Brief interventions for patients with an alcohol problem in the medical setting: a review

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Brief Interventions for Patients with an Alcohol Problem in the Medical Setting: A Review

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Introduction

Alcohol use has a significant role in American culture. Approximately 2/3, or 64%, of adult (18 y/o and up) Americans use alcohol (O’Connor, 2008). Of that 64%, approximately 16% are considered problem drinkers (U.S. Department of Health and Human Services, 2005). Problematic drinking is also referred to as heavy drinking, binge drinking or alcohol misuse/abuse. Heavy drinking is defined as greater than 14 drinks/week or more than four drinks on one occasion for men and greater than seven drinks/week or more than three drinks on one occasion for women (Morse & Flavin, 1992). Binge drinking is defined as greater than or equal to five drinks in a row for a man and greater than or equal to four drinks in a row for a woman. (Wechsler & Austin, 1998). Alcohol abuse is defined in the DSM-IV-TR as one or more of the following criteria that has been present for more than 1 year. The criteria are: role impairment (e.g. fail to show up to work or school), hazardous use (e.g. driving or operating machinery while intoxicated), legal problems (e.g. arrests for intoxicated behavior or driving under the influence), or social or interpersonal problems due to alcohol use (e.g. violent arguments with spouse or child abuse while intoxicated (American Psychiatric Association, 2000)).

The prevalence of problematic drinking behavior in medical settings is high. In primary care, approximately 20% of patients meet criteria for problematic drinking (Fleming, Manwell, Barry & Johnson, 1998) while it is 31% in emergency departments (ED) with the number reaching 50% for those brought in for trauma related injuries (D’Onofrio & Degutis, 2002). Although, moderate alcohol use has been shown to have some health benefits, problematic use can have detrimental physical, social, and psychological effects. The prevalence of problem
drinking in medical settings suggests it may be an ideal place to screen for, and intervene in patient’s problem drinking behavior.

Excessive consumption of alcohol is one of the largest preventable causes of morbidity and mortality in the US (O’Connor, 2008). Excessive alcohol consumption can affect many of the primary organ systems, including the gastrointestinal, cardio-vascular, and nervous system. The liver is commonly the first organ thought of when thinking of alcohol related organ damage. It is estimated that in the US, the number of people with alcohol related liver disease is approximately two million. Alcohol can contribute to fatty liver disease with chronic use progressing to alcohol related hepatitis or cirrhosis. The disease process can be asymptomatic or cause a variety of symptoms including, abdominal discomfort, nausea, vomiting, jaundice, and ascites (an abnormal accumulation of fluid in the abdomen). Fatty liver disease and alcohol related hepatitis have been shown to improve with abstinence from alcohol. Pancreatitis can also result from chronic alcohol misuse and symptoms can include nausea, vomiting, severe abdominal pain, and hypotension (O’Connor, 2008).

Cardiovascular problems related to chronic alcohol misuse include hypertension, cardiomyopathy, and supraventricular arrhythmias. In western countries, alcohol related cardiomyopathy accounts for 45% of nonischemic cases of cardiomyopathy. Hypertension and cardiomyopathy have both been shown to improve in some patients who abstain from alcohol. The hematopoietic system is also affected. Alcohol causes suppressed megakaryocyte production (production of large bone marrow cells that give rise to platelets) and thrombocytopenia (a decrease in the number of platelets in the blood), which leads to petechiae, bleeding, and easy bruising. Thrombocytopenia will reverse, usually within a week, with abstinence. Furthermore,
alcohol interferes with white blood cell production, which can lead to the increased risk of infectious disease (O’Connor, 2008).

In the nervous system, alcohol affects both the central and peripheral systems. Centrally a person can experience memory deficits, both short and long-term, severe dementia comparable to Alzheimer’s disease, paresthesias, numbness, weakness, and chronic pain. Peripherally, problem drinking can contribute to midline cerebellar degeneration, which manifests as unsteady gait. These side effects in the central nervous system are thought to be in conjunction with nutritional deficiencies. Chronic problematic drinking increases the risk for developing these and other health issues (O’Connor, 2008).

Along with alcohol related diseases, problematic drinking is known to be a secondary cause of trauma and accidents. Alcohol is a leading contributor to injury that results in ED care. Motor vehicle accidents (MVA’s) and burn accidents are often the result of alcohol and drug use. It is estimated that 15-20% of patients in the ED are positive for alcohol or illicit drug use. In trauma centers this number can more than double to 25-50% of patients. Costs from these ED and trauma visits reach $185 billion annually (Desy & Perhats, 2008).

