

BRIEF INTERVENTIONS AND MOTIVATIONAL INTERVIEWING

Literature Review and Guidance for Practice



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EXECUTIVE SUMMARY

Brief intervention (BI) and Motivational Interviewing (MI) techniques are a practical way to train health professionals in helping others to change their behaviour. BIs generally refer to opportunistic interventions by non-specialists (e.g. GPs) offered to patients who may be attending for some unrelated condition. Concern has grown among Health Promotion practitioners that the BI concept may now be too loosely-specified, and as such may be used differently by training providers throughout Ireland. There is also a related concern in terms of the structure, content and duration of BI and MI training programmes in order to provide competent practitioners and effective intervention programmes. A literature review was therefore undertaken to help ensure that the way BI and MI is employed by the HSE is based on evidence of effectiveness.

A literature search was undertaken for English language papers published between 2000 and 2010. This identified 2494 papers. Screening criteria was applied to the abstracts or summaries of these papers. The project team refined the inclusion criteria further to include reports which evaluate brief intervention training, including barriers to implementation; reviews of primary studies, primary prevention and risk factor avoidance only; practical 'real life' application of technique (i.e. not researcher administered); interventions in person (excluding computerised interventions). Papers pertaining to patients with established disease; articles which are general reviews of associated issues; studies in which BI is combined with pharmacological and other interventions and group approaches were excluded. This resulted in 28 reviews of BI or MI and 28 evaluations of BI and MI training. A framework was developed to summarise each review paper and training paper. The key findings from the review can be summarised as follows:

- There is considerable variation in the length and type of intervention included in the reviews. This makes comparisons between reviews difficult, and limits the degree to which specific conclusions can be drawn.

- In the absence of a universal definition, the concept subsequently appears to have evolved into a wide range of similar yet differing techniques (such as brief advice, brief interventions, motivational interviewing, adapted motivational interviewing) with each reported study having slightly different versions of each of these techniques.
- BIs and MIs are effective for alcohol, diet, and physical activity, but the impact on smoking is more equivocal, with four reviews reporting a significant effect, one reporting no effect on behaviour, and three giving mixed results.
- Screening tools appear to enhance the chances of brief interventions being successful.
- The impact of different healthcare settings on the effectiveness of BI and MI is difficult to determine as this was not the main objective of any of the reviews.
- In terms of the impact of interventions over time, it was difficult to draw conclusions in many cases as the length of time assessed was not sufficient. The reviews of alcohol based interventions suggest that behaviour changes can be sustained over time, although this was not always the case. Follow up does appear to be important to sustain behaviour changes.
- There currently does not appear to be a 'best practice training programme' to develop the skills required to apply BIs or MI. Each evaluation of training had a unique training programme. However, the review does highlight a number of general principles that should be adhered to by the HSE when developing BI or MI training programmes.
- There were significant variations in the methodologies of the studies of both the training and the reviews of the effectiveness of interventions. Issues such as study design, degree of follow up, and outcome measures employed differed significantly between studies.

The evidence from our review demonstrates the potential of BI and MI. However, it is not possible to provide a specific model of best practice and training. The strength and consistency of the evidence varies between behavioural domains. The reasons why, and under what conditions interventions are and are not effective needs to be established. For these reasons, it is vital that both the training and promotion of BI and MI should be conditional upon systems being put in place to track and assess any benefits in real-life settings. We would like to make the following recommendations for practice to facilitate the future provision of BI and MI and arrangements for training throughout the HSE:

1. A universal definition of BI and MI should be agreed for HSE staff.
2. In planning programmes which promote Brief Interventions and Motivational Interviewing there is a responsibility on each practitioner to understand the theoretical basis for behaviour change; the key elements of the intervention, and the essential characteristics of training to deliver such interventions.
3. The HSE should have a standardised approach to the delivery of BI and MI.
4. A standardised approach to BI and MI training should be employed throughout the HSE. This should involve:
 - a. The development of standardised training manuals.
 - b. Facilitators of such training programmes receiving standardised accredited training.
 - c. Training programmes incorporating pre-assessment of skills, skills practice during the programme and ongoing support to deliver interventions effectively.
 - d. Accrediting training programmes with relevant professional bodies.
5. Existing validated screening tools for alcohol, diet, physical activity and smoking should be reviewed and their appropriateness assessed in terms of applying prior to using BI and MI.

6. A system of follow up and long term monitoring and support of clients that have been counselled using BI or MI should be established. This necessitates the development of an integrated data management system.
7. In relation to alcohol interventions, it appears that sustained interventions and scheduled support over 6 months are most effective. Offers of intervention should be primarily made to those patients who are not seeking treatment for alcohol, and are not dependent drinkers.
8. A preliminary assessment of all those that apply to attend BI and MI courses should be undertaken to ensure that the training meets their needs and that those attending are in a position to practically apply the technique.
9. Systems of ongoing evaluation of training programmes should be developed. These should include an objective assessment of skills and an assessment of the long term impact of the training. Current validated instruments should be assessed e.g. Motivational Interviewing Treatment Integrity Code (MITI) or Motivational Interviewing Skills Code (MISC) to determine if they could be utilised to assess skill levels.

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1. INTRODUCTION

1.1 *Historical Context*

William Miller is generally attributed as the originator of both Brief Interventions (BI) and Motivational Interviewing (MI). A paper from William Miller's research group (Bien et al¹) summarises the history of Brief Intervention studies. They cite the earliest health services research on Brief Intervention for problem drinkers as dealing with the problem of facilitating referral. They further nominate a 1983 study by Kristenson et al as being the first clinical trial "designed to impact drinking behaviour directly".^{1(p.317)} The intervention consisted of counselling by a physician to moderate drinking, with regular follow-up.

Miller's first description of MI was in 1983. The "guiding principle of MI is to have the client rather than the counsellor voice the arguments for change".² After three decades of practice development, the Miller and Rose paper finally looks 'under the hood' of MI to set out what is described as an emergent theory of MI, which includes concepts of empathy and the reinforcement of client change talk.²

Given all these elements, can we now distinguish between Brief Interventions and Motivational Interviewing and other related intervention types?

1.2 *Definitions*

Powell and Thurston³ have attempted to distinguish between a standardised form of brief advice, BI and MI:

1.2.1 **Brief Advice**

Brief advice describes a short intervention (around three minutes) delivered opportunistically in relation to a service user's reason for seeking help. It can be used to raise awareness of, and assess a person's willingness to engage in further discussion about healthy lifestyle issues. Brief advice is less in-depth and more informal than a brief intervention and usually involves giving information about the

importance of behaviour change and simple advice to support behaviour change.

1.2.2 Brief Intervention

BIs provide a structured way to deliver advice and constitute a step beyond brief advice as they involve the provision of more formal help, such as arranging follow-up support. BIs aim to equip people with tools to change attitudes and handle underlying problems. As part of a range of methods, BIs may contain brief advice and may use an MI approach in the delivery.

1.2.3 Motivational Interviewing

MI is described as a process of exploring a person's motivation to change through interview in order to assist them towards a state of action.

Rollnick and Miller⁴ describe MI as

"...a directive, client-centred counselling style for eliciting behaviour change by helping clients to explore and resolve ambivalence. Compared with nondirective counselling, it is more focused and goal-directed. The examination and resolution of ambivalence is its central purpose, and the counsellor is intentionally directive in pursuing this goal."

They go on to propose that:

"...viewed in this way, it is inappropriate to think of motivational interviewing as a technique or set of techniques that are applied to or (worse) "used on" people. Rather, it is an interpersonal style, not at all restricted to formal counselling settings. It is a subtle balance of directive and client-centred components, shaped by a guiding philosophy and understanding of what triggers change."⁴

Although BIs may be offered to patients as a first step before more intensive treatment, more commonly the term is now reserved for opportunistic interventions by non-specialists (e.g. GPs), offered to patients who may be attending for some unrelated condition. Brevity is

likely to be a key feature for GPs and other hard-pressed service providers. The opportunistic offer of advice or help is generally based on an agreement that current patterns and types of consumption or behaviour are becoming problematic – and/or the client is now ready to change that behaviour or set of behaviours.

1.3 Linking Brief Interventions to a Stages of Change Model

The readiness-to-change concept has gained rapid acceptance within Health Promotion and also in many clinical services. The concept is set out in the stages-of-change model developed by Prochaska and DiClemente⁵. Their model identifies the following stages:

1. Pre-contemplation: not intending to change in the foreseeable future
2. Contemplation: seriously thinking about changing in the next six months
3. Preparation: intending to change in the next month
4. Action: individuals have overtly modified their risk behaviour
5. Maintenance: individuals work to continue a healthier lifestyle
6. Relapse: individuals reverting to original behaviour

Practitioners often use a menu of strategies including stages of change to take account of clients' readiness-to-change. They aim to support individuals through BI and MI at each of the stages with the ultimate aim of sustained behaviour change.

This review does not present a comprehensive assessment of the evidence to support the stages of change model as a necessary part of BI or MI as it was outside the scope of this review.

1.4 The Purpose of this Review

Concern has grown among Health Promotion practitioners that the BI and MI concepts may now be too loosely-specified, and as such may be interpreted differently, and may be used differently by training providers throughout Ireland. There is also a related concern in terms of whether the structure, content and duration of training programmes is adequate to provide competent practitioners and effective intervention programmes.

There was therefore a pressing need to examine the research and review literature, to ensure that the techniques employed by the HSE are based on best practice evidence. It is within this context that the literature review was undertaken. The aim of the review was to establish whether BIs and MIs are effective for behaviour change in key health related behaviours and what training is needed for effective interventions.

2. METHODOLOGY

A literature search was undertaken for English language papers published between 2000 and 2010 using a number of databases that are available either from HSE Library Services, University academic libraries and the internet (EBSCO, Ovid, Medline, Pubmed, CINAHL, BMJ, Webfeet, psycINFO, socINDEX, Google Scholar). The following search items were employed to undertake the literature search:

- Brief intervention* technique*
- Brief intervention* training*
- Brief motivational interviewing

This search identified 94 papers. As it was felt that there may be additional relevant papers, the search terms were further expanded to include the terms:

- Motivational Interviewing
- Brief Intervention*

This expanded search produced 5034 papers. Following the removal of duplicates and non English language papers, the search yielded 2494 reports or papers.

