single-dose e-SBI group), or a web-based motivational intervention with further interventions 1 and 6 months later (multidose e-SBI group). Results showed that relative to the control group, the single-dose group reported a lower frequency of drinking at 6 months (rate ratio [RR], 0.79; 95% confidence interval [CI] 0.68-0.94), less total consumption (RR, 0.77; 95% CI, 0.63-0.95), and fewer academic problems (RR, 0.76; 95% CI, 0.64-0.91). At 12 months, statistically significant differences in total consumption and in academic problems remained, and the AUDIT scores were 2.17 points lower (95% CI, -1.10 to -3.24). Relative to the control group, the multidose group reported a lower frequency of drinking at 6 months (RR, 0.85), reduced total consumption (RR, 0.79, [equivalent to 3 standard drinks per week]), reduced episodic heavy drinking (RR, 0.65), and fewer academic problems (RR, 0.78). At 12 months, statistically significant differences in academic problems remained (RR, 0.75), while the AUDIT scores were 2.02 points lower. The conclusions were that the single-dose intervention reduced hazardous drinking significantly with an effect lasting for 12 months. The additional sessions seemed not to add any benefit.

A more unusual (and partially inconclusive) study compared 10 hours of intervention with a mailed intervention comprising the student's AUDIT score, advice to cut down and suggested sources of help (e.g. telephone numbers of treatment organisations) (Johnsson et al. 2006). In total 693 freshmen at Lund University, Sweden, took part. A cognitive behavioural alcohol program or mailed intervention was randomly assigned to high-risk drinkers ($n = 177$). The AUDIT was used at baseline and at a 12 month follow-up to measure any changes in drinking. Results showed no significant differences between the cognitive behavioural and the mailed intervention groups. Both groups reduced their AUDIT scores, which could be explained by effects of regression to the mean. No significant differences occurred between the groups. This result suggests that mailed intervention was as effective as the much more intensive cognitive behavioural intervention.

General Practice: Effect of mental comorbidities

In a randomised controlled brief intervention study with two intervention groups and one control group, data were collected from 408 general practice patients with alcohol use disorders, at-risk drinking or binge drinking (Grothues et al. 2008). Eighty-eight participants were diagnosed with comorbid anxiety and/or depressive disorders. The effectiveness of the intervention was assessed at a 12-month follow-up in relation to the presence and absence of comorbidity. Reduction of drinking in six ordered categories (g/alcohol) between baseline and follow-up served as the

outcome variable. Results showed that the brief intervention significantly reduced drinking in the non-comorbid ($p = 0.03$) but not in the comorbid subsample ($p = 0.76$). Compared to non-comorbid participants, a significantly higher reduction of drinking was found for comorbid individuals ($p = 0.01$). Ordinal regression analysis revealed comorbidity to be a positive predictor for reduction of drinking ($p < 0.01$). When entering the variables (i) amount of drinking at baseline, (ii) intervention and (iii) classification of problematic drinking, these became significant predictors, whereas comorbidity showed only a tendency. As brief interventions are known to be less effective for dependent drinkers, a larger proportion of dependents among the comorbid might have limited its effectiveness.

General Practice: Dependent drinkers

At least one study tested brief interventions with dependent drinkers and compared the results with non-dependent drinkers (Guth et al. 2008). Retrospective analyses were performed on participants ($n = 326$) enrolled in a randomised trial designed to examine the impact of interactive voice response following brief intervention. All participants had received a brief intervention from their primary care provider before enrolling in the study. Daily consumption data were collected using the Timeline Followback method for the period prior to intervention (mean = 71 days) and for 6 months following. Dependent participants had significantly higher pre-brief intervention consumption than non-dependent patients. At the initial assessment 15 days after the brief intervention, both dependent and non-dependent participants reported significant reductions in total drinks per week and drinking days per week. Dependent participants significantly reduced their drinks per drinking day and no longer differed significantly from non-dependent participants on these measures. Similar decreases were observed in both groups over the following 6 months, although dependent participants drank on fewer days, but in significantly higher amounts than did non-dependent drinkers. Regression analyses showed that baseline consumption was the only significant predictor of post-intervention consumption. Conclusions were that there was no evidence that dependent participants gained less benefit on measures of alcohol consumption following brief intervention than non-dependent participants.