Socially, alcohol use is considered a problem when it affects a person’s ability to function well in occupational, family and interpersonal areas of their life. One area of the brain affected by alcohol is the prefrontal cortex which plays a role in personality, judgment, and behavior. Unfortunately, this disruption in judgment can contribute to reckless behavior that is contrary to a person’s values and safety (Gonzalez, 2010). Impaired judgment can lead to impulsive behavior that increases risks of injury or disease, more specifically, HIV and other infectious diseases. Activities such as IV drug use, needle sharing, having unprotected sex, sexual activity
with multiple and/or high-risk sexual partners (prostitutes, IV drug users) increases the risk of contracting HIV (Fauci & Lane, 2001). The social impact of alcohol misuse affects more than the user, the family and friends are also affected. Social problems such as family conflict and violence caused by problematic drinking frequently have secondary health effects on the family. Their loved ones often experience anxiety about the abuser, which can lead to numerous different health maladies, such as, high blood pressure, hyperlipidemia, ulcers, and cardiac arrhythmias (Gonzalez, 2010).

There are also psychological consequences to alcohol misuse/abuse. Up to 40% of chronic alcohol users experience anxiety related disorders and approximately 30% can have mood disorders such as depression or bipolar illness (O’Connor, 2008). As mentioned previously, chronic alcohol users may suffer a number of cognitive deficits that can contribute to personal, family and occupational dysfunction.

The incidence of alcohol misuse and abuse in inpatient and outpatient medical settings has been estimated to be 15%-40%. Alcohol misuse/abuse also accounts for greater than 100,000 deaths a year (O’Connor, 2008). Most patients with an alcohol use disorder (95.5%) do not seek advice or help with substance use from their health care provider (Substance Abuse and Mental Health Service Administration, 2007). This data suggests that screening and interventions for heavy, binge and abusive alcohol use is necessary. It is through proper alcohol use screening that clinicians may discover the presence of an alcohol misuse/abuse problem in their patients. Brief counseling sessions/brief interventions can then be used to help alter alcohol use behaviors in this patient population; however, many health care providers are not familiar with these interventions, their use, or efficacy.
Brief interventions (BI) are a means to help patients needing to modify a health behavior for medical reasons. This can range from diet modification to reducing alcohol use. There are different types of BI and ways to implement them: all having their own framework and methods for accomplishing the needed change. Although BIs are used to help with problematic drinking they differ from conventional alcohol treatment in that they aim to help the drinker decrease alcohol intake to a reasonable level, instead of complete abstinence. BIs also differ in the treatment population they focus on. Problematic drinkers are targeted for BIs, while serious substance abuse and dependence usually requires referral to a specialist. However, a brief intervention can serve to motivate patients to follow through with a referral to specialty care. BI sessions can range anywhere from five minutes of brief advice to 15-30 minutes of counseling. The advice given and intensity of the intervention are tailored to each specific patient situation (Moyer & Finney, 2004/2005).

Few individuals who have an alcohol misuse problem have opportunities to interact with mental health or substance abuse counselors but will interact more regularly with medical health care professionals. Brief interventions designed to effect change in alcohol use should follow all positive screens in the medical setting. Many healthcare providers know the screening process for identifying an alcohol problem, but do not always know how to best proceed after a positive screen. Employing brief interventions to affect change in drinking behavior, may serve to prevent/minimize the medical problems associated with problematic alcohol use and potentially save the patient’s life. The question is, are these interventions effective, can they be properly executed in the short amount of time allotted for each patient, and which ones should be used?
Brief interventions are meant to change a behavior but can do so using different strategies. Four interventions cited most in the literature are, the 5 A’s (Assess, Advise, Agree, Assist, and Arrange (Whitlock, Orleans, Pender, Allan, 2002)), FRAMES (Feedback, Responsibility, Advice, Menu, Empathy, and Self-efficacy (Searlight, 2009)), SBIRT (Screening, Brief Intervention, Referral, and Treatment (SBIRT Resource Manual, 2008)), and motivational interviewing (Searlight, 2009). These interventions may focus on different aspects of the patient’s problem, taking into account their current level of motivation for change, but all are thought to assist the patient in making healthy choices.

