A systematic review of the effectiveness of alcohol brief interventions for UK military personnel moving back to civilian life

ABSTRACT

Background Higher levels of alcohol consumption have been observed in the UK armed forces compared to the general population. For some, this may increase the risk of using alcohol as a coping strategy when adjusting to multiple life events occurring when moving back into civilian life.

Method A systematic review was conducted to determine the effectiveness of alcohol brief interventions for military personnel during transition. Electronic databases including Medline, Central, HMIC, and Embase, and grey literature, were searched. Two reviewers independently assessed potential studies for inclusion, extracted data, and assessed quality of selected articles using an established instrument.

Results Ten studies met criteria for inclusion. Studies were synthesized narratively. Interventions were heterogeneous, and bias within studies may have acted to increase or decrease their reported effectiveness. The findings suggest some evidence for effectiveness of self-administered web-based interventions, involving personalised feedback over a number of sessions, and system-level electronic clinical reminders. All studies were from the USA. Delivery of interventions by a clinician during motivational interviews was most effective for those with PTSD symptoms.

Conclusion A UK trial of web-based interventions with personalised feedback is recommended.

INTRODUCTION

Clusters of life events have been found cumulatively stressful in the general population and moving back into civilian life from the military may require simultaneous adjustment to changes in employment, accommodation, geographical location, finances, relationships, and family life.[1 2] Most service personnel make the move back to civilian life successfully, however for some this particular time may increase susceptibility to stress because adjustments to several life changes are required.[1 3 4] Coupled with this, events experienced while serving may be alienating when amongst civilian peers, and it may be a challenge to adjust to a more individualistic civilian culture.[5-7] Higher levels of alcohol consumption have been observed in the UK armed forces, with 67% of men defined as drinking harmful amounts compared to 38% of men in the general population.[8] If alcohol is used to cope, this may complicate the process of moving back to civilian life for example by exacerbating any subclinical mental health symptoms or by causing further adverse life events.[9-11]

Alcohol Screening and Brief Interventions

Screening the adult population for harmful levels of drinking and providing feedback and brief advice has been shown to result in a reduction in the amount consumed in a proportion of people.[12 13] The ten question Alcohol Use Disorders Identification Test (AUDIT) is seen as the gold standard for alcohol screening.[14] The AUDIT can be scored between 0-40. A score of 8+ is referred to as a 'positive screen' and indicates an alcohol use disorder; hazardous drinking (score of 8-15), harmful drinking (16-19), or probable dependent drinking (20+). A score of 8 or more out of a possible 40 on the AUDIT is able to detect genuine excessive drinkers (92% sensitivity) and to exclude false cases (94% specificity).[14]

Brief interventions are typically applied to opportunistic, non-treatment seeking populations, and delivered by practitioners other than addiction specialists in a variety of settings.[12 15 16] Alcohol brief interventions largely consist of two different approaches. Simple structured advice which, following screening, seeks to raise awareness through the provision of personalised feedback and advice on practical steps to reduce drinking behaviour and adverse consequences; and extended brief intervention which generally involves behaviour change counselling.[17] Extended alcohol brief interventions introduce and evoke change by giving an individual the opportunity to explore their alcohol use as well as their motivations and strategies for change. Both types share the common aim of helping people to change drinking behaviour to promote health but they vary in the precise means by which this is achieved. Typically, brief interventions aim to reduce alcohol consumption rather than achieve abstinence. There is a wide variation in the duration and frequency of alcohol brief interventions, however, they are typically delivered in a single session or a series of related sessions (not exceeding five sessions), lasting between five and 60 minutes.[13]

Evidence to date on the effectiveness of alcohol brief interventions comes from general population studies primarily in primary healthcare settings.[18 19] However, results may be different for military personnel who have different pressures and demands. Therefore, it is important to examine the effectiveness of alcohol brief interventions in this setting. This review includes serving personnel and veterans so the findings are of relevance to both groups.

This study therefore considers the evidence of the effectiveness of alcohol brief interventions in reducing harmful levels of drinking for armed forces personnel transitioning back to civilian life. The authors are not aware of any previous published systematic reviews of the

effectiveness of alcohol brief interventions relevant to UK military personnel moving back to civilian life. A previous systematic review has evaluated alcohol brief interventions for US active-duty soldiers.[20] The current review also includes veterans, considers the UK context, and interventions for individuals rather than making changes to the environment (e.g. availability of alcohol). The findings of the review will be of benefit in public health settings, military and veteran medical primary care, community mental health, and third sector organisations.