Abstracts or summaries for the 2494 papers were then downloaded to the Endnote bibliography management software programme for screening. The project team refined the inclusion criteria further to include the following:

- Reports which evaluate brief intervention training, including barriers to implementation
- Reviews of primary studies
- Primary prevention and risk factor avoidance only
- Practical 'real life' application of technique (i.e. not researcher administered)

- Interventions in person (excluding computerised interventions)

The inclusion criteria excluded papers containing:

- Patients with established disease
- Articles which are general reviews of associated issues
- Studies in which BI is combined with pharmacological and other interventions
- Group approaches

The screening criteria were then applied to each abstract/summary or title (whichever available). The project team noted that the range of behaviours was very broad and as a result agreed to further refine the search to include only the following domains:

- Smoking
- Alcohol
- Physical Activity
- Healthy eating (i.e. not weight management)

In applying the screening criteria to the 2494 abstracts or summaries, a total of 574 reports or papers were selected. A final refining of the screening criteria was applied to include only:

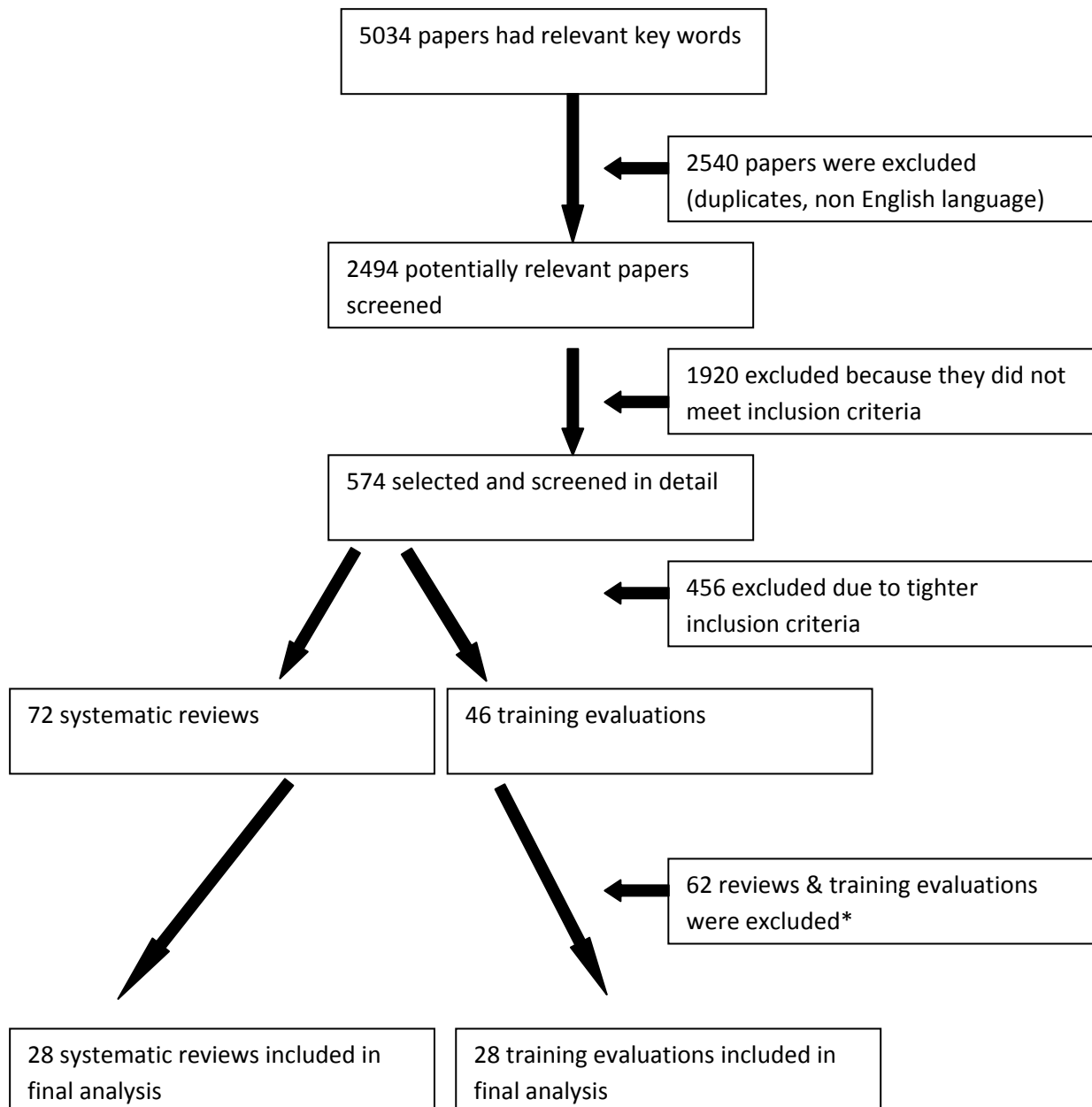
- Systematic reviews of Brief Interventions
- Systematic reviews of Motivational Interviewing
- Evaluations of training on Brief Intervention techniques.

This process identified 72 systematic reviews and 46 papers on training. The systematic reviews and training papers were split into four groups alphabetically, and then divided between five reviewers (the authors). A framework was developed to summarise the review papers and the training papers (see Appendix 1 and 2).

Further exclusions were made for several reasons, the main ones being unspecified or poorly-specified interventions, or in some cases the results were pooled and it was impossible to

extrapolate the results for the domain in question. This resulted in 28 systematic reviews of BI or MI and 28 evaluations on BI Training. A summary of the key papers is provided in Appendix 3 and 4. The process for inclusion in this final analysis for this review is summarised in figure 1.1

Figure 1.1: Summary of Screening process for Inclusion in Review



* Further exclusions were made for several reasons, the main ones being unspecified or poorly-specified interventions, or in some cases the results were pooled and it was impossible to extrapolate the results for the domain in question.

3. REVIEW OF SYSTEMATIC REVIEWS OF BRIEF INTERVENTION AND MOTIVATIONAL INTERVIEWING

3.1 Introduction

A total of 28 reviews were assessed and implications drawn in terms of using the technique within the HSE. The results of the review are grouped under four key behaviours. In addition, a section on other issues is also included to outline reviews that provided analysis of specific issues about the technique itself.

3.2 Alcohol

3.2.1 Overview of Effectiveness

There were 17 reviews which covered alcohol. The majority of reviews of BI and MI overall have shown that the techniques are effective in terms of reducing alcohol consumption.⁶⁻¹³ One review (Cuijpers et al,¹⁴) also reported that the use of BI had a significant effect on mortality rates. However, it must be noted that the technique is not always effective (e.g. Emmen et al,¹⁵ Harvard,¹⁶). In addition, some modified versions of the technique such as adapted motivational interviewing have produced mixed results (Burke et al,¹⁷). The reviews have shown that there are a number of factors that have an impact on its effectiveness. These do need to be considered when applying the technique to alcohol and will now be outlined.

3.2.2 Level of Alcohol Risk

Although definitions of the level of dependence vary between studies, it does appear that the technique is ineffective if an individual is highly dependent on alcohol such as satisfying criteria for alcohol dependence (Raistrick et al,¹⁸). Carey et al⁹ found that interventions were less successful when targeted at high risk groups

and heavy drinkers. In addition the technique is less effective on those seeking treatment (Ballesteros et al⁸) and more effective when applied to those not seeking treatment (Moyer¹⁹). It appears that once a certain level of alcohol dependency is reached, a specialised alcohol treatment service is required (Raistrick et al¹⁸). However, the technique does appear to be effective on heavy drinkers that do not satisfy criteria for alcohol dependence. Raistrick et al¹⁸ found the technique is effective in reducing alcohol consumption of hazardous and harmful drinkers to low risk levels. However Ballesteros et al⁸ found the technique worked better when applied to heavy drinkers compared to moderate drinkers. Whitlock et al²⁰ found that brief multi contact behavioural counselling reduced risky or harmful alcohol use.

These studies suggest that the technique will work best for alcohol use when used opportunistically and on those that do not satisfy criteria for alcohol dependence.

3.2.3 Length and Type of Intervention

There is considerable variation in the length and type of alcohol interventions. For example, Bertholet et al¹⁰ reported on interventions ranging from 5-45 minutes. Ballesteros et al⁸ reviewed interventions lasting 10-15 minutes plus follow up visits of 3-5 minutes. Interventions reviewed by Carey et al⁹ ranged from one 5 minute intervention to numerous interventions lasting up to 28 hours in total. Studies reported by Burke et al¹⁷ ranged from 15 minutes to four hours. There was also variation in the type of intervention ranging from brief advice; screening and brief intervention, motivational interviewing and adapted motivational interviewing (Ballesteros et al.⁸).

From the reviews, results are mixed in terms of the length and type of intervention. Ballesteros et al⁸ found that there were insufficient studies to determine whether extended BI differed in efficacy from BIs. Burke et al¹⁷ however found that longer interventions were more effective. Bertholet et al¹⁰ found that brief interventions of 5-15 minutes plus written materials and giving the opportunity for a follow up visit was more effective than interventions lasting less than five minutes or usual care. Whitlock et al²⁰ found little

evidence to support single brief five minute interventions or single sessions lasting up to 15 minutes. However, if sessions lasting up to 15 minutes were followed up, weekly alcohol consumption was reduced. Raistrick¹⁸ reported that evidence was mixed in terms of whether extended brief interventions were more effective than simple brief interventions.

Although it is difficult to draw firm conclusions in terms of the most effective length and type of interventions, the importance of follow up is emerging from the reviews of studies of alcohol.

3.2.4 Healthcare Settings for Alcohol Interventions

A number of studies did not specify the healthcare settings where brief interventions were undertaken^{17 19} whilst others did not provide an assessment of the importance of setting.^{6-10 14 15} Reviews by Whitlock et al²⁰ and Raistrick et al¹⁸ show that alcohol based brief interventions are effective in the primary care setting. Raistrick et al¹⁸ conclude that the public health impact of widespread implementation of brief interventions in primary healthcare is potentially very large. Brief interventions have also been shown to be effective in Accident and Emergency Departments.^{7 18} Harvard et al¹¹ report that Accident and Emergency Department Interventions are effective in terms of reducing alcohol related injuries, but not in terms of reducing the frequency of drinking. The only reviews that reported on other settings were Raistrick et al¹⁸ and Carey et al⁹. Raistrick et al¹⁸ found that the evidence was inconclusive for hospitals and other medical settings, although was effective in educational establishments. Carey et al,⁹ in reviewing third level colleges found that interventions significantly reduced alcohol use and frequency of drinking.

3.2.5 Impact of Brief Interventions/Motivational Interviewing over Time

There is considerable variation in the length of time assessed by reviews of alcohol interventions. Dunn et al²¹ found no evidence that the effects of motivational interviewing reduced over time. Similar findings are reported by Burke et al¹⁷ for adapted motivational interviewing. Cuijpers et al¹⁴ in reviewing four studies

found a significant effect on mortality at follow up at one two, four, and ten years. Whitlock et al²⁰ stated that one of the studies reviewed reported that reductions in alcohol consumption were maintained for four years. Moyer et al¹⁹ and Nilsen et al⁷ found that the impact of brief interventions was significant at 12 months. Carey et al⁹ however report that whilst reductions in alcohol related problems continue into long term follow up, the impact on alcohol consumption is not significant after six months. Vasilaki et al⁶ found that the impact of motivational interviewing was significant after three months, but not at six month follow up. It is worth noting that Emmen¹⁵ suggests the fading effects of alcohol interventions may be due to the way patients lost to follow up are dealt with. For example some assume that these patients revert to pre-intervention drinking behaviours which could exacerbate fading effects.

The effects of alcohol based interventions can be sustained over time, but this is not always achieved, and care must be taken in designing interventions to help ensure behaviour changes are sustained. Carey et al,⁹ in reviewing studies of interventions to reduce college student drinking report that studies typically involved only one follow up. They recommend that future studies should evaluate maintenance of intervention effects over periods of 6-12 months. It would therefore be important to develop systems to monitor the maintenance of intervention effects.

3.3 Smoking

3.3.1 Overview of Effectiveness

Of the eight reviews included, results overall are mixed in terms of the effectiveness of smoking based interventions. Dunn et al²¹ and Burke¹⁷ in reviewing the same two studies of adapted motivational interviewing and smoking cessation reported mixed effects with only one study having a significant positive effect on abstinence. Riemsma et al²² in a systematic review of 23 randomised controlled trials found only limited evidence of effectiveness when comparing stage based with non stage based or no intervention. They stressed

that this could be due to the way stage based interventions have been used or implemented in practice rather than problems with the model. The methodological quality of the studies was mixed. There were issues in terms of not using validated instruments to assess stage of change, a lack of consistency in the type of intervention employed, and an inadequate length of follow up.