The 5 A’s is an intervention used for alcohol misuse, but, can also be used for smoking cessation or to promote other health behaviors (e.g. diet and exercise). There are five steps in this intervention. The first being **Assess**. Assessing the patient allows the provider to determine if a behavior change need exists and also allows the provider to individualize the counseling session to the needs of a particular patient. The assessment can be as simple as, “How often do you drink alcohol?” or a questionnaire, such as CAGE questions (Cut down, Annoy, Guilt, Eye opener). The CAGE consists of four questions, these are “Have you ever felt you need to cut down on your drinking?”, “Have people annoyed you by criticizing your drinking?”, “Have you ever felt bad or guilt about your drinking?”, and “Have you ever had a drink first thing in the morning (an eye opener) to steady your nerves or get rid of a hangover?” (Bradley, Bush, McDonell, Malone, and Fihn, 1998). Two positive responses have been shown to have a sensitivity of 84% at detecting at-risk drinkers (Fiellin, Carrington Reid, & O'Connor, 2000).

**Advise** is the second step. The health care provider gives the patient advice on the need for behavior change and how it might be done. This is accomplished by statements such as, “I
recommend….” Or “as your doctor I should tell you…” (Whitlock et al., 2002). Patients also seem to be more receptive to advice when it begins with an “I” statement (“I recommend…”) rather than a “you” statement (“You need to…”) (Searlight, 2009). Advice is more influential when the proposed behavior change is linked to the patient’s specific health concerns (e.g. gastrointestinal upset or pain), past situations (e.g. previous legal issues related to alcohol use and driving), or family circumstances (e.g. spouse threatening to leave the marriage).

Agree is the third step. In this step the provider and the patient come together and agree on treatment goals and methods to achieve the behavior change. This allows the patient to be involved in the process of their treatment and gives them a sense of control. Involving the patient in the process increases the likelihood of adherence to their plan. The fourth step is Assist. This involves helping the patient achieve the goals they previously agreed on, through counseling, self-help, helping the patient gain confidence, and using adjunct medical treatments if necessary, such as, pharmacotherapy or referral. The final step in the 5 A’s is Arrange. Arrange follow ups for the patient so they continue to get assistance throughout the change process. Follow ups also allow the health care provider to modify the plan the patient and he/she developed to accommodate changes the patient has made. This can be accomplished by repeating the process of the 5 A’s. These follow ups are most effective if executed within the first month and can then be progressively spaced out in longer intervals according to the specific needs of the patient (Whitlock et al., 2002).

The FRAMES protocol is another BI used for patients who misuse and abuse alcohol. It starts by giving the person simple and accurate Feedback about their health and their alcohol use such as, physical findings like blood pressure, cholesterol, or the score they received from CAGE
questions. Links between health indicators and alcohol use are pointed out in a non-judgmental, non-confrontational way, leaving the patient to form an opinion about the seriousness of those links. For example: “Heavy alcohol use is associated with development of hypertension” and “your current level of alcohol consumption is defined as heavy.” (Fuchs, Chambless, Whelton, Nieto, and Heiss, 2001) **Responsibility** for the decision to change and how to make that change is left to the patient. The patient’s autonomy is respected. Statements such as “The decision to quit drinking is a choice that only you can make.” or “The decision to adhere to treatment is up to you.” can be used in this step. **Advice** to change is then given to the patient. This advice is given in a respectful collaborative way and use of words like “should” or “must” are avoided. For example: “The single best change one could make to eliminate the gastrointestinal problems you are experiencing and reduce the risk of future cardiovascular problems would be to reduce alcohol use.” This is similar to the 5 A’s advise step. For patients who are not ready to make a change the health care provider can use a question such as, “Would you mind if I asked you about this again in our next visit?” This shows respect for the patient’s ability to make decisions for themselves while still conveying concern. A **Menu of strategies** to assist in making the change is offered to the patient. These strategies can consist of pharmacotherapy (e.g., anti-craving medications), acquiring social support (e.g., encouraging use of family, friends or you-the clinician-as sources for support), or changing previous environmental circumstances (e.g., changing/altering activities and/or associates where alcohol use might cause problems). The health care provider needs to be **Empathetic** toward the patient while they are making the change. Words as simple as “Quitting drinking after all this time will be hard.” or “Cutting down on drinking is a real challenge.” shows the patient you have some idea of their struggle and that they are not alone in this process. Lastly, the provider needs to promote **Self-efficacy** by offering some
encouraging words about the plan the patient has developed. For example, “You seem very
determined to make this vital change in your life.” (Searlight, 2009).