Recommendation	Strength of recommendation	Level of evidence
4.5 Brief interventions should be implemented in general practice and other primary care settings.	A	1a

Emergency departments and trauma centres

There is a high rate of alcohol-related injuries and conditions among people attending accident and emergency departments, 1.5 to 3 times the rate seen in primary care. Data suggest that recent trauma or a life-threatening experience increases the receptivity of patients to interventions, thus increasing the likelihood of brief intervention being effective in reducing alcohol consumption among these patients (D'Onofrio et al. 2002; Neumann et al. 2006).

Interventions in emergency departments have proved to be effective in reducing risky levels of alcohol intake and binge drinking episodes (D'Onofrio et al. 2004/05; Bazargan-Hejazi et al. 2005; Soderstrom et al. 2007; Walton et al. 2008; Nilsen et al. 2008) and reducing subsequent alcohol-related injuries in the 6-12 months subsequent to intervention (Havard et al. 2008; Dinh-Zarr et al. 2005) although Dinh-

Zarr's Cochrane review was not able to correlate this benefit with the effect of the intervention on abstinence, consumption, or drinking-related hazardous behaviour (Dinh-Zarr et al. 2005).

Reduction of heavy alcohol consumption in the subsequent 12 months is less likely (Havard et al. 2008), but has been shown in some studies (Bazargan-Hejazi et al. 2005; Walton et al. 2008).

A number of studies reported reductions in alcohol consumption from risky to low risk levels in emergency department/trauma patients who did not receive structured brief intervention, but were asked about their levels of alcohol consumption and participated in the study as a control or standard care group (Daepfen et al. 2007; Dent et al. 2008; D'Onofrio et al. 2004/05). Highlighting the alcohol/injury connection as part of brief intervention in this setting may increase the effect of the intervention (Walton et al. 2008). Uptake of opportunistic screening by emergency department staff in one Australian study (Dent et al. 2008) was poor, as was patient compliance with off-site counselling.

Computer-assisted brief interventions in emergency department settings have demonstrated reductions in alcohol use over the subsequent 6 to 12 months, and appears a promising dissemination strategy (Neumann et al 2006).

Emergency Departments and Trauma Centres: Meta-analyses

A review and meta-analysis of strategies targeting alcohol problems in emergency departments (ED) was recently published (Havard et al. 2008). Thirteen studies with reasonable methodological quality were identified, with the exception that some had poor reporting of effect size or inconsistent selection of outcome measures. Sample sizes ranged from 85 to 1334. Selected outcome measures were quantity/frequency of alcohol consumption at 12 month follow-up; frequency of high-volume drinking at 3 months and 12 months; consequences from drinking at 6 and 12 months, and alcohol-related injuries at 6 and 12 months. Ten randomised controlled trials fulfilled these criteria. Findings were that ED-based interventions were found to have no effect on quantity/frequency or on high volume drinking at 12 months. Effects on frequency of heavy drinking at 3 months and consequences of drinking at 6 or 12 months were inconclusive; the only statistically significant effect found from the analysis was that intervention patients had half the probability (OR: 0.59) of controls in sustaining an alcohol-related injury in the 6 or 12 months following their ED visit. However, there were limitations in the data that prevented more thorough analyses being conducted.

A Cochrane review that examined interventions to prevent injuries in problem drinkers (Dinh-Zarr et al. 2005) was published prior to the Havard paper above. Settings were various, participants included dependent and non-dependent drinkers, partners of drinkers, men convicted of drink driving (DUI) and settings included Emergency departments, outpatient and inpatient settings, and others not described. Interventions ranged from brief intervention to a one hour consultation with a psychologist and included blood test results, medications, probation, rehabilitation programs, and AA attendance. The most common intervention studied was brief counselling in the clinical setting for problem drinking. The majority of trials of brief counselling showed beneficial effects on diverse non-fatal injury outcomes: motor-vehicle crashes and related injuries, falls, suicide attempts, domestic violence, assaults and child abuse, alcohol-related injuries and injury emergency visits, and hospitalisations; seven trials demonstrated reductions in injury-related deaths

(relative risk (RR) 0.65; 95% confidence interval (CI) 0.21-2.00). Reductions ranged from 27% to 65%. Because few trials were sufficiently large to assess effects on injuries, individual effect estimates were generally imprecise. The results were not combined quantitatively because the interventions, patient populations, and outcomes were so diverse. The major conclusions were that interventions for problem drinking appear to reduce injuries and their antecedents (e.g. falls, motor vehicle crashes, suicide attempts). The time frames for follow-up varied from 3 to 48 months.