Stead et al²³ in a review of brief physician advice versus usual care reported that brief advice led to a statistically significant increase in the rate of quitting. However, this increase, whilst significant, remained small. Based on 28 trials and 28,000 participants it was found that a brief intervention is likely to further increase the quit rate by 1-3%. Similarly Lai et al²⁴ in reviewing studies of motivational interviewing versus simple advice or usual care reported modest but statistically significant increases in quitting. Gorin and Heck²⁵ in reviewing tobacco counselling reported that receiving advice from any health care provider could produce a small increase in quit rates, with physicians being the most effective. Heckmann et al²⁶ reported in a systematic review and meta analysis of 31 studies of motivational interviewing that motivational interviewing increased the effect size by 45%. On the other hand, a review by Tait and Hulse²⁷ on MI versus standard treatment found the effect size for tobacco use was not significant.

3.3.2 Length and Type of Intervention

Studies of smoking (as with alcohol) are considerably varied in terms of length and type of intervention. For example Dunn et al²¹ reports interventions of 2-5 minutes compared with 30 minutes. Lai et al²⁴ reports on motivational interviews delivered over 1-4 sessions of 15-45 minutes duration. Gorin and Heck²⁵ reviewed the 5 A's model (ask, advise, assess, assist, and arrange) whereas others reported on studies of motivational interviewing (Lai et al,²⁴ Heckman et al²⁶). One review reported on studies using the stages of change model (Riemsma²²).

Gorin and Heck²⁵ found that where duration was recorded, it had no significant impact on effectiveness. Stead et al²³ found that in the 11 trials where interventions were more intensive, the rate of quitting was larger. Nevertheless, differences between intense advice compared to minimal advice remain small. They also note that follow up visits do significantly increase quit rates. Lai et al²⁴ found that motivational interviewing was effective when delivered in sessions of more than 20 minutes per session, with multiple treatment sessions more effective than single sessions.

It does appear that the length and duration of interventions have an impact on effectiveness. However, when compared to studies of alcohol, the influence on the effect does not appear to be as good.

3.3.3 Healthcare Settings for Smoking Interventions

Information is somewhat limited in terms of different settings for smoking based interventions. Stead et al²³ states that Primary Care was the most common setting for the delivery of brief interventions for smoking. Lai et al²⁴ from reviewing two studies found that GP delivered motivational interviewing was more effective than when delivered by other health professionals.

3.4 Diet and Physical Activity

3.4.1 Overview of Effectiveness

There were six reviews on either diet or physical activity, or both behaviours. These have shown overall that the technique is effective in making changes to diet and physical activity levels. Ammerman et al²⁸ in a review of 33 studies reported that brief interventions can improve dietary behaviours. Van Wormer and Boucher²⁹ in reviewing five studies that used motivational interviewing for diet modification found that it was effective in modifying diet when combined with nutritional education. However, they also report that results in terms of weight loss were mixed. In a review of four studies of diet and physical activity problems, Burke¹⁷ found that

adapted motivational interviewing did have an impact compared to no treatment controls, although Burke¹⁷ notes that these findings should be viewed as preliminary due to the small number of studies. Martins and Mc Neil³⁰, in reviewing 24 studies of diet and physical activity report that motivational interviewing was effective in terms of increasing fruit and vegetable consumption, decreasing body mass index, and increasing self efficacy. It also increased physical activity levels, although its impact was not greater than other treatments. The National Institute for Health and Clinical Evidence (NICE)³¹ found evidence from 11 primary studies to suggest that brief interventions in Primary Care can increase physical activity in the short, longer term, or very long term. Hutchinson et al³² reviewed the effectiveness of physical activity interventions based on the trans-theoretical model. This concluded (from the 34 studies reviewed) that the evidence to support the use of the model was inconclusive.

3.4.2 Length and Type of Intervention

The type of interventions range from brief interventions (Ammerman et al,²⁸ NICE³¹), motivational interviewing (Martins and Mc Neil,³⁰ Van Wormer and Boucher²⁹), adapted motivational interviewing (Burke¹⁷), and interventions based on the trans-theoretical model (Hutchinson³²). However, the length of intervention was difficult to determine in most reviews. Ammerman et al²⁸ report that more intensive counselling and counselling directed at higher risk patients produced larger changes than less intensive interventions delivered to lower risk populations. Van Wormer and Boucher's²⁹ review included one to one and over the phone based motivational interviewing with sessions ranging from 15 minutes to 45 minutes, although the importance of length of session was not assessed.

3.4.3 Risk Assessment

The need to identify an individual's level of risk when undertaking an intervention is considered by two reviews. Ammerman et al²⁸ highlight the need to undertake a nutritional needs assessment when using brief interventions to change dietary behaviour. They

suggest that for this to occur, primary healthcare providers will require a practical and valid means of assessing dietary intake. Similarly, NICE³¹ have reported that for physical activity, primary care practitioners should use a validated tool to identify inactive individuals. They also report that a person's needs, preferences, and circumstances should also be considered so that written supportive materials can be developed.

3.4.4 Impact of Interventions on Diet and Physical Activity over Time

The long term benefits of interventions are not addressed in detail by most of the reviews. Van Wormer and Boucher²⁹ state that they were not able to draw conclusions in terms of the long term benefits of motivational interviewing and diet modification, as follow up did not go beyond the treatment period of 3-5 months. NICE³¹ report that brief interventions can increase physical activity in the short, longer term or very long term. They also suggest that physical activity interventions need to be followed up for 3-6 months for changes to be sustained after one year.

3.4.5 Methodological Issues

Martins and Mc Neill³⁰ found that the impact of motivational interviewing was difficult to assess in some studies due to it being combined with other interventions (e.g. attending a weight loss programme in addition to motivational interviewing). In addition, results are limited in terms of long term follow up, an issue recognised by Van Wormer and Boucher²⁹.

3.5 Other Issues

Dunn²¹ highlights that there is a degree of ambiguity in terms of defining interventions. Martins and Mc Neill³⁰ for example state that there is a lack of clarity in terms of the 'active ingredients' of motivational interviewing and the processes leading to particular outcomes. From the reviews it is clear that interventions vary considerably between studies. This makes it difficult to determine the most appropriate content, structure, duration, and degree of follow up

required to produce the best outcomes. It is also important to point out that many studies and reviews of BI and MI studies do not assume or include assessments of the client's stage-of-change.

4. REVIEW OF EVALUATIONS OF BRIEF INTERVENTION AND MOTIVATIONAL INTERVIEWING TRAINING

4.1 Introduction

A total of 28 evaluations of BI and/or MI training were reviewed. A number of themes will now be outlined, discussing their implications in terms of developing training programmes within the HSE.

4.2 Type of Training

The type of training programme varies considerably between studies. No study employed the same training programme, and it was difficult to ascertain the precise content of each training programme. Two studies reported a preliminary needs assessment.^{33 34} Five studies reported that they used a training manual.^{33 35-38} Some training programmes formed part of academic student training programmes,³⁹ whereas others were work based programmes designed for health professionals. The number of training sessions and their duration varied. For example, Carise et al³⁸ noted the length of training was 20-30 minutes while Opheim et al⁴⁰ reported on a four hour programme and Manwell et al⁴¹ evaluated a four day programme. Two studies included follow up reviews or booster sessions.^{42 43} Mentoring and technical assistance for take-home tasks was also offered in some studies.^{42 44-48} A combination of training methods were used including lectures, role play, and group discussions. The level of training that the facilitators had was difficult to ascertain, and their professional background varied considerably.

4.3 Participants

Participants in training varied across studies from students,³⁹ to community based health practitioners,⁴⁴ practitioners in General Practice,⁴⁷ Probation Officers,⁴⁶ Dieticians,⁴⁹ High School staff,⁴⁸ Mental Health Services,⁴⁵ Multi-disciplinary Faculty members,⁴¹

Primary Care staff,³³ community Pharmacists,³⁴ Surgical Interns,⁵⁰ Pre-natal care staff,³⁷ and School Nurses.³⁶

4.4 Practical Application of Training

Acquiring new skills does require practice.⁵¹ It is therefore important that training programmes give participants the opportunity to practice the skills they acquire, and where possible, this skill should be practiced in their own (or similar to their own) working environment. It is also important to establish whether skills are applied effectively to practice. In many studies, the extent to which participants were able to practice the technique is unclear. Three studies did not report on the application of MI post training.⁵¹⁻⁵³ Only two studies^{38 51} involved assessment of participants while applying the technique to their own clients. Others incorporated role play into the training.⁵²

Some studies did highlight difficulties in applying training. Burrell et al³³ reported that a number of participants felt it may not be appropriate for mental health, drug and alcohol services and young people. Others felt they had no contact with suitable clients (Physiotherapist, nursery nurse, family support workers).³³ It would be important that the individual circumstances of those attending BI and MI courses should be reviewed, to ensure that those that are trained have the opportunities to apply the technique in practice. It is suggested that this could be achieved through a preliminary needs assessment as employed by Burrell et al³³ and Fitzgerald et al.³⁴

4.5 Assessing the Effectiveness of Training

Studies have employed a number of different techniques to assess the effectiveness of training. These include feedback from participants in terms of their perceptions of the training content and whether it met expectations,⁴³ perceptions of confidence to implement techniques³³ and observational assessment of skills using 'standard patients',^{44 50} and actual patients.⁴⁹ In some cases observational studies used videos of participants,^{40 49 53} while Burke

et al⁴⁸ used case vignettes. In a number of studies, skills were assessed using validated assessment tools. These included the Motivational Interviewing Treatment Integrity Scale,^{44 54 55} the Motivational Interviewing Skill Code,⁴⁰ the Behaviour Change Counselling Index,⁴⁷ the Helpful Response Questionnaire,⁵⁷⁻⁵⁹ the Alcohol Attitudes and Problems Perception Questionnaire³⁴ and the Competencies Questionnaire.³⁴ One study developed themes from content analysis of participant interviews⁴² and another involved completion of an exam.⁵⁶

The variety of different techniques for evaluation combined with the differences in the training programmes themselves means that comparisons between studies are difficult. A number of studies did not include such an assessment,^{42 43} which limited their usefulness. The need for an objective skill assessment is demonstrated in a study by Miller and Mount⁴⁶ who found that participants' perception of their own skills differed significantly from observational measures.

4.6 Methodological Flaws

A number of studies had methodological flaws inherent in their design, which made it difficult to determine the effectiveness of training programmes. An absence of baseline data in some studies⁴³ meant that it was difficult to determine if any changes were due to the training. A number of studies employed a pre test/post test design recording self-rated understanding of one to one interventions. Only a limited number of studies assessed competence to carry out one to one interventions pre intervention.⁴⁹⁻⁵¹ Only one study used a control group.³⁰ The sample sizes of some studies⁵⁵ was not sufficient to permit the drawing of meaningful conclusions. Miller and Mount⁴⁶ highlighted the problem of bias where participation is not mandatory and participants have a high level of interest in the training. Burrell et al³³ notes that follow up evaluation may be biased towards those who have had a positive experience of those using the technique. High levels of drop out at follow up were a difficulty experienced by a number of studies.^{33 37}
^{44 50} Bennet et al⁴⁵ found that both clients and practitioners were

unwilling to participate in recorded analysis of skills. The time period after the training that the evaluation was undertaken varied considerably between studies. Overall, evaluation periods were relatively short (0-4 months) which meant that the long term impact of the training could not be assessed.

5. DISCUSSION

5.1 Introduction

The project aimed to provide a comprehensive review of research on BI and MI and of BI and MI training programmes across a number of key behavioural domains. It involved a literature search across several databases for reports or papers undertaken from 2000-2010. The key issues emerging from the review of reviews will now be discussed.