Motivational interviewing (MI) is most commonly used with patients who are ambivalent
about making a change. This is the patient who may be expressing little need to change or one
who wavers back and forth in their commitment to change. Asking permission to discuss a topic
is important when a patient is ambivalent. This demonstrates respect for the patient’s autonomy
and once a patient provides permission, they are typically more open to discussing that topic. For
example: “Would you mind if we talked about your drinking?” Once he/she has permission, the
provider then delves into the topic of change by focusing on the need for change (which is
similar to the feedback provided in the FRAMES model) and reasons the patient has for change –
from the patient perspective (this can be viewed as a discussion of the costs and benefits of
change or of not changing). A question such as, “You mentioned that you are now more open to
cutting back with your drinking. What makes you open to it now?” elicits the patient’s current
motivation for change. The patient is unable to answer this question without giving reasons why
change might be important. The provider elicits from the patient their understanding of the
problem, and then presents information the patient does not have. This has been called Elicit-
Inform-Ilicit. First *elicit* from the patient their understanding of the problem (how alcohol use is
impacting their health), then *inform* them based on what they know/may not know, and then
elicit how your information may have effected how they think about their medical situation and
behavior. This is done in a neutral, non-judgmental way. Asking the patient, “How important is
making this change to you?” allows the provider to judge their degree of motivation. Once they
have this information the health care provider can offer some insight or options to help make the
change, as in the menu of strategies in FRAMES. This approach includes the patient in the
treatment plan and places them in control of their behavior. The patient and provider then need to schedule a follow up so the provider can assess how the intervention is progressing. MI elicits patient thoughts about making a change and helps them explore the pros and cons of making a change (Searlight, 2009).

SBIRT also referred to as SBI, is used for both alcohol and drug related problems. This approach starts with a screening to assess the patient for a substance problem. Screening can be accomplished by commonly used methods, such as, interview, questionnaire (CAGE questions), or test The Alcohol Use Disorders Identification Test (AUDIT). The AUDIT consists of ten questions and is used to detect problem drinking (Fiellin et al., 2000). After a positive screen for risky or problematic drinking, a BI can then be implemented. The intervention focuses on increasing the patient’s awareness of their substance use problem and guides them toward behavior change. This can be accomplished through feedback (as in the FRAMES model), advice (as in the 5 A’s, FRAMES and MI models), respect for patient autonomy (as in the MI model) and/or by giving the patient pamphlets on drinking or information tailored to their specific situation. If the brief intervention is ineffective, a referral to a specialist for proper treatment is then made. Referral to a specialist is important when ambivalence about change is strong or when there is alcohol dependence present (SBIRT Resource Manual, 2008).

Alcohol use is prevalent in the US, with many individuals engaging in occasional non-problematic use, but for some, the quantity of alcohol consumed has lead to adverse health, social and psychological problems. These adverse effects often improve with reduced alcohol consumption. Persuasion is a strategy often used by health care providers in situations requiring a patient to change a health behavior. Statements such as, “You need to stop drinking.” or “Your
drinking is not good for you, you need to cut back.” strips the patient of their right to make
health related decisions for themselves and has the clinician taking responsibility for the change.
Although this method can work with some individuals, the prevalence of health related problems
discussed earlier would suggest this is not the most effective behavior change method. Brief,
empirically supported health behavior interventions are thought to be an effective alternative to
strict advice giving and persuasion for those with alcohol related problems.

Though the BI’s just discussed have different approaches, they have the same goal, to
motivate and assist patients in making needed health related behavior changes. This change is
accomplished through screening (identifying the problem), and then through education, planning,
and support, all of which are features of the different interventions listed above. Each BI offers a
different, unique style and approach. For example, the 5 A’s is a stepped approach while
FRAMES offers the components needed to guide the patient in the right direction and how best
to deliver them, through empathy, self-efficacy and holding the patient responsible. SBIRT
encompasses most of FRAMES components except it does not offer a menu of strategies or
promote self efficacy. MI offers all of FRAMES components except advice. MI is aimed at
eliciting the patient’s own desire for change, even if they are ambivalent about the decision. It is
important to note that these BI’s all involve the patient in the process, and guides them in making
a decision that is right for themselves. When a patient feels they have some control over, and are
involved with, their treatment they are more apt to make healthy changes and adhere to those
changes. The questions that now need to be answered are, “Do these interventions work?” and
“Is one better than the other in certain situations?”
Screening

Screening is an important first step in brief interventions, helping the health care provider identify patients with problematic alcohol use. Screening also helps the provider determine if the patient is a candidate for a brief intervention or if they require further assessment and referral to a specialist (Babor & Kadden, 2005). Screening instruments can be brief or long questionnaires, or biological markers, for example, blood alcohol content (BAC).