METHODS

The review is presented in accordance with PRISMA guidelines.[21]

Searches were undertaken in the following databases in November 2015: Medline; PubMed; CINAHL; EBM Reviews: Cochrane Central Register of Controlled Trials (CENTRAL); Web of Science; Embase; PILOTS: Published International Literature On Traumatic Stress; PsycINFO; PAIS International; HMIC; Project Cork. The results from the search were downloaded into Endnote X7.

The search strategy comprised three facets 1. Military personnel (both active and those in transition), 2. Alcohol-related disorders, and 3. Interventions. Appendix 1 shows the Medline search (online supplementary material). The search strategy was translated (e.g. thesaurus terms, syntax) for use in different databases.

In some instances a search string was used to exclude records with PubMed IDs or use the 'Exclude Medline journals' limiter to reduce duplication of results given limited resources. No further limits were used. The Ministry of Defence (via gov.uk), the US Defence Technical Information Centre (dtic.mil), and a general internet search were conducted to identify grey literature. A further search in March 2016 was conducted to locate papers related to acceptability of interventions. This included a fourth facet of acceptability terms, with the search conducted using the following structure: Alcohol-related disorders AND Military personnel AND Acceptability, leaving out the interventions facet used in the original searches (Appendix 2, online supplementary material). This informed the facilitators and barriers section in the discussion. The reference lists of included articles were searched and forward citation searches were carried out in Web of Science, as were hand searches of Military Medicine and Journal of Studies on Alcohol and Drugs.

Inclusion criteria

The inclusion criteria were articles in English with the following characteristics: population: serving or former armed forces personnel; intervention: screening and brief intervention; comparator: usual care, other intervention or none; outcome: measure of alcohol consumption; study design: observational or interventional. Evaluations of effectiveness of interventions in purposively selected clinical groups, e.g. traumatic brain injuries, Post-traumatic Stress Disorder (PTSD) were excluded. Studies were included if participants were current or former military personnel; interventions for military spouses or children were excluded.

Study Selection

Screening of titles and abstracts was carried out by one researcher (SW). Potential full texts were then screened independently against the inclusion criteria by two researchers (SW, DNB), and consensus reached on all by discussion. Two authors were contacted to request further details not reported in the publication that were required to make a decision.

Data collection and data items

A data extraction form was developed in excel to record data on: country, participant characteristics, study eligibility, intervention and comparator information, study design, outcome measures and findings. Data was extracted independently by three reviewers (SW, AB, JF).

Risk of bias

All studies meeting the inclusion criteria were assessed independently (SW, AB) using the Quality Assessment Tool for Quantitative Studies which has demonstrated validity and reliability.[22 23] Where global ratings fell in between the bias categories of low, moderate, or high risk the lower rating was given.

Synthesis of results

Heterogeneity of study design and shared recruitment sources [24 25] meant meta-analysis was inappropriate and results were synthesized narratively.

RESULTS

Following de-duplication 3415 studies were assessed for the study. Ten studies met inclusion criteria and were included in the review (Figure 1).

Study characteristics

All included studies were from the USA. Study designs included randomised controlled trials (RCTs),[26 27] controlled clinical trials (CCTs),[28-31] and retrospective secondary data analyses.[24 25 32] Eligibility for all studies was screening positive for unhealthy alcohol use or drinking above recommended guidelines apart from two studies. For these two studies eligibility was active-duty personnel, or those attending a Veterans transition clinic.[29 31] All studies had >80% and in six studies >90% male participants.

Data used in the studies was collected from individuals attending Veterans Affairs primary care clinics[24 27 32] including two studies which recruited across ≥30 clinics.[25 28] In two papers using the same data set participants were recruited via Facebook.[26 33] Participants were also recruited from across eight military installations[31] or were attending transition clinics for veterans of operations in Afghanistan and Iraq.[29 30] In five studies mean age of participants was over 50 years old.[24 25 27 28 32] The other five studies recruited a younger demographic with a mean age of 32 years[26 29 30 33] and 69% being between 21-34 years.[31] Study characteristics are shown in Table 1.