5.2 Type of Intervention

There is considerable variation in the length and type of intervention included in the reviews. This makes comparisons between reviews difficult, and limits the degree to which specific conclusions can be drawn. Motivational Interviewing was described by Rollick and Miller⁴ in 1995 as a 'spirit or style'. In the absence of a universal definition, the concept subsequently appears to have evolved into a wide range of similar yet differing techniques (such as brief advice, brief interventions, motivational interviewing, adapted motivational interviewing) with each reported study having slightly different versions of each of these techniques. Whilst some authors have attempted to provide a clear definition; a degree of ambiguity remains, particularly in terms of specifying contact time and the need for follow up (Moyer¹⁹).

5.3 Behaviours

The review has established that the effectiveness of brief interventions does vary by the type of behaviour it is applied to. Overall it can be seen that the technique is effective for alcohol, diet, and physical activity, but the impact on smoking is more varied, with four reviews reporting a significant effect, one reporting no effect on behaviour, and three giving mixed results. Burke et al¹⁷ suggests that behaviours that involve physical addiction may be

more difficult to change. This would help explain why some studies of smoking did not find the technique effective, and also why it has been shown to be ineffective for those highly dependent on alcohol (Raistrick et al¹⁸). An assessment of the level of physiological addiction may help determine whether a brief intervention would be beneficial, or whether it would be more appropriate to recommend that an individual attends a more specialised service.

The need for some form of initial assessment has been suggested by a number of reviews (e.g. NICE,³¹ Ammerman et al²⁸). Screening tools appear to enhance the chances of brief interventions being successful. Existing validated tools should be reviewed and their appropriateness assessed in terms of practical application by health professionals.

5.4 Healthcare Settings

The comparative effectiveness of BI and MI in different healthcare settings is difficult to determine as this was not the main objective of the reviews.

5.5 Impact of Interventions with Time

To have a significant impact on the health of those that access health services, any behaviour changes need to be sustained in the long term. The length of time assessed by reviews varied considerably. The length of time assessed was not sufficient in many cases to draw conclusions. For physical activity there is some evidence to show that interventions can be effective in the short and long term (NICE³¹). The reviews of alcohol based interventions suggest that behaviour changes can be sustained over time, although this was not always the case. Follow up does appear to be important to sustain behaviour changes (e.g. Whitlock et al²⁰). Carey et al⁹ found observed significant effect sizes on alcohol consumption up to six months. At long term follow up frequency of drinking days and alcohol related problems were reduced. There is some evidence to suggest that future studies should evaluate maintenance of intervention effects over periods of 6-12 months

(Carey et al⁹). To ensure that intervention effects are sustained a system of follow up and long term monitoring needs to be developed by the HSE.

5.6 Developing Training Programmes

There currently does not appear to be a 'best practice training programme' to develop the skills required to apply BIs and MI. With many factors varying between studies, it is difficult to draw conclusions in terms of the most appropriate training programme for HSE staff. However, it does clarify the need to develop a standardised approach to BI and MI training throughout the HSE.

The considerable variation in the technique itself may help explain the lack of a 'best practice to training'. However, the evaluation of training programmes does highlight a number of general principles that should be adhered to by the HSE when developing BI and MI training programmes.

In general terms the review suggests that training should incorporate the following components:

1. Pre-assessment of skills.
2. BI and MI theory and practice.
3. Skills practice and recording.
4. Immediate feedback and review.
5. Further practice and feedback.
6. Practice in real-life setting.
7. Follow-up review and re-assessment of skills.

In addition, trainers should be trained using:

1. A standardised training manual.
2. Accredited trainers.
3. Standardised systems of evaluation.
4. Validated assessment tools.

It is also clear that training should involve the practical application of the technique and utilisation of an objective method of assessing skills.

The wide variety of participants that have been trained suggests that the technique can be utilised by a wide variety of staff types within the HSE. The number of staff that could potentially benefit from the training could therefore be large.

It is fundamental that a standardised approach should be employed throughout the HSE using training manuals and trained accredited facilitators. This will facilitate the evaluation of training and help ensure that the best possible outcomes are achieved. Only in this way can the performance of BI and MI training programmes be effectively evaluated in the future. Facilitators also need to receive similar training to ensure that they have developed the core skills to deliver BI and MI training. Standardised training manuals should be developed to ensure adherence to best practice throughout the HSE.

If HSE brief intervention training programmes are to be evaluated and monitored on an ongoing basis, then it would be important that a standardised system of evaluation is developed. It would be crucial that this incorporates an objective assessment of skill, to ensure that those attending training acquire new skills. Utilising

validated assessment tools would be a practical solution to standardising systems of evaluation and performance monitoring on an ongoing basis. It is suggested that current validated instruments should be assessed to determine which if any could be utilised.

There is a need to assess the long term impact of the training. Following up the impact of the training over a longer time period also helps to provide a better understanding of the degree to which training has been incorporated into practice. This has implications in terms of the need for refresher training.

Overall, it is clear that a rigorous research design is required that is able to determine the impact of the training (e.g. pre test/post test, or use of a control group).

5.7 Methodological Issues

There were significant variations in the methodologies of the studies of training and the reviews of the effectiveness of interventions. Issues such as study design, degree of follow up, and outcome measures employed differed significantly between studies. Whilst it is possible to draw generic conclusions from the review, specific issues such as the most appropriate form and duration of intervention, and the type and level of training required to ensure that this can be delivered by health professionals cannot be resolved. There is a need to develop standardised ways of describing interventions, measuring their effects, and reporting outcomes.

6. CONCLUSIONS AND RECOMMENDATIONS

The purpose of this review was to examine the research and review the literature to ensure that the techniques employed by the HSE are based on best practice evidence. The evidence from our review demonstrates the potential of BI and MI. However, it is not possible to provide a specific model of best practice and training. The strength and consistency of the evidence varies between behavioural domains. The reasons why, and under what conditions interventions are and are not effective needs to be established. For these reasons, it is vital that both the training and promotion of BI and MI should be conditional upon systems being put in place to track and assess any benefits in real-life settings. We would like to make the following recommendations for practice to facilitate the future provision of BI and MI and arrangements for training throughout the HSE:

1. A universal definition of BI and MI should be agreed for HSE staff.
2. In planning programmes which promote Brief Interventions and Motivational Interviewing there is a responsibility on each practitioner to understand the theoretical basis for behaviour change; the key elements of the intervention, and the essential characteristics of training to deliver such interventions.
3. The HSE should have a standardised approach to the delivery of BI and MI.
4. A standardised approach to BI and MI training should be employed throughout the HSE. This should involve:
 - a. The development of standardised training manuals.
 - b. Facilitators of such training programmes receiving standardised accredited training.

- c. Training programmes incorporating pre-assessment of skills, skills practice during the programme and ongoing support to deliver interventions effectively.
 - d. Accrediting training programmes with relevant professional bodies.
- 5. Existing validated screening tools for alcohol, diet, physical activity and smoking should be reviewed and their appropriateness assessed in terms of applying prior to using BI and MI.
- 6. A system of follow up and long term monitoring and support of clients that have been counselled using BI or MI should be established. This necessitates the development of an integrated data management system.
- 7. In relation to alcohol interventions, it appears that sustained interventions and scheduled support over 6 months are most effective. Offers of intervention should be primarily made to those patients who are not seeking treatment for alcohol, and are not dependent drinkers.
- 8. A preliminary assessment of all those that apply to attend BI and MI courses should be undertaken to ensure that the training meets their needs and that those attending are in a position to practically apply the technique.
- 9. Systems of ongoing evaluation of training programmes should be developed. These should include an objective assessment of skills and an assessment of the long term impact of the training. Current validated instruments should be assessed e.g. Motivational Interviewing Treatment Integrity Code (MITI) or Motivational Interviewing Skills Code (MISC) to determine if they could be utilised to assess skill levels.

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APPENDIX 1

TEMPLATE FOR SUMMARISING REVIEW ARTICLES

ID:

(1) Author(s)

(2) Baseline measures (e.g. consumption, dependence level, related problems, setting, type of person delivering intervention
How much training they had, client attributes...)
BP, BMI, Cholesterol, BAC and ethanol content, HBA1C

(3) Intervention characteristics (e.g. duration, integrity....)

(4) Outcome measures (e.g. Sessions attended, use/consumption other problem-related behaviours, abstinence days, Blood Alcohol Concentration, Composite index of above)

(5) Findings (inc effect size, significant change on baseline, combination effects, usual treatment plus MI...)

(6) Commentary

APPENDIX 2

TEMPLATE FOR SUMMARISING TRAINING ARTICLES

ID

Study name & Author

Study Target group

Number of starting participants

Number of those who dropped out

Reasons for drop out

Facilitator training

Setting

Training type

Training hours

Methods of assessment

Evidence of applying BI to clients post training

Limitations of the study

Control group

Measures of effectiveness

Commentary

Reviewer's assessment of effectiveness of training

Participant skill development

APPENDIX 3

SUMMARY OF SYSTEMATIC REVIEW ARTICLES

	Domain covered	Setting and Sample	Intervention characteristics	Outcome measures	Findings	Comments raised by original author
Alcohol						
Dunn et al (2001)	Alcohol	Setting: Variety of clinical sites. .	Measured readiness-to-change. Used 'Intensively-trained Motivational Interviewing research interventionist' 10 studies reported training time, average 15 hours Included both individual and group formats Length of intervention ranged from 5 to 360 minutes; typically from 70 mins as enhancement to usual treatment, to around 100 mins in comparisons with no-treatment controls	Use/consumption Other problem-related behaviours Abstinence days Blood Alcohol concentration Composite index of above	69% of studies had at least one outcome with a significant effect size Eight studies reported mixed results on whether MI increases readiness No evidence of reduced effects over time	Substance studies included lots of dependent subjects Some substance summaries combine alcohol and other drug results Few studies reported on the theoretical components of MI, so can't conclude much about how MI might work Commented that 104 minutes of MI is too long for opportunist/clinical application.
Moyer et al (2002)	Alcohol	Brief Intervention vs control in non-treatment seeking samples (34) and BI vs extended treatment in treatment-seeking. Settings not specified.	Only included studies with no more than 4 sessions. Follow-up up to 24 months	Changes in intoxication, consumption, abstinence and related problems	Significant small-to-medium effect sizes compared to controls on composite outcomes and consumption separately, up to 12 months; larger if more severe cases excluded. No significant difference between BI and extended treatment	Concluded that BI is only useful for patients with less severe drinking problems. Nick Heather's commentary on Moyer's paper cautions that real-world effectiveness may not match such efficacy trials.
Burke et al (2003)	Alcohol	Variety of settings, including general practice, hospitals and substance abuse clinics	Focused on AMIs - adaptations of motivational interviewing. Design type: 26 had AMI vs. control, 9 had AMI vs. other treatment, of which 5 had both. AMI format (prelude to further treatment or standalone) . Follow-up: from 4 weeks to 4 years. Length of intervention (total mins) Longest follow-up noted.	Studies measured: Blood alcohol content Drinking frequency, abstinence and drinking days Alcohol-related problems Cigarettes/day Physical activity score Blood Pressure BMI Cholesterol levels Glycemic control Clinically significant impact Effect of other moderator variables Sustained efficacy Attrition (% completion to follow-up) Efficacy adjusted for attrition Setting: Miller's clinic vs others (to check for investigator allegiance: see commentary)	Overall 51% improvement from AMI (vs 37%) Only 11/30 studies showed any statistically significant effect size None of the studies comparing AMI with other treatments showed sig extra effect Drugs and diet most effect, then alcohol Smoking no effect AMI effects do not fade sig. over time Accounting for attrition reduces effect size estimates	AMIs may be no more effective than other treatments but are cost-effective AMIs don't seem to increase motivation any more than other treatments so not clear how they work Investigator allegiance effect shown (i.e. trials are more positive when carried out by enthusiasts)