Brief questionnaires are often used as a quick, effective way to evaluate the need for an intervention. These can be given through self-administration or by the health care provider. Some common measures are the CAGE (introduced previously), The Michigan Alcohol Screening Test (MAST) and Alcohol Use Disorders Identification Test (AUDIT). Each has strengths and weaknesses. Screens are typically evaluated for sensitivity and specificity. The sensitivity indicates the probability that the screen will be positive when the person does in fact meet criteria for problematic drinking. The specificity indicates the probability that the screen will be negative when the person does not meet criteria for problematic drinking.

As a reminder, the CAGE uses four brief questions to assess for problematic alcohol use. They include, “Have you ever felt you need to cut down on your drinking?”, “Have people annoyed you by criticizing your drinking?”, “Have you ever felt bad or guilt about your drinking?”, and “Have you ever had a drink first thing in the morning (an eye opener) to steady your nerves or get rid of a hangover?” (Bradley et al., 1998). These questions have been shown to have a sensitivity of 84% and a specificity of 95% at detecting problem drinking when using the cutoff of two or more positive responses (Fiellin et al., 2000). Because this is only four brief questions it is considered optimal for the busy health care worker. The answers to the CAGE
questions focuses on active alcohol problems, but does not identify risk factors for hazardous alcohol use (Babor and Kadden, 2005).

The Short Michigan Alcohol Screening Test (SMAST) was developed from the longer Michigan Alcohol Screening Test (MAST). The SMAST is a 13 item questionnaire that detects current alcohol abuse and abuse over the patient’s lifetime. These questions cover aspects of physical harm, such as, “Have you ever been in a hospital because of drinking?” and social problems, such as, “Has your drinking ever created problems between you and your wife, husband, a parent or other near relative?”, or, “Have you ever gotten into trouble at work because of your drinking?” The SMAST has been shown to have a sensitivity of 82-100% and a specificity of 85-96% for identifying alcohol use disorders over the lifetime when using a score of two or greater (Cleary, Miller, Bush, Warburg, Delbanco, & Aronson, 1988). When looking at current alcohol abuse, the sensitivity drops to 57-66% and specificity to 80% with a cutoff of five or greater (Barry & Fleming, 1993). Although the SMAST is very good at detecting lifetime alcohol abuse it is also fair in detecting current use. This is a factor that needs to be taken into consideration when choosing to use the SMAST. Detecting previous episodes of problematic drinking over a patient’s lifetime can help the provider determine if further counseling might be needed to help with recidivism. Lifetime detection may also help health care providers in evaluating current health problems that may be secondary to problematic drinking.

Another tool commonly used is The Alcohol Use Disorders Identification Test (AUDIT), developed by the World Health Organization. The AUDIT can identify less severe alcohol use problems (Fiellin et al, 2000). The AUDIT uses ten questions to identify problematic alcohol use. The questions range from simple “How often do you have a drink containing alcohol?” to
more personal, “Has a relative, friend, or a doctor or other health care worker been concerned about your drinking or suggested you cut down?” The AUDIT can be administered as a self-report measure or used by the health care provider in the patient interview. The ten questions are the same with both routes of administration. Administered as a self-report, the AUDIT is quick, and may produce more reliable answers considering the patient is answering in private. Administration during the patient interview allows the health care provider to clarify answers and actually begin a brief intervention if needed (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001).

Using a cutoff of eight or more positive questions, the AUDIT has a sensitivity of 97% and a specificity of 78% in detecting problematic and heavy alcohol use. When a cutoff of five or more positive answers is used, there has been a sensitivity of 84% and a specificity of 90% reported (Fiellin et al., 2000). The AUDIT better detects early signs of problematic drinking and alcohol use disorders, compared to the MAST and CAGE which are better at identifying “active alcohol dependence” (Babor & Kadden, 2005). Because the AUDIT contains questions that focus on quantity and occurrence of recent alcohol use, it can better identify milder alcohol use problems, when compared to MAST and CAGE (Bohn, Babor, & Kranzler, 1995).