165 **Table 1.** *Study Characteristics*

Study (country)	Population	Eligibility	Intervention	Design
Systems-level electronic reminders prompting clinicians to give advice				
Williams et al., 2010[24] (USA)	VA primary care (8 clinics) (*N* = 4198). 94% male; 83% ≥50 years; 72% White; 49% married	Positive screen for unhealthy alcohol use, & FU screen at 14.5 months (mean)	Reminder in electronic clinical records triggered by positive alcohol screen for clinician to give and document advice to reduce or abstain from alcohol consumption. (*n* = 2975). Comparator: no documented advice	Retrospective cohort via secondary data
Williams et al., 2010[32] (USA)	VA primary care (*N* = 1358). 94% male; mean age 59 years; 64% White; 54% unmarried	Positive screen for unhealthy alcohol use, & FU screen (≥18 months)	As above (*n* = 692). Comparator: no documented advice	As above
Williams et al., 2014[25] (USA)	VA primary care (30 clinics) (*N* = 6210). 97% male; 89% ≥50 years; 49% married	Positive screen for unhealthy alcohol use, & FU screen (mean 350 days)	Clinical reminder triggered by positive alcohol screen for clinician to give and document alcohol-related (*n* = 1751). Comparator: no documented advice	As above
Clinician-administered face to face interventions				
McDevitt-Murphy et al., 2014[30] (USA)	Primary care for veterans of Afghanistan and Iraq (*N* = 68). 91% male; mean age 32 years; 65% White; 41% married; 57% PTSD	Positive screen on AUDIT-C	Personalised drinking feedback (PDF; information on alcohol, norms, mental health and coping) discussed during 1 hour motivational interview (MI) (*n* = 35). Comparator: written PDF with no MI (*n* = 33)	CCT 6 week & 6 month FU
Clinician-administered telephone interventions				
Helstrom et al., 2014[28] (USA)	42 VA providers (*N* = 139). 98% male; mean age 57 years, 55% White, 30% married	Positive screen on AUDIT-C	Telephone care management: sessions at 3, 6, & 9 months post screen with a clinician: on motivation, decisions, education, risk, comorbidity, behaviour change plan and goals (*n* = 68). Comparator: usual care (advice to reduce, risks, recommended drinking limits) (*n* = 71)	CCT 4, 8, and 12-month FU
Self-administered web-based interventions				