Several studies have reported on the results of brief intervention delivered during a visit to an ED or trauma centre. D'Onofrio and Degutis compared 4 studies conducted between 1999 and 2004: Monti et al. (1999); Gentilello et al. (1999); Longabaugh et al. (2001) and Spirito et al. (2004). Findings suggested that, from the evidence presented, brief intervention to patients whose injuries are alcohol-related may decrease their alcohol consumption. However, the standard care groups also reduced their drinking in every case, and three of the studies had very high refusal rates, perhaps skewing the results in favour of more compliant patients (D'Onofrio et al. 2004/05). The follow-up intervals were 3 and 6 months (Monti); 3, 6 and 12 months (Spirito); 6 and 12 months (Gentilello); and 12 months only (Longabaugh).

Nilsen et al carried out a systematic review of emergency care brief interventions for injured patients, selecting 14 studies for analysis (Nilsen et al. 2008). Of the 12 studies that compared pre- and post-brief intervention results, 11 observed a significant effect of brief intervention on the following outcomes: alcohol intake, risky drinking practices, alcohol-related negative consequences, and injury frequency. Two studies assessed only post- brief intervention results. More intensive interventions tended to yield more favourable results. brief intervention patients achieved greater reductions than control group patients, although there was a tendency for the control group(s) to also show improvements. Five studies failed to show significant differences between the compared treatment conditions. Variations in the study protocol, alcohol-related recruitment criteria, screening and assessment methods, and injury severity limited the specific conclusions that could be drawn.

Emergency departments and trauma centres: RCTs

One study in ED with patients that were not randomised, but allocated alternately to control and intervention groups, showed that brief motivational intervention delivered by peer educators significantly reduced moderately risky drinking and associated problems in the intervention group patients who scored 7-18 on AUDIT at baseline (Bazargan-Hejazi et al. 2005). No such effect was found, however, for intervention group patients in the high-risk group (defined by AUDIT scores above 19).

Two recent randomised controlled trials in Switzerland and in Australia were not able to demonstrate any effect on alcohol use in either intervention or control groups (Daepfen et al. 2007; Dent et al. 2008). The aims of the Swiss study were to evaluate the effectiveness of brief intervention (BI) in reducing alcohol use among hazardous drinkers treated in the ED after an injury; it also tested whether assessment of alcohol use without intervention was sufficient to reduce hazardous drinking. A total of 5136 consecutive patients completed a seven-item general and a three-item alcohol screen; 1472 (28.7%) were positive for hazardous drinking according to the National Institute on Alcohol Abuse and Addiction definition; 987 (67.1%) were randomised into a BI group (n = 310), a control group with screening and assessment (n = 342), or a control group with screening only (n = 335). A total of 770 patients (78%) completed the 12-month follow-up. The intervention was a single

standardised 10-15-minute session conducted by a trained research assistant. At follow-up similar proportions of participants reduced their level of drinking to low-risk in the intervention and both control groups with and without assessment (35.6%, 34.0%, 37.0%, respectively, $p = 0.71$). Data also indicated similar reductions in drinking frequency, quantity, binge drinking frequency and AUDIT scores across groups. A model including age groups, gender, AUDIT and injury severity scores indicated that BI had no influence on the main alcohol use outcome. This study provided evidence that a 10-15-minute intervention did not decrease alcohol use and health resource utilisation in hazardous drinkers attending ED. The authors also state that commonly-found decreases in hazardous alcohol use in control groups cannot be solely attributed to the baseline alcohol assessment. There are three possible explanations for this; either a very minimal intervention (the assessment) is sufficient to change behaviour; having an injury is of itself enough reason to reduce drinking; or the brief Intervention of 10-15 minutes had no effect over and above the minimal intervention, due to regression to the mean.