Physical findings are useful in detecting alcohol problems in patients. Findings such as BAC are commonly used in the emergency department (ED) or in trauma situations. Although BAC can tell you an approximation of the amount of alcohol a person has ingested, because of its short half-life and inability to provide specifics about risk factors, it is better used as an adjunct with other screening tools. Carbohydrate-deficient transferrin and the liver enzyme
gamma-glutamyltransferase were also thought to be useful in alcohol screening, but so far, have not been sensitive or specific enough for use (Peterson, 2004).

The rationale behind screening is to detect problematic alcohol use that can lead to physical and/or psychological harm to the user and others around them. Effective screening methods in medical settings need to be valid, quick, consistent, effective, and easy to administer. When problematic alcohol use is detected early, brief intervention practices can be implemented before there is a need for full-scale treatments (Babor and Kadden, 2005).
**Methods**

**Selection Criteria**

A review of the following electronic databases was used to identify relevant papers for inclusion in this review: PubMed, UpToDate, Access Medicine, and CINAHL. A manual search of the reference lists of acquired articles was also undertaken. Search keywords included: binge drinking, hazardous drinkers, at-risk-drinkers, heavy drinkers, problematic drinking, alcohol misuse, alcohol abuse, alcohol dependence, alcohol screening, SMAST, CAGE, AUDIT, counseling, brief interventions, health promotion, SBIRT, FRAMES intervention, motivational interviewing, 5 A’s, primary health care, general practitioner, emergency department, ED, family medicine, trauma center.

Studies were included if they examined a brief intervention for alcohol use in a medical setting based on the following additional criteria. The articles were published between 2001 and 2011, the intervention took place in one of three medical settings (primary care, family medicine and emergency medicine) and the intervention used was either the 5 A’s, FRAMES, SBIRT, and/or motivational interviewing. Only studies conducted in the United States and published in English were used. Due to the paucity of articles in some areas, specifically FRAMES and MI, the inclusion criteria were selectively expanded. Four articles describing FRAMES were published outside of the United States. One was from North India (Raj Pal, Yadav, Mehta, & Mohan, 2007), one was published in Spain (Rubio, Jiménez-Arriero, Martínez, Ponce, & Palomo, 2009), one was published in Finland (Aalto, Seppa, Mattila, Mustonen, Ruuth, Hyvarinen, Pulkkinen, Alho, Sillanaukee, 2001), and one was published in 1998 and took place
in England (Wright, Moran, Meyrick, O'Connor, & Touquet, 1998). One MI article, (Miller, Benefield, & Tonigan, 1993), was published in 1993 which fell outside of my inclusion dates.

Some of the research did not utilize “pure” forms of an intervention but was an adaptation which maintained the fundamental elements of the intervention. One of the 5A article, (Curry, Ludman, Grothaus, Donovan, & Kim, 2003), one motivational interviewing (MI) article, (Miller et al., 1993), and one FRAMES article, (Aalto et al., 2001), were adaptations.

Based on the above selection criteria 17 articles are included in this review, two describing the 5 A’s, in Primary Care/Family Medicine and none on the use of 5 A’s in Emergency Medicine, four using FRAMES in Primary Care/Family Medicine and one in EM, three examining SBIRT in EM and none in Primary Care/Family Medicine, and finally three using Motivational Interviewing in Primary Care/Family Medicine and four in EM. This is a qualitative review so no statistical analysis was used.
Results

Summary of Previous Reviews - Primary Care

Brief interventions for problematic drinking in the primary care setting result in 5-15% of patients making a significant change in drinking levels (Fleming, Barry, Manwell, Johnson, & London, 1997) while those receiving group and individual treatment in specialty settings have reported a behavior change rate of up to 30-40% (Whitlock et al, 2002). Specialty settings offer effective treatments but reach a small proportion of patients needing care. Brief interventions within primary care can reach a greater percentage of the patient population, so moderate change rates of 5-15% can transform into large health benefits across the population (Fleming et al, 1997).