	Domain covered	Setting and Sample	Intervention characteristics	Outcome measures	Findings	Comments raised by original author
Ballesteros, et al. (2004a)	Alcohol	Excluded alcohol dependant individual. 13 studies. 4353 participants. 18-70 years. Only 3 of the studies were on non treatment seekers. Setting: primary care	Control groups: no specific advice on alcohol. Minimal intervention lasting 3-5 mins but without stressing strategies to reduce consumption . BI , 10-15mins with specific advice and strategies to reduce consumption + f/u visits of 3-5 mins. Extended BI (EBI) same as BI but longer reinforcement sessions of 10-15 mins each. Ten studies presented data at 12 month f/u.	Measurement = change in the proportion of hazardous drinkers at 6 & 12 months.	Results support efficacy for BIs for hazardous drinkers in PC. Less efficacious in moderate drinkers. No clear evidence of dose effect relationship linking intensity of BI with outcome. Simple advice not better than usual care. Insufficient studies to tell whether Extended BI differ in efficacy from BIs. Overall 11% difference in success between BI and usual care. The review supports the moderate efficacy of BI.	Assumption that those lost to f/u did not decrease their alcohol consumption. Subjects and physicians were paid in 2 of the studies. 2 of the studies which included heavy drinkers & moderate drinkers had the most influence on the overall estimate of BI efficacy.
Ballesteros J, Gonzalez-Pinto A, Querejeta I, Arino J. et al (2004b)	Alcohol	Excluded studies that did not separately report results by gender. 7 studies. 2981 individuals.	control = no intervention beyond assessment of consumption, Minimal intervention lasting 3-5 mins but without stressing strategies to reduce consumption . BI 10-15 mins with specific advice and strategies to reduce consumption + f/u visits of 3-5 mins. Extended BI (EBI) same as BI but longer reinforcement sessions of 10-15 mins each.	measurement = changes in alcohol consumption, ie, the Quantity of typical weekly alcohol consumption / and the frequency of drinkers who reported consumption below hazardous levels after the intervention.	Effect size was practically identical for men /women who drink at excessive levels. The standardised effect sizes for the reduction of alcohol consumption were similar in men and women. The frequency of individuals who drank below harmful levels was also similar for men and women.	
Whitlock et al (2004)	Alcohol	Review of 12 systematic reviews of alcohol based interventions in primary care. Included studies assessed for quality based on author consensus. Studies were randomised or non randomised controlled trials. Studies of adults aged 12-70. Delivered by clinicians, health professionals, and research staff. Clients appear to be identified using alcohol screening instruments.	Behavioural counselling interventions, followed up at 6-12 months. Looked at very brief interventions (5 mins), brief interventions (15 mins), and brief multicontact interventions (15 mins plus follow up contact).	Recorded average number of drinks per week and binge drinking	Overall studies reported a reduction in alcohol consumption. One study reported that this was maintained for 48 months.	Given the system supports for most trials, to achieve positive results in practice, a similar level of support would be required such as 1. commitment to planning 2. allocation of resources and staff to identify harmful drinking among clients, and 3. delivery resources (such as clinician training, prompts, materials, reminders, and referral resources).
Stoffel and Moyers (2004)	Alcohol	Several different types of interventions for people with substance abuse disorders.	Looked at brief interventions and motivational interventions. Reviewed studies that had Intervention and control groups, and brief intervention versus full intervention. Duration and follow up varied between studies.	Baseline measures, in some studies these were utilized to undertake a meta analysis. Recorded alcohol consumption, binge drinking, hospitalization. Studies assessed for quality using a specially developed tool	Brief intervention and motivational interviewing studies have been shown to be effective in reducing alcohol use.	Literature review of a number of different types of interventions for people with substance abuse disorders. Contains several systematic reviews.

	Domain covered	Setting and Sample	Intervention characteristics	Outcome measures	Findings	Comments raised by original author
Emmen et al (2004)	Alcohol	Brief Intervention for drinking in hospital setting or in-patient clinic setting. Delivered by physicians, psychologists, nurses Selected studies with 'no-intervention' control	Duration 5-20mins or 30-75 mins	Alcohol consumption in grams/week Difference between consumption at baseline and follow-up	One study found significant effect but only 2 month follow-up Loss to follow-up from 9-50%	The (8) studies were too heterogeneous to allow pooling of data. Evidence for effectiveness in general hospitals was "inconclusive"
Cuijpers et al (2004)	Alcohol	The effects of Brief Interventions on mortality. BI compared to no intervention in 32 studies, 4 with verified mortality rates. Only studies of non-treatment seeking subjects. GP/therapist/nurse delivering intervention	Used Moyer's specification of BI. No intervention time was studied as it was not always specified in the studies..	Proportion of sample dying during average year of follow-up	33 deaths in intervention groups compared with 46 in controls Effect size in the 4 verified studies favoured intervention but effects across the others were not significant.	Estimated 23-31% reduction in deaths but small number of studies
Raistrick et al (2006)	Alcohol	Review of 56 controlled trials, and 14 meta-analysis/systematic reviews.	Brief interventions of various forms delivered in a variety of settings	A variety of measures employed including alcohol consumption, excessive drinking, and alcohol related problems	Brief interventions are effective in reducing alcohol consumption among hazardous and harmful drinkers which lasts up to two years, although booster sessions may be required after this. There is no evidence that opportunistic brief interventions are effective among people with more severe alcohol problems who should attend specialist treatment services. Opportunistic brief interventions delivered to hazardous and harmful drinkers in primary care are effective. Findings were inconclusive for General Hospitals. Brief interventions have been shown to be effective in Accident and Emergency Departments. Results are mixed for other medical settings whilst appear effective for educational establishments. Simple brief interventions (5 mins) consisting of simple structured advice are effective for hazardous and harmful drinkers encountered in health settings. There is mixed evidence on whether extended brief interventions (20 minutes) in healthcare settings add anything to the effects of simple brief interventions.	Opportunistic brief interventions delivered to hazardous and harmful drinkers in primary care are effective in reducing alcohol consumption to low risk levels. The public health impact of widespread implementation of brief interventions in primary healthcare is potentially very large.

	Domain covered	Setting and Sample	Intervention characteristics	Outcome measures	Findings	Comments raised by original author
Vasilaki et al (2006)	Alcohol	Compared Motivational Interviewing with no treatment, and with other treatments 7 college studies; 6 in outpatient community settings; 5 in ER or treatment rooms, 2 in drugs agencies.	Duration of intervention from 15 to 240 minutes	'Various' instruments such as Brief Drinker Profile and drinking diaries. Variety of consumption measures, including standard drinks per day, per week or number of standard drinks per drinking occasion	Significant effect sizes when compared with no treatment or other treatment The effects of MI compared to no treatment were greater at the first follow up than the second follow up Effects of MI compared to no treatment were more significant when individuals with more severe problems were excluded. Significant aggregate effect size for MI versus other treatments, plus significant individual effect size in all but one study. MI is effective for treatment seeking and non treatment seeking individuals. Effect size persisted to three month follow-up but was not significant at 6-month follow-up The MI element of 'Promoting self-efficacy' seems not to have been used	MI is an effective intervention for reducing alcohol consumption. It appears that with time control groups catch up in terms of their impact, as opposed to MI impact returning to baseline. (Of the 2767 participants, 996 were dependent drinkers)
Carey, et al (2007)	Alcohol	62 RCTs. 13750 college students. 53% males. 47% female. Retention rate of 75%. Intervention was delivered by professional in training (66%), professionals (21%) peers (18%) or paraprofessionals (12%). Setting: College	Most studies evaluated two intervention conditions. Dosage across all studies was estimated. Follow-up generally at 6 weeks, 6 months and 12 months.Face to face intervention by facilitator to an individual or group (70%) computer or print (22%) and combination (7%). Intervention 50 mins x 2 sessions. Computer sessions were 15mins x 1 session	Interventions significantly reduced alcohol use, freq of drinking, peak BAC and related problems.Effects reduced at follow-up (27-195 wks). changes in consumption quantity, drinking frequency, indicators of intoxication, negative consequences resulting from drinking.	Students who received risk reduction interventions subsequently engaged in less extreme drinking behaviour than students in the control (reduced the quantity and frequency of drinking). Interventions were less successful when targeted at high risk groups & heavy drinkers. Effect size diminishes over time. Effect size on consumption ceases to be significant beyond 6 months.	Alcohol risk reduction interventions reduce alcohol related problems (social, legal, physical, academic). Reduction in alcohol related problems takes longer to emerge but continues into long term follow-up. Interventions delivered to individuals rather than groups, and interventions that used MI, provided feedback, normative comparisons, and included decisional balance were more successful at reducing alcohol related problems than a range of comparison conditions.
Harvard A (2008)	Alcohol	13 Intervention studies (10 RCTs, 2 cohort studies 1 non RCT. Setting: Emergency Room Departments;	Duration: Ranged from one session of counselling (5-60 mins); Motivational interviewing; Laptopbased interactive ; Personalised computer-printed information; Generic patient information handouts. Integrity: Only RCT's were pooled in meta-analysis. CDC Instrument and Cochrane review checklist used to appraise studies for inclusion.	Outcomes assessed varied: Quantity/frequency of alcohol consumption; frequency of heavy drinking; negative drinking consequences; alcohol related injuries. Standardised mean differences for continuous outcomes; (Frequency of alcohol consumption or binge drinking and drinking consequences. Results pooled using fixed effects modal. Few studies reported effect sizes or enough data to calculate effect sizes	ED based interventions decreased the likelihood of having an alcohol related injury in the following 6-12 months compared to control, but did not significantly decrease the frequency of drinking at 12 months, frequency of heavy drinking at 3 months, freq of heavy drinking at 12 months or drinking consequences at 6-12 months	Concluded that BI ED based interventions reduce alcohol related injuries but evicence about their effects on frequency of drinking, heavy drinking or drinking consequences were inconclusive.