The Australian study (Dent et al. 2008) aimed to evaluate the feasibility and efficacy of opportunistic screening and brief intervention by ED staff to reduce high-risk alcohol consumption. It was an open, randomised controlled trial with allocation blinding, performed over 12 months. Adult patients were screened using the Paddington Alcohol Test. Consenting patients screened positive were randomised to standard care (control group), same-day brief intervention (BI) by an emergency nurse or doctor, or motivational intervention (MI) within 1 week by off-site drug and alcohol counsellors. Telephone follow up was performed at 1 and 3 months. The primary outcome was maximum self-reported daily standard drinks consumed. Of 32,965 eligible patients, 10,274 (31%) were screened, 1043 (10%) were positive, 468 (45%) consented to the study, and 161, 159 and 148 were allocated to SC, BI and MI respectively. Results showed a loss to follow-up of about 50%. In the MI group, 133 declined intervention or failed to attend the counselling session. At 3 months, 96 (60%), 81 (51%) and 74 (50%) participants in the control, BI and MI groups, respectively, were contactable and consented to telephone interview. Overall, maximum daily alcohol consumption decreased from a median of 13.5 standard drinks at enrolment to 9.25 drinks at 3 months. At 3 months, control participants reported fewer drinks than those randomised to MI. The authors' conclusions were that neither BI nor MI was better in this case than standard care in reducing high-risk alcohol consumption. However, the uptake of opportunistic screening by ED staff was poor, as was patient compliance with off-site counselling, which would have had an impact on the lack of significant results.

The aim of the latest study published by D'Onofrio et al was to determine the efficacy of emergency practitioner-performed brief intervention for hazardous/harmful drinkers in reducing alcohol consumption and negative consequences (D'Onofrio et al. 2008). A randomised clinical trial was conducted in an urban ED. Patients who screened above National Institute for Alcohol Abuse and Alcoholism guidelines for low-risk drinking or presented with an alcohol-related injury were eligible. The mean number of drinks per week and binge-drinking episodes during the past 30 days were collected at 6 and 12 months; negative consequences and use of treatment services at 12 months. A brief negotiation Interview performed by emergency practitioners was compared to a scripted discharge instruction sheet. A total of 494 drinkers took part and each group was similar with respect to baseline characteristics. In the Brief Negotiation Interview group, the mean number of drinks per week at 12 months was 3.8 fewer than the 13.6 reported at baseline. The discharge instructions group decreased their mean number of drinks to 2.6 from 12.4 at baseline. Likewise, binge-drinking episodes per month decreased from 6.0 to 4.0 in the brief interview group and from 5.4 to 3.9 in the discharge instructions group. For each outcome, the time

effect was significant and the treatment effect was not. The authors conclude that brief interventions among ED patients with hazardous/harmful drinking were effective in reducing alcohol consumption at 3 months and there was no difference in efficacy between the two types of interventions.

Yet another randomised controlled study (Soderstrom et al. 2007) tested the effectiveness of two different brief interventions to reduce both drinking and the consequences of drinking. Trauma patients defined as at-risk alcohol users (n=497) were randomised into two treatment options: a brief personalised motivational intervention (MI), or brief information and advice (BI). After a brief assessment, MI subjects received a motivational session, feedback letter, and two post-discharge telephone contacts, whereas the BI group received a brochure and one post-discharge telephone contact. Both groups were followed up and reassessed at 6 and 12 months post-injury. Results show that both groups had statistically significant reductions in drinking, binge episodes, and consequences related to drinking that persisted from the 6- to the 12-month follow-up. Although not statistically significant, for those classified as lower-level drinkers (≤ 1 drink per day), there was a consistent pattern of maintaining reductions for the MI group at 12 months compared with the BI group. Their results suggest that brief interventions that link alcohol consumption with trauma injury and consequences of drinking can be effective in reducing drinking and consequences related to drinking in non-dependent drinkers.

Walton et al carried out a study with an aim of determining what influence the stage of change and other attitudes might have on advice given to injured patients visiting ED for non-life-threatening injuries (Walton et al. 2008). Patients (n = 4,476) completed a computerised survey; 575 at-risk drinkers were randomly assigned to one of four brief intervention conditions, and 85% were interviewed again at 3-month and 12-month follow-ups. The results produced by regression models examined interaction effects between intervention/control condition (advice/no advice) and hypothesised moderator variables (stage of change, self-efficacy, acute alcohol use, attribution of injury to alcohol) on alcohol outcomes over time. Overall, participants who reported higher levels of self-efficacy had lower weekly consumption, whereas those with higher readiness to change had greater weekly consumption. In addition, individuals who attributed their injury to alcohol and received advice had significantly lower levels of average weekly alcohol consumption and less frequent heavy drinking from baseline to 12-month follow-up, compared with those who did not receive advice. This study provides more data regarding attribution for alcohol-related injury as an important moderator of change and suggests that highlighting the alcohol/injury connection in ED-based alcohol interventions can augment their effectiveness.