Patients in the primary care setting commonly utilize their primary care provider numerous times annually. Brief alcohol focused interventions tend to be more successful when delivered over multiple contacts and when goals are individualized (Whitlock et al, 2002). Multicontact brief interventions show a decrease of 2.9-8.7 drinks per week. (Whitlock, Polen, Green, Orleans, & Klein, 2004). Such multicontact interventions are associated with fewer all cause hospital stays when compared to single-contact or no alcohol intervention (Nilssen, 1991). The CDC reports one standard drink in the U.S. is approximately 14 grams of pure alcohol (Alcohol and Public Health, 2010).

Primary care clinics often utilize physician assistants and nurse practitioners to assist with the patient load and brief interventions have also been shown to be efficacious when delivered by ancillary health care staff. At 6 months after an initial brief intervention was delivered by a
nurse practitioner there was a significant reduction of 5.8 drinks per week compared to 3.4 in the group who received usual care. Utilizing nurse practitioners and physician assistants when delivering brief interventions decreases the physician’s burden and increases patient health outcomes (Ockene, Adams, & Hurley, Wheeler, and Herbert, 1999).

Before addressing the review articles, there have been previous reviews in this area that will be informative. Poikolainen, (1999), reviewed a number studies which looked at brief interventions for problematic drinkers in the primary care setting. The study looked at the efficacy of brief interventions in general, and so some of the interventions could not so easily be categorized into the 5A’s, Frames or Motivational Interviewing framework, but most contained essential components of these interventions. Participant ages in the review ranged from 17 to 69 years old. Three studies included components of the 5 A’s, (Scott & Anderson, 1991, Anderson & Scott, 1992, and Nilssen, 1991) with one examining women only, one men only, and the third examining both. The three studies reported a decrease in the amount of alcohol consumed per week as the result of the interventions. The average decrease in consumption was 10.5 drinks of alcohol. Two studies using FRAMES-like interventions, (Wallace, Cutler, & Haines, 1988; Fleming et al., 1997), one with women only and one examining both men and women, reported an average decrease of 8.7 drinks of alcohol consumed per week. Brief advice and information was used in one study (Heather, Campion, Neville, & MacCabe, 1987) that examined both men and women. Heather and colleagues (1987) also reported a reduction of 8.9 drinks per week. One study (Richmond, Heather, Wodak, Kehoe, & Webster, 1995) examined both men and women using motivational interviewing. Unlike the other studies in their review, the Richmond et al., (1995) research showed an increase of 4.0 drinks of alcohol per week. Overall, the
multiple visit brief interventions in Poikolanen’s analysis showed an average decrease in consumption of 4.6 drinks of alcohol per week.

It is important to note that two reviews examining the specific use of motivational interviewing in the primary care setting found results contrary to those of Richmond and colleagues (1995). A review of 19 studies which included 5,639 participants not actively seeking treatment found a reduction of approximately 2.7 drinks of alcohol consumed at 12 months (Bertholet, Daeppen, Wietlisbach, Fleming, & Burnand, 2005). A review of 22 studies found that 87 minutes of MI was superior to no treatment in problematic drinkers and 53 minutes of MI was superior to comparison treatment, such as, cognitive behavioral therapy (Vasilaki, Hosier, & Cox, 2006).

**Reviewed Articles – Primary Care**

*Motivational Interviewing*

Three MI articles analyzing the effects on problematic drinking were used in this review, (Reiff-Hekking, Ockene, Hurley, & Reed, 2005; Ockene, Reed, & Reiff-Hekking, 2009; Miller et al, 1993). Miller and colleagues (1993) studied two different interventions: a directive approach and an MI approach. The participants were recruited by an announced free “drinkers check-up” (DCU). These participants were taken from the community emulating the primary care population. There were a total of 42 participants from the general public with a mean age of 40-years-old. The participants were broken into two groups. One group contained 2/3 of the participants and received a two hour alcohol use evaluation (DCU). The amount of alcohol consumed per week was one factor measured during the evaluation period. This amount was reported as a “standard ethanol content” or SEC. One SEC unit equaled 0.5 oz of absolute
alcohol. The other 1/3 were told they would get their DCU in six weeks. This group was the control. Ultimately, participants were randomly assigned to three groups (which included the waitlist control group) containing 14 participants each. In the intervention arm, one group received a “directive feedback” style intervention and the other received a “client centered” motivational style of feedback. In the “directive feedback”, the therapist was told to be more confrontational with the participant. In the “client centered” motivational style intervention the therapist would be more empathetic and use interviewing techniques to elicit motivation. (Miller et al.,1993).