	Domain covered	Setting and Sample	Intervention characteristics	Outcome measures	Findings	Comments raised by original author
Nilsen et al (2008)	Alcohol	12 studies of Brief Interventions with injury patients Measured alcohol intake, drink-related risks and injury frequency. BIs variously delivered by nurses, doctors, students, research assistants	A 'flexible' definition of BI was accepted. Intervention goals and details are specified.	Repeated from baseline; also a few extras, e.g. completion rates.	11 studies showed significant effects of BI 5 failed to show a significant difference between treatment conditions No study showed a stepwise effect (more intervention giving more effect)	Includes three studies that used computer-generated feedback And three studies that did not use control groups but compared BI groups of varying intensity. The authors point out that we still need to theorize the causal chain between intervention and outcome. They also caution that the Emergency Department may not be best place for BI
Web et al (2009)	Alcohol	Variety of work based interventions including brief interventions. Recorded intervention type, age and gender (1 study). Reviewed several study designs including RCT, time series, quasi experimental design	Studies involved 1- 3 interventions	Outcome measures of each study reported individually due to wide variety of methods used to collect data on alcohol consumption..Self report measures of alcohol consumption; quality assessment of quantitative studies.	Findings of each study reported individually. Overall it is reported that brief interventions may have potential to produce favourable results.	Systematic review of 10 work place alcohol interventions published between 1995 and 2007. Weaknesses across all studies were a lack of exposure to the intervention, and contamination of the intervention due to changes in work place policies. These have implications for the credibility of the study results. There was considerable variation between studies which meant comparisons were very difficult, if not impossible.
Bertholet, et al (2010)	Alcohol	19 trials involving 5639 individuals. Mostly GPs delivering intervention. Clients were adults. Male & female. One study was > 65 yrs. Studies conducted in OPD of clients who were actively attending a PC centre. Review excluded alcohol treatment seeking patients, hospital ward & EM studies.	Intervention involved face to face individual sessions. Interventions described as BI or MI + or - reinforcement sessions. FU 6-18 months. Interventions 5-45 mins. Control intervention in 6 studies consisted of up to 5 mins of advice. The remaining 13 studies had no intervention or usual care as the control group.	Review measured changes in alcohol consumption. Effect size was measured in terms of mean net reduction in alcohol consumption (gms ethanol / week). 3 studies reported health care utilisation measures to test the impact of BI on healthcare costs.	Pooled results show BI effective for men & women in reducing alcohol consumption @ 6 & 12 months. BI from 5-15 mins + written material + opportunity for f/u visit more effective than no intervention / usual care / intervention <5mins/. Evidence of other outcome measures was inconclusive.	A scoring system for methodology quality was developed and used. Assumption that those lost to f/u did not decrease their alcohol consumption. No reported negative effects of BI.

	Domain covered	Setting and Sample	Intervention characteristics	Outcome measures	Findings	Commenst raised by original author
Diet						
Ammerman et al. (2002)	Dietary	33 studies. Primary care patients. Setting: primary care providers, primary care referral clinic, research clinic, mailings or computer generated messages and intervention materials.	Intervention delivered by primary care provider, secondary referrals eg dieticians, office staff to provide follow up telephone calls or mailings, computer tailored newsletters, automated telephone systems. low intensity - intensive intensivity interventions, interventions using mailed or computer generated materials. .	Dietary assessment / nutritional assessment. Studies employing 3 or more counseling elements were more effective than those employing fewer elements.	BIs can improve dietary behaviours. More intensive counseling and counseling directed at higher risk patients produced larger changes than less intensive interventions delivered to low risk populations.	To determine nutritional risk and need for counseling intervention, primary care providers need practical and valid means of assessing dietary intake. Instruments that can be scored simply and that guide providers to offer food based rather than nutrient-based counseling are particularly useful.
Burke et al (2003)	See Burke et al above					
Van Wormer and Boucher (2004)	Diet	Review of five studies using motivational interviewing for diet modification (RCTs and pre test-post test design).	Standard care versus 1-2 intervention types.	Studies graded using ADA evidence grading system. Changes in baseline summarized for each article. Recorded number of patients, gender, and respondent type. Measures included blood pressure, lipid profile, weight, sodium intake, alcohol intake, BMI, fat intake, fruit and veg intake, attendance at group sessions, stage of change	Significant benefits were observed across several variables including reduced energy from fat, reduced sodium intake, increased fruit and veg consumption. Results for weight loss were mixed	MI used in combination with nutrition education is at least moderately efficacious for facilitating diet modifications, offering an advantage beyond standard education alone. MI is a scalable treatment that can be implemented in brief, convenient forms of delivery. Long term benefits however cannot be ascertained as follow up did not go beond the treatment period.
Martins and McNeil (2009)	Diet and Exercise, and others	Includes 24 empirical studies in relation to diet, exercise, in diverse settings and with many different populations	Length of intervention, fidelity measures	Focused particularly on attrition rates and length of follow-up	Supports the effectiveness of Motivational Interviewing in relation to diet and exercise across a range of measures. Patients who received MI report increased self-efficacy and demonstrated decreased Body Mass Index.	Good summary of issues in relation to integrity and length of treatment and active ingredients of MI. Suggests that training and support needs to be ongoing Unclear whether longer intervention leads to greater behaviour change
Physical Activity						
NICE (2006)	Physical activity	physical activity level. Intervention delivered by primary and community based professionals. 11 studies. Setting: Primary Care	Any brief intervention involving verbal advice, encouragement, negotiation or discussion with the overall aim of increasing physical activity delivered in a primary care setting by a health or exercise professional, with or without written support or follow-up	increases in physical activity; Validated and self report (non validated)	There is sufficient evidence to recommend the use of BI in PC. PC practitioners should use a validated tool to identify inactive individuals, should take into account the persons needs, preferences and circumstances, provide written supportive materials, follow up for 3-6 months is required if the for the effect to be sustained at 1 year. Evidence from eleven primary studies (6 individual RCTs, 2 cluster RCTs, and 3 controlled non-randomised trials) suggests that brief interventions in primary care to increase physical activity can have short, longer term or very long term effects.	

	Domain covered	Setting and Sample	Intervention characteristics	Outcome measures	Findings	Comments raised by original author
Hutchinson et al (2008)	Physical activity	Not clear what baseline measures were taken in studies. Assumption: assessed stage of change, process of change, self-efficacy for change, level of knowledge Fitness assessment carried out in some studies. Setting: Doesn't specify setting	34 studies (Predominantly RCT's) reported on the efficacy of 24 different TTM-based Physical activity behaviour change interventions. Techniques: Distribution of TTM-based written information on PA (66%) PA counselling based on the TTM (71%) Computer generated PA feedback (8.3%) Telephone advice (12.5%) Control conditions - routine care by physicians and delivery of non TTM based PA information. Duration: 29% brief intensity), 38% medium (Medium = and 29% intensive interventions. Brief = Single delivery of intervention material such as single mailing of written information or a one-off counselling session; Medium = Duration 1-3 months and involved more than one delivery of intervention material Intensive = > 3 months and involved multiple contacts or more than one delivery of material. Different dimensions of TTM (Stages of change, Process, Decisional Balance, Self-efficacy) reported in studies - 29% referred to all 4 dimensions.	not clearly specified	Short term finding (<6 months) - 75% of studies reported a significant effect of TTM based interventions vs control in terms of stage progressions, activity levels or both. Long term findings (> 6 months) - 25% reported a significant effect of TTM based interventions vs controls. Need to treat these results with caution as majority of studies did not use all the 4 dimensions of the TTM model. Only (7 studies) 29% of interventions used all 4 dimensions of TTM. 6 reported significant short term findings and 1 significant long and short term findings. Intensive and medium intensity interventions were effective in short term (86% and 89% of studies) vs 57% of brief interventions.	Not possible to draw conclusions regarding efficacy of TTM-based interventions. Interventions that do not address all dimensions of TTM may be as effective. Intensity may influence effectiveness.
Smoking						
Dunn et al (2001)	See Dunn et al above					
Burke et al (2003)	See Burke et al above					
Riemsma et al (2003)	Smoking	Systematic review of 23 RCTs of smoking interventions. Recorded number of participants, setting, age, gender, type of respondent.	Reviewed stage based versus non stage based versus no interventions.	Reviewer classified Studies classified as mainly significant, mixed outcome, and no significant differences. Recorded self reported abstinence in previous 24 hours, percentage smoking within 5 minutes of waking, attempts at quitting, number of cigarettes cut down.	8 trials showed significant differences, 12 showed no significant differences, and 3 studies showed mixed outcomes	Found limited evidence of effectiveness. Stressed that this could be due to the way stage based interventions have been used or implemented in practice rather than problems with the model. The methodological quality of the studies was mixed. There were issues in terms of not using validated instruments to assess stage of change, a lack of consistency in the type of intervention employed, and an inadequate length of follow up.

	Domain covered	Setting and Sample	Intervention characteristics	Outcome measures	Findings	Commenst raised by original author
Tait and Hulse (2003)	Smoking	Systematic review of 11 studies using brief interventions (usually a motivational intervention) for alcohol, tobacco, or other drugs among adolescents.	MI versus standard treatment, plus no treatment. Follow up period varied between 1 month -36 months. Recorded age, gender, type of subject (e.g. smoker, substance user)	Behaviour changes from baseline used to calculate effect size. Variety of behaviour measures such as cigarettes per day, days using drugs.	The effect size for tobacco was not significant.	It was suggested that adolescents may view the long term impact of smoking versus alcohol differently, which may explain why BI is less effective for smoking among this age group. Data on the type of intervention is ltd, but there appears to be considerable variation between studies. It is unclear which studies (if any) employed the stages of change model. The way effect size was calculated (assuming zero for missing data) would have underestimated the impact of interventions.
Gorin and Heck (2004)	Smoking	Primary and in-patient care settings Nurse/Physician/Other/Team Studies outside USA were excluded	Examined the 5A's components(Ask Assess Advise Assist Arrange), also examined the transtheoretical model in in 10 studies	Studies recorded smoking prevalence and cessation rates at 3/6/9 months, and examined differences between intervention and control groups on cessation rates	Comparison of efficacy between providers: physicians and teams had significant effect but dentists and nurses did not Physicians were significantly more effective than teams The 5A components did not significantly affect cessation rates	Suggestion that further training for nurses is warranted
Stead et al (2008)	Smoking	The most common setting for the delivery of brief intervention was primary care. However, this review did not review which settings were most effective for the delivery of BIs . Data from 41 trails and 31,000 participants. Setting: mostly Primary Care	Brief advice versus no advice (usual care). Minimal Intervention was defined as: Advice was provided with or without a leaflet during a single consultation lasting less than 20 mons plus up to one follow-up visit. Intensive intervention was defined as a consultation longer than 20 mins, use of additional materials other than a leaflet, or more than one follow-up visit.	Abstinence from smoking after at least 6 monyhs follow-up	Pooled date from 17 trials on Brief Advice versus usual care detected a statistically significant increase in the rate of quitting. There were 11 trials where the intervention was intensive in nature. The results from these trails showed a greater effectiveness in the rate of quitting, however the advantage of intensive advice over minimal advice was small. There was also a small benefit of follow up visits in that it slightly increases the quit rates. Motivational advice appeared to increase the likelihood of making a quit attempt.The results confirm that brief intervention is likely to further increase the quit rate by 1-3%	Subjects lost to follow-up were counted as smokers

	Domain covered	Setting and Sample	Intervention characteristics	Outcome measures	Findings	Comments raised by original author
Lai et al. (2010)	Smoking	14 studies involving 10,000 smokers. Setting: PC, screening clinics, OPD, Hospitals, participants home.	The review reviewed MI which was delivered over 1-4 sessions of 15-45 minutes duration. Sub group analysis suggested that MI was effective when delivered in sessions of more than 20 mins per session. Multiple treatment sessions were slightly more effective than single sessions. The evidence for the value of follow up supportive telephone contacts and supplemental self help materials was unclear.	Abstinence from smoking after at least 6 months follow-up	MI versus usual care yielded a modest but significant increase in quitting. Sub group analysis suggested that MI was effective when delivered by Primary Care Physicians and by trained counsellors. MI delivered by GPs had a larger effect compared with nurses, counsellors, or research staff. (this finding is based on 2 studies so it should not be overstated) This finding may be attributable to the long term doctor – patient relationship within the community as to the benefits of MI. Sub group analysis suggested that MI was more effective when delivered in the primary care setting. This may be attributable to the long term doctor patient relationship.	Subjects lost to follow-up were counted as smokers
Heckman et al (2010)	Smoking	31 studies were included in this review which included data on 33 RC groups and 34 MI groups. Studies included adolescents, adults with chronic physical or mental illness, pregnant/postpartum women and other adults. Mean participant age was 35 years, 68% of participants were female Providers: Counsellors, therapists, staff/interventionists, nurses/midwives, mixed, psychologists, physicians, health educators and	Mean duration of MI interventions (reported for 32 MI arms) was 101 minutes and most combined MI with some additional intervention including personalised risk feedback, educational leaflets, other types of intervention and multiple other interventions. 50% of MI included some fidelity check e.g. video -recording or observer rating, but many were minimal or not well described. 50% included pharmacotherapy. Control condition was brief advice plus some written materials.	Duration of abstinence. Abstinence duration at 4-8 weeks inclusive, 10-12 weeks inclusive, 22-26 weeks inclusive and 52 weeks.	Overall, MI had 45% greater odds of being abstinent at follow-up evaluation than control participants. Analysis of the trials showed an overall OR comparing likelihood of abstinence in the motivational interviewing vs control condition of OR 1.45 (95% CI 1.4 -1.83). CI's suggest that MI did not vary significantly with timing of follow-up, whether individuals were treatment or non treatment seeking or by sex.	Studies that use Carbon monoxide verification tended to have larger MI effects, however fidelity was inadequately assessed across most studies. Slight publication bias in this paper. Findings suggest that MI a smoking cessation approaches can be effective for adolescents and adults.