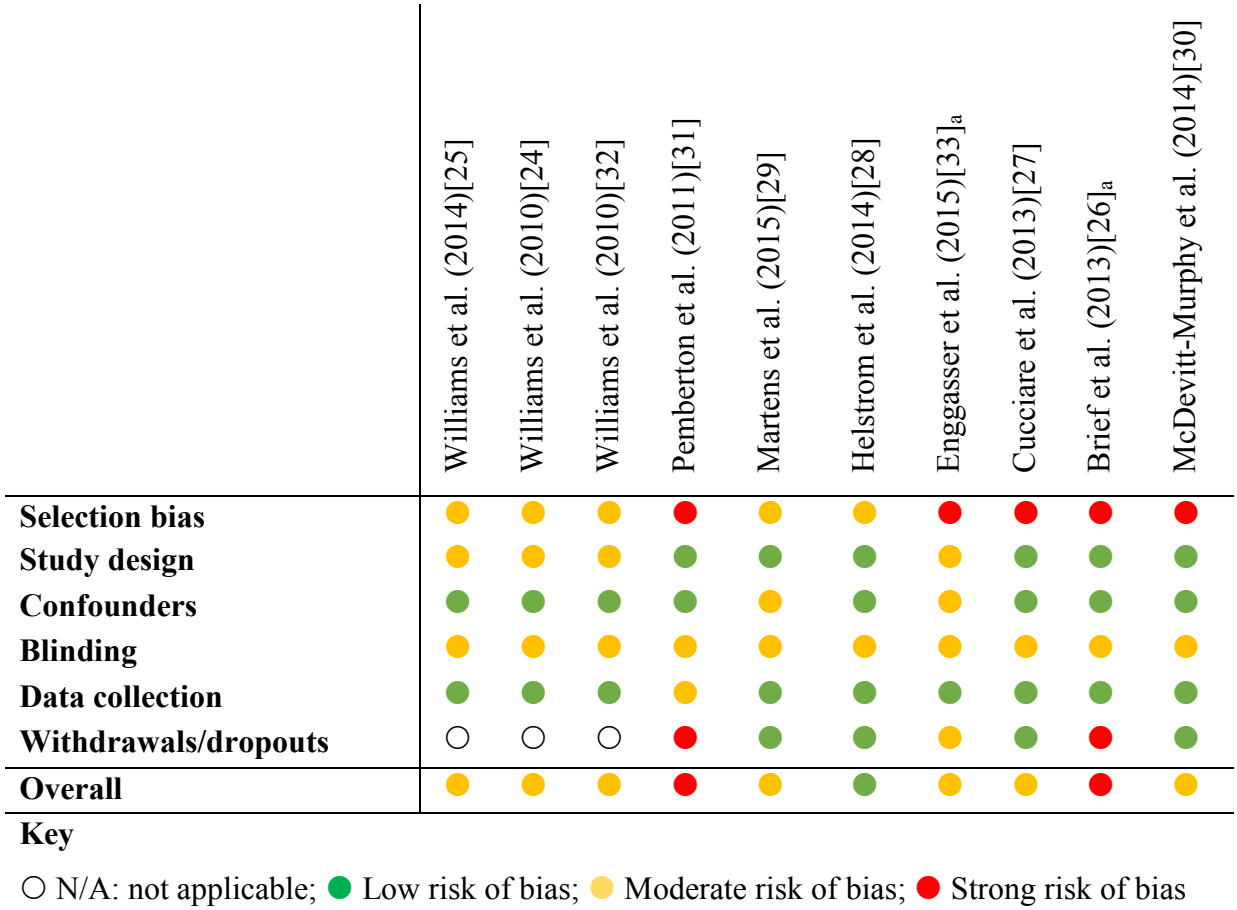
Pemberton et al., 2011[31] (USA)	Active-duty (8 installations) (*N* = 3,070). 83% male; 69% 21-34 years; 65% White; 59% married	Active-duty personnel	'Drinker's Check-Up': 'High' & 'Low risk' versions (AUDIT>/<8) pros/ cons of drinking, family history, consequences, personalised feedback, norms, BAC, tolerance, goals, risk factors, helping others. (*n* = 1470; 6 month FU *n* = 256). 'Alcohol Savvy': 3 multimedia modules on personal use, consequences, decision-making, and skills for change (*n* = 686; 6 month FU *n* = 175). Control: delayed intervention (*n* = 914).	CCT 1 & 6 month FU
Brief et al., 2013[26] (USA)	Afghanistan and Iraq veterans recruited via Facebook (*N* = 600). 86% male; mean age 32 years; 79% White	Drinking above guidelines; AUDIT score between 8-25 (men) and 5-25 (women)	'VetChange': 8 weeks; CBT-based, motivational, and self-control strategies; 8 modules: personalised feedback, readiness to change, goals, risk situations, support system (*n* = 404; FU *n* = 183). Comparator: 8 weeks delayed intervention (*n* = 196; FU *n* = 78).	RCT 3 month FU
Cucciare et al., 2013[27] (USA)	Veteran Affairs general medical clinics (*N* = 167). 88% male; mean age 59 years; 69% White; 43% married; 35% positive PTSD screen	Positive screen on AUDIT-C	Web-delivered (10–15 minutes): assessment of alcohol consumption, lifetime negative consequences, risk factors for unsafe drinking, e.g. combat, PTSD; substance use; motivation to change. Then personalised feedback on: weekly alcohol/substance use, age/gender-norms, financial/social/health consequences, tolerance, BAC, risk, self-report motivation to change (*n* = 89; 6 month FU *n* = 75). Comparator: treatment as usual (*n* = 78; 6 month FU *n* = 67).	RCT 3 and 6 month FU
Enggasser et al., 2015[33] (USA)	Veterans of Afghanistan and Iraq recruited via Facebook (*N* = 305). 87% male; mean age 32 years; 79% White	Drinking above guidelines; AUDIT score between 8-25 (men) or 5-25 (women)	'VetChange' (see Brief et al., 2013): Participants selected own drinking goals at intervention start and end: abstinence only, abstinence to moderation, moderation to abstinence, moderation only (chosen by majority). Comparator: before, after & between goal group.	Retrospective analysis of RCT. Post intervention & 3 months FU.
Educational Information				
Martens et al., 2015[29] (USA)	Afghanistan and Iraq Veterans transition clinic (*N* = 325). 93% male; mean age 32 years; 82% White	All veterans attending clinic	Information to read for 10 mins in clinic. Personalised feedback: educational information on norms, BAC, risk, social/ health problems, protective strategies, calories, financial costs. Comparator: educational information on physical effects of alcohol.	CCT 1 and 6 month FU