Use of Computers in Emergency Department screening and intervention

Neumann et al hypothesised that the use of computer technology to screen and provide an intervention could reduce at-risk drinking in injured ED patients (Neumann et al. 2006). Sub-critically injured patients were screened for an alcohol use disorder, using a laptop computer that administered the AUDIT and assessed motivation to reduce drinking. Patients with a positive AUDIT (n = 1,139) were randomised to an intervention (n = 563) or control (n = 576) condition. The computer generated a customised printout based on the patient's own alcohol use pattern, level of motivation, and personal factors, which was provided in the form of feedback and advice. Most patients (85%) used the computer with minimal assistance. At study entry, a similar proportion in each group met criteria for at-risk drinking (49.6% versus 46.8%, p = 0.355). At 6 months, 21.7% of intervention and 30.4% of control patients met criteria for at-risk drinking (p = 0.008). Intervention patients also had a 35.7%

decrease in alcohol intake, compared with a 20.5% decrease in controls ($p = 0.006$). At 12 months, alcohol intake decreased by 22.8% in the intervention group versus 10.9% in controls ($p = 0.023$), but the proportion of at-risk drinkers did not significantly differ (37.3% versus 42.6%, $p = 0.168$). The results suggest that this is a practical and effective option to assist the implementation of screening and intervention in ED.

Recommendation	Strength of recommendation	Level of evidence
4.6 Brief interventions should be implemented in emergency departments and trauma centres.	A	1a

Hospital settings

Clear associations have been found between admissions for traumatic incidents or medical problems and alcohol consumption (Saitz 2005). There is a high prevalence of problem drinkers among hospital inpatients (Shourie et al. 2007), making general hospital wards a good environment in which to offer brief interventions to a large number of risky drinkers who already demonstrate or may be at risk of developing alcohol problems. It is likely that the experience of being admitted to hospital provides an ideal opportunity for brief alcohol intervention, which is rarely done (Hosking et al. 2007; Williams et al. 2008). Hospital wards can be a particularly effective setting for advice, as patients are often more motivated and willing to change their drinking behaviours after being hospitalised. However, to date the evidence for the effectiveness of brief intervention in this setting is limited (Emmen et al. 2004; Freyer-Adam et al. 2008; Saitz et al. 2007). See also Chapter 3.

The existing studies (described in more detail below) could suggest that minimal intervention (or even simply a participation in a research trial) in these settings is as successful as a more intensive intervention, or conversely, that all interventions are ineffective and the impact of hospital admittance is sufficient to effect changes in alcohol-related behaviour, including rate of consumption.

However, there seems to be more influences at work than is yet fully explored. “What explains the range of findings?” is a question asked in an editorial (Bernstein et al. 2008); possibilities for negative influences include low sample size, low AUDIT score cut-off for eligibility; length of the intervention, lack of booster session, possible contamination, patient characteristics, social desirability bias, etc. These issues have been addressed fully in primary care and it seems too early to dismiss the usefulness of brief intervention in hospital settings; the fact that there are conflicting results, some positive and some negative, seems to indicate that the most effective combination of intervention elements have not yet been found (Bernstein et al. 2008).

Routine screening for excessive alcohol consumption should be implemented in general hospital settings; however the evidence for brief intervention is limited

Hospital Settings: Meta-analyses

Eight studies of opportunistic brief intervention conducted in hospitals were reviewed by Emmen et al (2004) for their effectiveness in reducing alcohol consumption. Some were individually randomised, some were cluster randomised and one was non-randomised (group allocation, 6 hospitals, 3 control and 3 intervention). The sole

outcome measure was change in alcohol consumption. Weaknesses in study reporting meant that the authors had difficulty in drawing any conclusions; these weaknesses included irretrievable data, gaps in data collection or reporting, small sample sizes and losses to follow-up (from 9% to 50%). Only one study, with a short follow-up period, showed any significant effect, a larger reduction in weekly drinking by the intervention group (mean difference -309g; range -470g to -148g). These were outpatients in a hypertension clinic, 91% of whom were followed up. Changes in the control group patients are not described. Results from this particular review, therefore, are inconclusive.