APPENDIX 4

SUMMARY OF TRAINING ARTICLES

Author (Year)	Domain	Sample and Setting	Facilitator training	Description of Training delivered	Methods of assessment	Measures of effectiveness	Commentary
Kennedy et al (2004)	BI, Alcohol and Drugs	No of participants: 293 (118 prenatal staff trained & 175 staff on the brief intervention) (87 completed screening training, 130 completed BI training); Dropouts = 76 Control group: No Setting: Practice based in 4 community health centres, network of multi-specialty private practices and a teaching hospital.	The ASAP Project's physician expert trainers conducted training on alcohol and drug use in pregnancy, staff attitudes, and screening and intervention techniques for all site staff ranging from clinicians to case managers.	Training on alcohol and drug use in pregnancy, staff attitudes, and screening and intervention techniques fro all site staff, ranging from clinicians to case managers. Most training was conducted in 2 sessions by separate physician-trainers (1 x Screening and Prevalence & 1 x BI) during regular staff meetings. All sites encouraged to include all staff including admin	Self administered questionnaires only -	Results of self administered questionnaire including evidence of applying BI / MI to clients post training	Screening and brief interventions for alcohol use can be delivered effectively within a routine prenatal care visit by prenatal staff by utilising and building on existing office systems with practice staff, screening for any use not only at risk use, providing training with skills building sessions and information delivered by physicians, offering easy to access community treatment resources and providing ongoing technical assistance.
Shafer et al, (2004)	MI and substance abuse	Substance abuse clinicians No participants = 351; dropouts = 259 Control group:No	Unclear	5 video workshops at 19 sites. Involved lecture, demonstrations, small group activities at reception sites and homework assignments. Duration: 15 hours over 5 months	Pre test/post test within subjects design.	Knowledge and skills assessed using validated instruments. 9 respondents videoed their counselling at 3 stages which was evaluated using MISC.	Some improvement in MI proficiency observed although not always statistically significant. Small sample size limited this study.
Burke et al. (2005)	MI, Substance Abuse	High school staff members who would be most likely to counsel students regarding substance use issues; Control group: No Setting: On Job training		Knowledge and skills in screening and MI for substance misuse in 2 high schools in Boston. Duration: Series of half day training sessions & an additional follow up session for a total of 12 hours. Miller & Rollnick book supplied 1 month in advance of training.	Brief written case vignettes to exemplify how had applied what had learned about substance abuse screening, BI and MI. Self Assessment-teaching evaluation form after session 3 & discussion around their response to the training	Participant feedback on process and content. No evidence of applying BI / MI to clients post training.	Positive feedback in terms of use of role plays, spread of time line of training, comfort levels in discussing substance use and self reported competence in using CRAFFT screening tool, learning on referral pathways for teenagers, strengthened linkages between school and medical services and greater understanding from both sides

Author (Year)	Domain	Sample and Setting	Facilitator training	Description of Training delivered	Methods of assessment	Measures of effectiveness	Commentary
Castleman et al (2005)	BI, Tobacco	Middle and High school Nurses - training in BI for Tobacco use. No of participants = 34 Control group: No Setting: On Job training	The Interdisciplinary faculty Learning Group represented the professions of Dentistry, Medicine, nursing and were mentored by an academic dentist.	School based practice. Educational, Screening & BI "Steps to Change" toolkit Duration: Not stated	Client Feedback Practitioner Feedback	Process implementation, anecdotal feedback. No evidence of applying BI / MI to clients post training.	Efficacy not measured, Positive interdisciplinary and partnership building outcomes only reported
Corelli et al. (2005)	BI, Tobacco	Doctor of Pharmacy Students (First / Second Year) who had received comprehensive tobacco cessation training as part of their required pharmacy coursework . No of participants: 492 Control group: No Setting: Students	Not stated - assumed Curriculum provider in University	Tobacco cessation training Duration: 6 x Core Module sessions (1 hour each) (minimum 6 - 8 hours) and optional modules. Hours varied by University	Pre-training survey immediately prior to training & e post training survey following final module assessing quality of counselling and likely increase in number will counsel.	Overall ability, 5 competency facets of tobacco cessation counselling (5A's), Self efficacy for counselling. Impressions of curriculum content & applicability, general attitudes concerning the role of pharmacy profession in TC and opinions on tobacco sale. No evidence of applying BI / MI to clients post training	After training respondents reported improvements in perceived ability to help patients quit and self efficacy. 87% indicated that the training will increase the number of patients that they counsel and .97% believed it will increase the quality of their cessation counseling
Burrell et al. (2006)	BI, Alcohol	Primary Care Professionals; 35% Community Healthcare, 13% Drug & Alcohol Services, Youth Services, Sure Start, 11% Mental Health services, General Practice and Hospital based staff. No of participants = 60; 23 dropouts (Indicated had not used the intervention) Control group: No Setting: On Job training	3 of the training sessions were conducted by a trainer unfamiliar with the content of the training pack whilst the fourth was delivered by a member of HIT involved in the training packs development.	Alcohol BI Training Pack. Duration: 4 x 1 day pilot sessions for the facilitators unfamiliar with the pack,	Focus group, pre and post training questionnaires. Measured elements of training plus confidence in implementing and examples of how used technique.	Self rated - Questionnaires and focus group . Satisfaction with training and delivery, Knowledge of alcohol issues and use of BI, Confidence in delivering screening tool and BI, Appropriateness of the Intervention, Appropriateness of BI materials.	Course content and relevance rated as excellent or good by the majority of participants. Following the training 78% claimed that their confidence in implementing the brief intervention was high or very high.

Author (Year)	Domain	Sample and Setting	Facilitator training	Description of Training delivered	Methods of assessment	Measures of effectiveness	Commentary
Manwell et al (2006)	MI, Alcohol	Multi-Disciplinary Faculty members - Schools of Medicine, Nursing, Allied health, social work, pharmacy, dentistry, psychology & public health plus all the above from the Military Medical Centre site also. Control group: No Setting: Inter-disciplinary Faculty Development Model - 6 sites.	Experienced substance abuse educators and researchers taught the course. Approx 4 per course from dept of Family Medicine Research Program, local educators and clinicians and alcohol researchs from other universities. All expertise in small grp facilita	2 x 2 day courses for 4 sites, 1 x 2 day training 2 sites with mentoring and technical support	Pre course and post course interviews, plus standardised patient clinical performance assessments pre and pos training to measure patient screening skills, brief counselling skills, and MI skills.	Focus on behavioural outcomes that represented acquisition and application of course materials by participants, development of clinical skills and broader impact of course participation on faculty development through departmental and interdepartmental act. No evidence of applying BI / MI to clients post training.	Increases frequency and depth of reflections, reduced communication roadblocks and closed question usage. Students showed increases in BMI knowledge, interest in the approach, confidence in ability to use BMI and commitment to incorporating BMI skills in future medical practice
Mounsely et al. (2006)	MI	Year 3 medical students Control group: Yes - SP's or fellow students Setting: Medical school	Role-play and training sessions developed with the assistance of a psychologist with expertise in MI. Principal coder and investigator attended a 3 day MITI users course and carried out 20 hrs of practice with tapes	RCT comparing the use of SP's with student role-plays in teaching MI to Year 3 Medical students who had completed a 1 month family medicine clerkship. Day 1 of clerkship includes a workshop on MI. Control group interview fellow students	MITI treatment code	MITI - 6 measures of effectiveness: Empathy, MI spirit (autonomy, evocation, collaboration), MI adherence (asking permission, affirmation, emphasis on control and support), MI non-adherence (advice, confrontation & direction); types of questions used. No evidence of applying BI / MI to clients post training	Group with MI training asked more open questions, fewer closed questions, summarized, affirmed and emphasised patient control more often and directed and confronted less. 4 hours insufficient to bring students to a high level of competence in MI
Rubak et al (2006)	MI	GP's n = 71 Control group:Yes Setting: GP Practice	Trained teacher who was also an author of a trining manual on BIT	Short lecture followed by group discussions, participation in workshops and role play. Duration: 1.5 day training session with 2 half day follow up sessions during first year.	questionnaire 12 months after training.	Assessed if GPs using MI or advice giving; perceptions of course plus MI. Evidence of applying BI / MI to clients post training	Extensive training, and link between theory and practice , being a passive listener seen as crucial. Barriers included need for reprogramming and dealing with ambivalence.
Villaume et al, (2006)	MI and substance abuse	Substance abuse clinicians 34 groups of approx 4 individuals Control group:No Setting: Academic	College Lecturers	5 weeks to write a script of session with a virtual patient Duration: Unclear	Exam	Exam scores (multiple choice questions) plus qualitative feedback. No evidence of applying BI / MI to clients post training	Workshop alone may not be sufficient to produce large improvements in behaviour without some form of guided practice and supervision over time.

Author (Year)	Domain	Sample and Setting	Facilitator training	Description of Training delivered	Methods of assessment	Measures of effectiveness	Commentary
Brug et al (2007)	MI, Diet	Dietitians - Lower Saturated fat in patients. Starting Participants: 37 dietitians working with 209 baseline patients, 142 follow-up patients. Control group: Dietitians with no training Setting: Home care organisations on the job training	Member of MINT & a Senior Diabetes Care dietitian 2x 1 week training sessions. Wk 1 introductory, Week 2 Train the Trainers, then developed a 2 day basic MI Skills training for dieticians working in diabetes diet counselling.	Practice based Duration: Day 1 Introductory, Day 2 Practising MI skills. 1 day follow-up 3 months later to share experiences and refresh knowledge and skills. Received on demand feedback and advice on MI related issues from Snr Dieticians for first 6 months	Video transcripts of 2 interactions with live patients, MITI evaluation codes assigned to MI criteria. Patients completed baseline Self administered questionnaires to collect baseline data including a validated food frequency questionnaire. Waist circumference and HbA1c recored for patients over 6 weeks.	Dieticians - MITI evaluation codes assigned to MI criteria. Patient intakes of saturated fat, fruit and vegetables & motivation and self efficacy to maintain a healthy diet, Height & Weight measurements, Waist Circumference and HbA1c recorded for patient. Evidence of applying BI to clients post training	1).MI dietitians complied better with MI criteria, scoring higher on total number of reflections made and are less likely to talk for the majority of the time of the consultation 2). MI dieticians were significantly more empathetic, more often showed reflection during consultations and were more likely than control dieticians to let their patients talk for the majority of the consultation. 3). Patients of MI dieticians had significantly lower saturated fat intake levels at post test compared to patients of control dieticians. 4). Positive self reported saturated fat intake.
Bennett et al (2007)	MI, Mental Health & Addiction	Workers from a range of Mental Health and Addiciton Services in Dorset. No of participants: 40 (11 male & 29 female)			Video Vignettes (videotapes of interviews), MITI	Participants who were trained in MI were significantly more competent than others. Reasonable reliability and valid ratings of competence in MI for clinical and research purposes. No evidence of applying BI / MI to clients post training	
Hartzler et al (2007)	MI	Community Practitioners No of participants = 30; Dropouts = 23 (Extended absence due to personal/family vacation, prospective retirement, competing personal and agency time demands and diminished interest in the project. Payment for participation in assessment) Control group: No Setting: On Job training	Licensed Psychologists both members of the Motivational Interviewing Network of Trainers (MINT) with considerable trainer experience	Practice based; Didactic presentations, group exercises, role plays. Between sessions participants also completed an individual skills practice interview that was audio recorded & reviewed by a trainer who provided written feedback. Duration: 15 hours (5 x 3 hour group sessions)	Training outcome assessment included 20 min recorded interview with a standardised patient. Motivational Interviewing Treatment Integrity Scale (MITI) and domains of client change language adapted from MI Skills Code.	No evidence of applying BI / MI to clients post training	Independent, blinded rating of skills by external reviewers. Reliability analyses. Immediate impact only. Evidence that self-rated confidence measures are not accurate!