166 *Note.* AUDIT: Alcohol Use Disorders Identification Test; AUDIT-C: Alcohol Use Disorders Identification Test – Consumption; BAC: blood alcohol content; CBT:
167 cognitive behavioural therapy; FU: follow up; PTSD: Post-traumatic Stress Disorder; RCT: randomised controlled trial; CCT: controlled clinical trial; VA: Veterans Affairs.

Risk of bias within studies

Good inter-rater reliability for the risk of bias assessments was demonstrated by a kappa value of .76 for 20% of included studies.[34] The characteristics of studies which may have caused an increase or decrease in reported effectiveness of interventions include the following and are shown in Table 2. Five studies had a high risk of selection bias because less than 60% of invited individuals agreed to participate, participants were self-selecting, or were recruited from a clinic.[26 27 30 31 33] Study designs were moderate to good with four being retrospective cohort or secondary analysis of an RCT[24 25 32 33] and the rest being RCTs[26 27] and CCTs.[28-31] There was moderate risk of bias across all studies as blinding was not or only partially addressed. Two studies had an overall strong risk of bias because participants self-selected into the study, there was high attrition[26 31] plus randomisation could not be carried out across all participants.[31] These same studies were otherwise moderate to strong on design and factored attrition into their analysis. A variety of different tools were used to measure alcohol consumption/risk. These included measures of alcohol consumed (Timeline Follow Back, Quick Drink Screen, Daily Drinking Questionnaire); measures of alcohol use disorders (AUDIT, AUDIT-C); estimates of blood alcohol content; and measures of consequences of drinking (Short Inventory of Problems, Drinker Inventory of Consequences). One study had a moderate risk of bias rating for data collection[31] and the rest of the studies lower risk of bias as there was some psychometric evidence for the outcome measures they used. However the variety of different tools used and their different purposes in studies compromised cross study comparisons of results.

Table 2 *Assessment of bias*



Same data set[a]

Outcome measures used in the studies reviewed

The outcome measures used in the studies to demonstrate a reduction in harmful levels of alcohol consumption and so a successful outcome are shown in Table 3.

Table 3 *Outcome measures used to show resolution of harmful alcohol use*

Study	Outcome Measure	Characteristics
Measures of alcohol use disorders		
McDevitt-Murphy et al. (2014)[30] Brief et al. (2013)[26]	AUDIT	*Alcohol Use Disorders Identification Test:* the AUDIT is a widely used standardised 10-item self-report screening measure of alcohol use developed by the World Health Organization.[35] Individual items are scored 0-4; a score of 8+ indicates harmful levels of drinking.[14] Psychometric properties have been demonstrated in veterans.[36]
Williams et al. (2010; 2010; 2014)[24 25 32]	AUDIT-C	*Alcohol Use Disorders Identification Test – Consumption:* the AUDIT-C is a short form of the AUDIT comprising the first three items.[36] A score of 3+ for women and 4+ for men indicates harmful levels of drinking.[37] Psychometric properties have been demonstrated in veterans.[36 38]
Measures of alcohol consumed		
Mc-Devitt-Murphy et al. (2014)[30] Helstrom et al. (2014)[28] Cucciare et al. (2013)[27]	TLFB	*Timeline Follow back*:[39] a self-report calendar-based measure of drinks (frequency and quantity) over the past 28 or 30 days. Psychometric properties have been demonstrated.[40]
Enggasser et al. (2015)[33] Brief et al. (2013)[26]	QDS	*Quick Drink Screen*:[41] a short self-report measure of drinking. 4 items focus on quantity and frequency in the last month and some evidence of reliability has been demonstrated.[41 42]
Martens et al. (2015)[29]	DDQ	*Daily Drinking Questionnaire*:[43] a self-report method of calculating average weekly drinks over the past month.
Measures of consequences of drinking		
Helstrom et al. (2014)[28] Brief et al. (2013)[26] Enggasser et al. (2015)[33] Cucciare et al. (2013)[27] Martens et al. (2015)[29]	SIP	*Short Inventory of Problems*:[44] a 15-item self-report measure of alcohol related problems. It is a shortened version of the Drinkers Inventory of Consequences and problems related to drinking over the past 3 months are scored 0-3. Psychometric properties have been demonstrated.[44 45]
McDevitt-Murphy et al. (2014)[30]	DrInC	*Drinkers Inventory of Consequences*:[46] a 50-item self-report measure of the presence and frequency of any adverse consequences of drinking across five areas during the past 3 months (inter-/intra-personal, physical, social adverse consequences or any resulting from impulsivity). Current and lifetime scores can be calculated on a 4-point scale. Acceptable internal consistency was demonstrated in the study.
Estimates of blood alcohol content		