Hospital settings: Randomised controlled trials

Two recent studies have trialled brief alcohol intervention in a hospital setting, by Saitz et al. (2007) and Freyer-Adam et al. (2008).

The Saitz et al (2007) study included dependent drinkers (77% of whom fulfilled the CIDI criteria for dependence) and included the outcome measure of treatment by a specialist for this group, as well as change in mean number of drinks which was applied to all participants (Saitz et al. 2007). The intervention was a 30-minute session of motivational counselling by a trained counsellor. Results showed that the intervention was not significantly associated with receipt of alcohol assistance by 3 months among alcohol-dependent patients (adjusted proportions receiving assistance, 49% for the intervention group and 44% for the control group; intervention-control difference, 5% [95% confidence interval, CI, -8%-19%]) or with drinks per day at 12 months among all patients (adjusted mean decreases, 1.5 for patients who received the intervention and 3.1 for patients who received usual care; adjusted mean group difference was -1.5 (CI, -3.7-0.6). There was no significant interaction between the intervention and alcohol dependence in statistical models predicting drinks per day ($p = 0.24$). The conclusions these authors drew are that brief intervention is insufficient to link medical inpatients with treatment for alcohol dependence, and is ineffective in reducing levels of alcohol consumption.

Freyer-Adam et al (2008) screened all inpatients of 29 wards from 4 hospitals in Germany, and 595 were randomised into 3 groups; a control condition or to two intervention groups which included motivational interviewing by either the specialist consultation liaison service or by hospital physicians. At baseline, the three groups differed regarding motivation, with higher motivation among the controls. At 12-month follow-up, the groups did not differ in alcohol consumption, alcohol-related problems or measure of well-being. All groups significantly decreased their alcohol consumption. Regarding motivation, longitudinal analyses revealed significant interaction effects of time and intervention ($p < 0.05$), indicating a stronger increase of readiness to change drinking and a small increase in readiness to seek help among those who received intervention compared to the controls. The conclusions were that the intervention was not effective in reducing alcohol consumption when compared to controls (who, however, had higher motivation to reduce drinking, thereby affecting the results) or in increasing well-being 12 months after hospitalisation. However, it had a positive effect on readiness to change drinking and on readiness to seek formal help for alcohol problems.

Recommendation

4.7 Brief interventions should be implemented in general hospital settings.

Strength of recommendation
D

Level of evidence
IV

Community counselling and welfare services

Patients may present to community counselling services with a variety of complaints that may be related to their alcohol or other drug use, including financial, relationship, employment or parenting problems. Brief interventions may be appropriate for those drinking at risky levels (O'Connor et al. 2007) (Sullivan et al. 2005); however as yet there is little evidence as to their effectiveness in these settings (see Chapter 3) .

Recommendation	Strength of recommendation	Level of evidence
4.8 Brief interventions in community health and welfare settings may be used, but should not be a sole intervention strategy.	D	IV

Workplace settings

Rates of alcohol consumption are particularly high in some workplace settings. In particular, hospitality, agriculture and construction industries have been identified as having a large proportion of people drinking at levels leading to both short-term and long-term risk of harm (Berry et al. 2007), which can lead to increased rates of accidents and absenteeism (Roche et al. 2008).

Web-based feedback, with or without motivational counselling, proved an effective method for reducing risky drinking among young employed people (Doumas et al. 2008); 124 participants were randomly assigned to one of three conditions: web-based feedback, web-based feedback plus a 15-minute motivational interviewing session, or a control group. Both intervention groups reported significantly lower levels of drinking than those in the control group at a 30-day follow-up. No differences were found between the two intervention conditions, indicating that the addition of the motivational interview did not increase the efficacy of the web-based feedback program. However the small sample size limits any generalisations that can be made from this study.

Another study found challenges in getting people to access and participate in the workplace-initiated website program (Matano et al. 2007). Matano's pilot study gave 145 employees working in Silicon Valley access to a web site that provided feedback on their levels of stress and use of coping strategies. Participants randomised to receive full individualised feedback also received individualised feedback about their risk for alcohol-related problem. The major drawback is that only 3% took up the offer of participation, severely limiting the results and any conclusions that could be made.