Author (Year)	Domain	Sample and Setting	Facilitator training	Description of Training delivered	Methods of assessment	Measures of effectiveness	Commentary
Martino et al (2007)	MI	Year 3 medical students in Yale University. No of participants: 45 volunteered to participate during Psychiatry clerkship 22 completed up to 4 week follow-up. 100% attended training. Control group: No Setting: Academic	6 instructors - 5 x PhD YSM clinical faculty psychologists and postdoctoral fellows experiences in Masters level community counselling) . Each participated in 2 x 4 hour training sessions and learned CHANGE technique. 2 x MI expertise, members of MI Net	Developed curriculum using interactive process, provided a 2 hour block to teach students how to counsel patients in behavioural change. Duration: 2 hour training type using CHANGE teaching acronym	Pre test, post test and 4 week follow-up using Helpful Response Questionnaire to assess BMI skills, knowledge and attitudes towards the approach. Likert scale degree to which BMI trainers covered CHANGE components and instructor's overall skillfulness and to rate experience of the credibility of SP enactments	Assessed student's communication skills when presented with behavioural problems during an interview, effect on knowledge and attitudes towards BMI. Level of satisfaction with the curriculum and overall training approach. No evidence of applying BI / MI to clients post training	Results suggest that surgeons can perform fundamental BI skills with minimal training, authors comment that a greater understanding and appreciation of BI among surgeons could potentially lead to changes in institutional policy and culture to increase the use of BI.
Smith et al (2007)	MI and substance abuse	Substance abuse clinicians n = 13, dropout =1 Control group: No Setting: Community based treatment programme	Experienced trainer	2 day training workshop, 5 supervised in vivo MI training interviews with patients at their own treatment programs via teleconference feedback. Duration: 7.5 hours of supervision (assume this excludes 2 day workshop)	Audiotaped role play using actor at end of workshop plus, plus audiotape of interviews of clients at week 8 and 20	Interviews rated using MITI. Evidence of applying BI / MI to clients post training	Team based learning does appear to help BIT training.
White et al (2007)	MI and smoking	Substance abuse clinicians No of participants = 112 first year students and 46 third year students Setting: Academic	Lecturers and mentors	7 weeks to write a script of session with a virtual patient Duration: Unclear	Pre test/post test within subjects design.	Video tape of 46 family medicine clerkship students using MITI, student evaluations of curriculum, plus pre-post knowledge exam. No evidence of applying BI / MI to clients post training	Single session had a positive effect on confidence and were also judged to be competent by OSCE station results.

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Bell et al (2008)	MI	Third year Medical Students - MI Skills. No of participants = 53 Control group: No Setting: Undergraduate Medical students in 3rd year	Primary Care Physician, a Social Worker & a Graduate Student Educator	Curriculum practice based Duration: 4 x week 2 hour sessions - Ambulatory Care Block during 12 week core medicine clerkship	Pre and post questionnaires plus performance assessment using videos of simulated encounters (revised VASER). Also included a 3 month follow up online survey to determine changes implemented and barriers.	Knowledge improved significantly (pre mean:7.04, post mean:11.54) as did skill development (pre mean:7.02, post mean:9.47) Student satisfaction with behavior change counseling training improved from 3.6 to 8.1. Students were significantly more confident. No evidence of applying BI / MI to clients post training	
Lane, et al (2008)	MI	Healthcare Practitioners. No of participants: 88 (70 completed) Control group: Yes Setting: On Job training	Dept. General Practice, Cardiff University	2 day practice based, Experimental v Control Group. Experimental Skills practice with SPs and Control role plays with other trainees. Otherwise training identical Duration: 2 days including 3 practice sessions	Standardised consultation with a SP recorded before and after the workshop to establish changes in BCC-consistent behaviour and scored using the BECCI. Completed questionnaire following each practice session.	BECCI score, rating of applicability, rating of effectiveness in practice. No evidence of applying BI / MI to clients post training	
MacLeod et al. (2008)	BI, Alcohol	First Year Surgical Interns. No of participants: 15 Surgery interns - training, 23 internal medicine interns. Dropouts: 6 surgical & 22 medicine interns (Failure to participate in the assessments / failure to respond to contact from actors) Control group: Yes - first Year medicine interns untrained Setting: Undergraduate training	Training was delivered by the author (a surgeon) who has performed and taught BIs in trauma centres for 10 years.	BI skills training workshop including video taped demonstration of BIs and role play exercises. Duration: 8 hours	Levels of BI skills measured pre and post training in both groups. Simulated interviews and SP actors in scenario of challenging patient with alcohol problem. Audiotapes rated by blinded coders. 12 item BI skills checklist.	Checklist covering 3 elements of BI: 1. giving feedback on BAC lab results, exploring views on pros and cons of drinking, & discussing options for change. 5 items on checklist covered patient-centred communication style. No evidence of applying BI / MI to clients post training	Training can produce significant improvement in practitioner competence. However, there were no significant differences between groups in the amount of change in BECCI scores from pre to post training despite significant differences at baseline.

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Madson et al. (2008)	MI	Systematic review			Outlines populations to which MI training was targeted, foci of trainings, training methods, length and outcomes. Also extent to which studies integrated experiential / practice opportunities, feedback provided to participants. Degree to which training fitted Miller & Moyer's stages of learning MI	Stage 1 - Spirit of MI, 2 = OARS, 3 = recognising and reinforcing change talk, 4 = Ask about, reflect and emphasise change talk to prevent client getting stuck, 5 = rolling with resistance, 6 = Develop an Action Plan, 7 = develop client commitment to change. Evidence of applying BI / MI to clients post training	Participants reported large increases in MI skills. Observational measures reflected more modest changes in practice behaviour retained 4 months after training. Clients did not show the response changes. Practice behaviour changed to a statistically significant level, effect of training not large enough to make a difference to client response.
Soderlund et al (2008)	MI	Nurses n = 20 Control group: No Setting: Primary health care units	Unclear	12 hours initial training plus 4 follow up meetings, plus access to reference group of nurses and researchers. Also undertook 50 counselling sessions using technique. Duration: 28 plus 50 counselling sessions	Semi structured interviews	Themes emerging from content analysis of interviews with participants. Evidence of applying BI / MI to clients post training	
Tully et al (2008)	MI	Substance abuse clinicians n = 25 Control group: No Setting: Academic	College Lecturers	6 weeks to write a script of session with a virtual patient	Pre test/post test within subjects design.	Perceptions of confidence, possible use in future career, competence examined in OSCE station. No evidence of applying BI / MI to clients post training	Writing a script of a simulated interaction appears to be effective.
Caris et al (2009)	Substance Abuse	Substance Abuse Counselors - Decisional Balance toolkit. No of participants = 28 counselors, 210 patients ; Dropouts = 2 (Declined to participate) Control group: No	Working in the substance abuse field, all with at least 10 years experience in this field, 55% certified drug counselors, 50% in recovery.	Practice based. Practice based on trial toolkit (DVD, laminated counselor guide, worksheets and wallet cards for patients, "Decisional Balance" concept toolkit . Duration: 20-30min Decisional Balance training	Client feedback	Counselor satisfaction with Toolkit, Continued counselor use of Toolkit components, Comparisons of Counselors in Recovery V Not in Recovery, Client satisfaction with Toolkit, Client interest in attending more groups. Evidence of applying BI / MI to clients post training	Toolkit materials were easily implemented and attractive to counselors and clients. The toolkit curriculum based approach may be a viable & attractive way of translating core concepts from sophisticated based therapies into use by counselors within contemporary, community based treatment programs with minimal training.

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Fitzgerald et al (2009)	BI, MI, Alcohol	Community Pharmacists n = 8 Control group: No Setting: On job training in Community pharmacies in Scotland	Create Consultancy Glasgow, School of Nursing Midwifery & Community Health & School of Pharmacy	2 day training course focusing on: consequences of problem alcohol use, attitudes, sensible drinking, familiarity with client screening (FAST Screening Tool), BI & MI Duration: 2 days	Pre and post questionnaire. Alcohol Attitudes and Problems Perception Questionnaire (AAPPQ) which measured readiness for working with problem drinkers and The Competencies questionnaire which rated their competencies in addressing alcohol issues.	Changes in knowledge, attitude scores and self rated competence were only measured in the short term and may not be maintained or translated into practice. No evidence of applying BI / MI to clients post training	Results showed an increase in the participants self ratings of confidence, knowledge & competence. Participants also felt that they needed additional training in MI and communication information about alcohol limits before screening clients.
Opheim et al (2009)	MI	Final Year Medical students No of participants: 30-35 faculty members from each of 6 sites invited - 172 completed pre course interview, 153 completed training, 131 6-month follow-up (76%) Control group: Yes Setting: Academic		Trained in adaptation of MI (AMI) - workshop designed in 3 stages: 1. exercises used to produce hands-on experience and understanding of concepts, 2. debriefing these exercises, student comments were reframed in MI terminology and 3. students practiced skills Duration: 4 hours	Video recordings of consultations with SP's scored by independent raters with MISC (MI Skill Code). Post training questionnaire to evaluate the workshop and assessment of MI as an approach. Control Grp attended workshop after video assessment	No evidence of applying BI / MI to clients post training	Improvements in clinical skills in every scenario and every site for those who chose to do this element of the training. 81% would repeat the training and 98% would recommend the training
Shellenberger et al (2009)	BI and alcohol	Resident Physicians n = 175 Control group: No Setting: Part of resident training programme	Unclear	Initial training plus 3 booster sessions using team based learning at 4 month intervals after initial training Duration: 3 hours initial training, booster session 1 hour 15 mins.	Residents completed evaluation form,	Number of brief interventions conducted in previous 30 days and since training, confidence in ability to do screening and brief interventions, individual and group scores. Evidence of applying BI / MI to clients post training.	After training, GPs used MI in daily practice significantly more than control group

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Wallace and Turner (2009)	MI	Substance abuse clinicians	Unclear	Varied between studies	MISC, MIPC, MITI, BECCI, VASE	Psychometric testing of validity and reliability	Knowledge improved but students only had ltd competency. The study reviews 5 instruments to assess MI integrity. Overall these require more psychometric validation.