Pemberton et al. (2011)[31] Martens et al. (2015)[29]	BAC	Peak *Blood Alcohol Content*: calculated from the number of drinks an individual self-reported consuming on their heaviest drinking occasion in the past month, their weight and time spent drinking on the occasion.

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STUDY FINDINGS

The findings from the studies in the review are presented in Table 4.

Systems-level electronic clinical reminders prompting clinicians to give advice

Three studies evaluated systems-level electronic clinical reminders.[24 25 32] These were triggered in the clinical notes by a positive alcohol screen and prompted clinicians to give advice to reduce drinking. Data from Veterans primary care settings was retrospectively analysed with the AUDIT-C used as a screening and outcome measure. Two studies found that electronic clinical reminders and documented advice did not improve resolution of harmful alcohol consumption, compared to controls.[25 32] One study did find evidence of effectiveness of electronic clinical reminders with resolution of harmful levels of alcohol consumption significantly better (31%) than controls (28%) (p = .03).[24]

Clinician-administered interventions

Two studies evaluated clinician-administered interventions face to face, and by telephone.[28 30] Individually tailored information delivered over the telephone by a clinician on drinking motivation, decisions, education, risk, comorbidity, behaviour change plan, and goals was evaluated.[28] Although significantly reduced alcohol outcomes continued to 12 months follow up, effectiveness was not significantly higher than when brief advice was given in combination with information on drinking guidelines in written form.[28] Personalised drinking feedback delivered during a one hour motivational interview by a clinician was evaluated with veterans of Afghanistan and Iraq.[30] Again although alcohol outcomes significantly reduced and were sustained six months later, effectiveness was not significantly higher than when personalised information was delivered in written form. However, for those with PTSD symptoms, there were significantly greater reductions in drinking six weeks after

a brief intervention delivered during a motivational interview with a clinician (compared to written information only).[30]

Self-administered web-based interventions

Four studies evaluated self-administered web-based interventions and yielded mixed results.[26 27 31 33] 'Drinkers Check-Up' is a web-based intervention comprising several components, for example, personalized feedback, goal setting, and information on motivation and tolerance. Two formats of 'Drinkers Check-Up' were evaluated with over 3000 active-duty personnel across eight bases.[31] The formats were 'high' and 'low risk' versions based on AUDIT thresholds, and these effected significant reductions on a number of alcohol outcomes compared to a delayed control group. Effects were maintained six months after the intervention (n = 702). 'Alcohol Savvy', a multi-media web-based intervention, was not found effective.[31]

'VetChange' is an eight module cognitive behavioural therapy based web intervention comprising several components, for example, personalised feedback, information on mental health and coping and setting personal goals. 'VetChange' was evaluated in 600 military personnel reporting an average of two tours and 20 months total deployment. Compared to delayed controls, those receiving the intervention demonstrated significantly more reductions in alcohol outcomes which were maintained at 3 months follow up.[26] The improvements were found independent of which personal drinking goal was chosen e.g. abstinence or moderation.[33]

A 15-minute web-delivered assessment followed by personalised feedback was found no more effective than receiving information on recommended drinking limits and the effects of alcohol on health.[27]

The web-based interventions included a variety of different components though common across all was personalised feedback.