A substance misuse prevention training program designed to change work culture, combined with random workplace testing, in a large US transportation company, was successful in reducing injuries (Miller et al. 2007). This program focussed on changing workplace attitudes toward on-the-job substance use, in addition to training workers to recognise and intervene with co-workers who have a problem. The main benefit to the company was that the combination of the peer-based program and testing was associated with an approximate one-third reduction in injury rate, avoiding a \$48m in employer costs. The cost-benefit ratio was 1:26, thereby making the program extremely worthwhile both for participants and employers. However, the project had the benefit of being backed up by a federally mandated testing program.

There is at present not enough evidence to recommend implementation of brief interventions in this setting

Recommendation	Strength of recommendation	Level of evidence
4.9 Brief interventions in high-risk workplaces may be used, but should not be a sole intervention strategy.	D	IV

The wider community- and the internet

Research on the efficacy of correspondence or web-based interventions is emerging. For example, Kypri et al identified nine acceptability or feasibility studies of these approaches and seven efficacy trials covering a wide range of settings in 2003-4 (Kypri et al. 2005). These modes of intervention are acceptable to patients and the public, and with careful planning can be implemented in a variety of settings. Treatment trials demonstrate the efficacy of these interventions in reducing hazardous drinking by university students, in delaying initiation of heavy drinking in children and adolescents, and, intriguingly, in addressing insomnia among recovering alcoholics.

There is strong support among potential users for alcohol interventions that employ telephone assistance, written correspondence, and the Internet.

These new technologies offer the prospect of increasing the reach of interventions for problem drinking and being cost-effective alternatives or supplements to face-to-face interventions.

One study is presently examining two alternative modes of electronic intervention (Murray et al. 2007). In a two-arm randomised controlled trial, an on-line psychologically enhanced interactive computer-based intervention is compared with a flat, text-based information web-site. Recruitment, consent, randomisation and data collection are all on-line. The primary outcome is to be total past-week alcohol consumption; secondary outcomes include hazardous or harmful drinking, dependence, harm caused by alcohol, and mental health.

Web-based interventions show promise, especially in university students (Bewick et al. 2008b; Bewick et al. 2008a) and young people. Web-based feedback, with or without motivational counselling, proved an effective method for reducing risky drinking among young employed people (Doumas et al. 2008), although another study found challenges in getting people to access and participate in the website program through their workplace (Matano et al. 2007).

Limitations of Brief Interventions

The outcomes can be perceived as modest and discourage clinicians from using brief interventions routinely.

One of the limitations of brief interventions is that the clinician often does not see beneficial results of the intervention (e.g. the number needed to treat can be substantial in order to create a measurable effect). In order to get one drinker to return within recommended limits, brief intervention needs to be delivered to 10

patients (this is the number needed to treat, or NNT) (Beich et al. 2003a; Beich et al. 2003b; Vinson 2003). To identify those individuals one must screen 100 (the number needed to screen). However this is a quarter of the number (400) needed to screen for high cholesterol before 1 person can benefit, which is a routine, expensive and invasive test (Vinson 2003; Shepherd et al. 1995).

Another factor that must be mentioned is that screening alone can raise the patients' awareness and have a similar effect to a brief intervention (Kaner et al. 2007; Kaner et al. 2009).

There is no evidence that brief interventions are effective among people with more severe alcohol problems and dependence disorders. Typically, interventions offered to treatment-seeking populations or those with severe alcohol problems require more comprehensive treatment approaches, that will usually include intensive interventions (e.g. detoxification), or extended follow-up sessions.

A number of barriers to the uptake and implementation of brief interventions in health care settings have been identified (Aalto et al. 2003). These include:

- Lack of confidence, knowledge, or skills
- Difficulty in identifying risky drinkers
- Uncertainty of the justification for initiating discussion about alcohol
- Lack of simple guidelines
- Lack of financial incentives

Summary

Most alcohol-related harm in the community is caused by excessive drinkers whose consumption exceeds recommended drinking levels, not the drinkers with severe alcohol dependency problems. One way to reduce consumption levels in a community is to provide a brief intervention in primary care over one to four sessions, provided by healthcare workers such as general physicians, nurses or psychologists. In general practice, patients should be routinely asked about alcohol consumption during registration, general health checks and as part of health screening (using a questionnaire). The intervention would ideally include feedback on alcohol use and harms, identification of high risk situations for drinking, coping strategies, increased motivation and the development of a personal plan to reduce drinking.

Brief interventions for non-dependent drinkers have been proved efficacious in primary care; at present there is conflicting evidence for their effectiveness in emergency departments and other hospital settings.

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