Educational information and personalised feedback

One study evaluated the effectiveness of educational information and personalised feedback.[29] Veterans attending a transition clinic were given either personalised feedback about alcohol, for example, calories and financial costs, or general educational information on the physical effects of alcohol. There was a steady decrease on drinking outcomes over time for those receiving personalised feedback. Those receiving only educational information demonstrated an initial decrease then a slight increase, though between-group differences were not significant. Abstainers receiving personalised information however were significantly more likely to still be abstaining six months later compared to those receiving general/non-personalised information.[29]

Table 4 *Study findings*

Study	Findings
Systems-level electronic reminders prompting clinicians to give advice	
Williams et al., 2010[24]	Resolution of unhealthy alcohol use: significantly higher with reminder in electronic clinical records (31%) than control (28%), $p = .03$.
Williams et al., 2010[32]	No significant association between resolution of unhealthy alcohol use and intervention (40%) vs control (43%), $p = .25$. No significant increase in resolution of unhealthy alcohol use with documented electronic clinical reminder or brief intervention.
Williams et al., 2014[25]	No significant difference between intervention 48% and control 47% for resolution of unhealthy alcohol consumption, $p = .5$; or when stratified by drinking severity, or presence/absence of alcohol disorder.
Clinician-administered face to face interventions	
McDevitt-Murphy et al., 2014[30]	Significant reduction at 6 weeks sustained at 6 months in drinking quantity, frequency, binge drinking days, drinks per drinking occasion across all participants. Significant reduction across time in adverse consequences of drinking (physical, interpersonal, social responsibility, impulse control) for all participants. No significant difference in effect with or without motivational interviewing. At 6 weeks those with PTSD symptoms significantly reduced drinks per week when receiving feedback with motivational interviewing v feedback only.
Clinician-administered telephone interventions	
Helstrom et al., 2014[28]	Both groups significantly reduced number of drinks, drinking days and heavy drinking days (average 4 days/month). <60% met criteria for at-risk drinking by end of intervention. Significant pre-post differences in number of drinks and days drinking in past month. No between-group differences (telephone intervention vs information on drinking guidelines only).
Self-administered web-based interventions	
Pemberton et al., 2011[31]	'Drinkers Check Up': 1 month after baseline, participants significantly reduced average number of drinks per drinking occasion, frequent heavy episodic drinking, & peak blood alcohol content (BAC) compared to a waiting control group. Reductions in heavy episodic drinking relative to controls approached significance at 1-month follow up. Reductions maintained at 6 months, though no significant further change. 'Alcohol Savvy': no significant effects baseline to 1- and 6-month follow up, though frequent heavy episodic drinking reductions approached significance relative to controls.
Brief et al., 2013[26]	Baseline: 59-62% screened PTSD positive. 'Vetchange' group significantly greater reductions across all measures than control baseline to time 1 and time 1 to time 2 (all $p<.01$); sustained at 3-month follow up.

Cucciare et al., 2013[27]	Both groups showed statistically significant reductions on all outcomes from baseline to 3- and 6-month follow up (apart from treatment as usual + brief intervention) which only approached significance on drinks per drinking day baseline to 3 months. No significant change in outcomes from 3 to 6 months. No significant difference in alcohol outcomes between the groups (treatment as usual or treatment as usual + brief intervention) at any time. Allocation to the treatment as usual + brief intervention group was not associated with better alcohol outcomes over time. Small effect size for baseline to 6 month follow up on all outcomes (all =/<.18; $p < .01$) apart from number of drinking days (moderate: .24). Treatment as usual: information on US government recommended drinking limits and health effects of alcohol.
Enggasser et al., 2015[33]	Significant reductions from baseline to post intervention and 3-month follow up on all alcohol outcomes (drinks per drinking day; average drinks per week; percent heavy drinking days; drinking related problems) for all drinking goals apart from Abstinence to Moderation which took until 3 months to show significant change). Those with more severe baseline drinking showed significantly less improvements on all alcohol outcomes at follow up. At 3-months follow up: >56% with initial and final drinking goals of moderation met personal goals for drinks per drinking day & average drinks per week. >66% with goals of abstinence to moderation met personal goals for drinks per drinking day & average drinks per week. >84% of abstainers still abstaining/ drinking within guidelines. Those changing goals reported similar abstinence and drinking within guidelines rates at 3-month follow up, regardless of direction.
Educational Information	
Martens et al., 2015[29]	Personalised Drinking Feedback group: significant decreases in BAC and drinks per week from baseline to 6-month follow up; only significant effect at 1-month follow up on drinks per week for 'drinkers' and BAC for 'heavy drinkers'. Education Only group: significant decreases in BAC from baseline to 1-month follow up, then increases. 1-month to 6-month follow up. No significant between-group differences ($p > .05$). Personalised Drinking Feedback group significantly more likely to continue abstaining 6-months later than Education Only group (96% vs. 79%; $p < .05$).

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DISCUSSION

Study Findings

The findings from this review indicate mixed evidence regarding the effectiveness of using electronic clinical reminders to prompt brief interventions. One study did find evidence of effectiveness[24] but two studies did not measure any significant effects.[25 32] Delivering information in written format was as effective as when delivered by a clinician face to face[30] or over the telephone.[28] Though written personalised feedback (including information on hazardous drinking, PTSD symptoms, depression, and coping) delivered by a motivational interviewing counselling session, was more effective for those with PTSD symptoms than when provided without.[30] 'VetChange' and 'Drinkers Check-Up' web-based interventions demonstrated effectiveness in resolving unhealthy levels of alcohol consumption.[26 31] However, 'Alcohol Savvy' and a 15-minute web-based intervention were not found to show significant effects.[27 31] No significantly greater effect on resolution of unhealthy drinking was found when information about alcohol was personalised as opposed to general educational information in the context of a 10-minute intervention.[29] However, personalised information was effective for encouraging abstainers to maintain abstinence.[29]

Previous research on facilitators and barriers to the effectiveness of brief interventions can highlight reasons why some interventions in the review appeared to work better than others. Facilitators and barriers may need to be considered when implementing brief interventions in order to create circumstances that maximise their effectiveness. For example, a lack of understanding by individuals and organisations of the goals of brief interventions has been described as a barrier to their successful implementation.[25 47] So that for maximum effectiveness of brief interventions training may be important.

Where interventions are made up of a number of components it may not be clear which ones are having the most effect.[29 31] For example linking financial cost and calories to drinking has been reported a useful motivator.[48] In the review, 'Drinkers Check-up' worked better than 'Alcohol Savvy' though both are self-administered web-based interventions. This is aligned with previous findings where 'Drinkers Check-up' but not 'Alcohol Savvy' facilitated changing perceived drinking norms which affected alcohol outcomes six months later.[49] The findings in the review which supported effectiveness of web-based interventions accord with previous reports on the acceptability of web-based brief interventions to military personnel[48 50] and the use of smartphone applications in the general population.[51]

Strengths and limitations of the review

All included studies in this review were from the USA. Given different military organisational, social and drinking cultures between the US and the UK, generalizability of the findings cannot be assumed. There are different age restrictions on alcohol in the USA, and alcohol consumption is suggested to be lower in the USA armed forces compared to the UK.[52] In addition research suggests that alcohol is used to promote unit cohesion in the UK.[53 54] Furthermore, the range of different screening tools, and interventions used in the studies reviewed means that it is impossible to ascertain efficacy or effectiveness across trials. Given this, the need for a trial of alcohol brief interventions in the UK in this setting is imperative to the field.

This review looks at interventions appropriate for transition between military and civilian life. The review therefore includes serving personnel and veterans so the findings are of

relevance to both groups. Some veterans may experience adjustment difficulties a number of years after moving back into civilian life, and serving personnel will move between deployment and non-deployment and more so if they are reservists.[55]

Directions for future research

Although there are some modest positive findings, certain study characteristics may have acted to increase or decrease reported effectiveness, for example large numbers lost to attrition resulting in underpowered analyses. A UK trial of alcohol screening and brief interventions using the results of this study is imperative. Further examination of the most effective parts of composite programs would facilitate streamlining interventions for best use of resources.[29]

Conclusions and policy implications

There was substantial heterogeneity across studies in intervention and design. Brief interventions are quick, preventative, and can be implemented upstream of acute clinical services to reduce the risk of developing long term alcohol related health and social difficulties requiring clinical treatment but require more investigation in the UK setting. The findings also suggest web-based interventions may have some utility. Resources for technology development, set up and maintenance are required for web-based interventions though being online and self-administered costs and overheads could be minimised. Web-based interventions also allow flexibility with regards to time and geographic coverage.[56]

The findings of this review will benefit UK armed forces personnel by summarizing the evidence base for the effectiveness of alcohol brief interventions relevant to transitioning to civilian life. Alcohol brief interventions can signpost healthier coping strategies.

Furthermore, findings will also benefit service providers by informing decisions on which interventions to fund and develop; and researchers by highlighting future research priorities.

Competing interests

The authors declare they have no conflict of interest.

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