A follow up session was held at six weeks and 12 months after the intervention to evaluate changes in alcohol habits. All participants completed the first follow up and 35 completed the 12 month follow up. The average weekly alcohol consumption for the directive group at base line was 38 drinks. At the six week follow-up, weekly consumption decreased to 22.4 drinks and at the 12 month follow-up, weekly consumption decreased to 17.1 drinks. The client centered group at baseline reported average weekly alcohol consumption to be 49.5 drinks. At the six week follow-up, weekly alcohol consumption decreased to 15.2 drinks and at the 12 month follow-up, weekly consumption decreased even further to 12.1 drinks. The delayed DCU group consumption at baseline was 36 drinks per week. At the six week follow-up consumption had decreased to 15.1 drinks and at the 12 month follow-up, weekly consumption had increased to 23.4 drinks (Miller et al, 1993).

Reiff-Hekking et al., (2005) examined the efficacy of MI using 530 male and female participants. The age of participants ranged from 21 to 70 years old with 274 participants receiving the brief intervention and 256 receiving “usual care.” The interventions were delivered
by a physician or a nurse practitioner. Those performing the interventions received 2.5 hours of training prior to administering the intervention. The control group received a booklet with general health information and was told to follow up with their primary provider if they had any questions. The treatment group was given a brief intervention consisting of a 5-10 minute single contact patient-centered intervention. All participants were reassessed at 6 and 12 months. At the 12 month assessment, 83 participants could not be reached for follow up. The data for these participants was figured by using multiple imputation estimation. This method assumes the missing participants are similar to the study population and made alcohol consumption changes similar to the study population (Reiff-Hekking et al., 2005).

At base line, the brief intervention group reported an average of 18.2 drinks of alcohol consumed per week. Drinks per week decreased to 12.4 at the six month mark but increased slightly to 12.8 drinks per week at 12 months. The control group averaged 16.1 drinks per week at baseline. At six months drinks per week dropped to 13.1 and remained the same at 12 months. Comparing the two groups, there was a 19% greater reduction in drinks per week with the intervention group at six months and a 20% greater reduction in drinks per week at 12 months. Binge episodes per month for the intervention group was 4.9 at base line. At six months binge episodes decreased to 2.8 (a 27% decrease) and at 12 months a further decrease to 2.7 (a 35% decrease) from baseline. The control group reported an average of 3.7 binge episodes per month. By six months the average number of episodes decreased to 2.8 and at 12 months it decreased further to 2.3. The difference between the two groups was reported as a 20% greater reduction in binge episodes in the intervention group compared to the control at six months and a 13% greater reduction in episodes with the intervention when compared to the control at 12 months (Reiff-Hekking et al., 2005).
The authors of this 2005 study decided to reconsent those same participants and examine 48 month outcomes (Ockene et al., 2009). Problematic drinking and binge episodes were the focus of this study/follow up. Over the 48 months between the first study and this follow up, 333 participants were retained with 169 in the intervention group and 164 in the control group.

There was a 52% decrease in drinks per week in the intervention group 48 months after the intervention. The intervention group showed a nonsignificant 4% increase in drinks per week by the end of 48 months when compared to the intervention group. When looking at binge episodes, there was a 53% decrease from baseline 48 months after the intervention. When comparing the intervention to the control, the intervention group again showed a slight 8% increase in binge episodes (Ockene et al., 2009).

Overall, at 48 months after the intervention, no significant difference between the intervention and the control group with drinks per week and binge episodes. This study and the original show, at 6 and 12 months, the group receiving the intervention experience a significant decrease in drinks per week and binge episodes per month when compared to the control group.

5 A’s

Two articles address the use of the 5 A’s, (Liszka Rose, Miller, Nemeth, Jenkins, Nietert, Wessell & Ornstein, 2008) and (Curry et al, 2003). Curry and colleagues (2003) used a brief intervention adapted from the 5 A’s approach on with both men and women engaged in problematic drinking. This study included 307 participants who were randomly assigned to the intervention (N=151), and control groups (N=156). The interventions took place during routine primary care visits and consisted of a 1-5 minute talk about drinking, a packet of information
dealing with safe drinking and good health habits, and three telephone counseling calls. The first call was 1-2 weeks after the initial intervention. The second call was made within four weeks after the first call and the third call was within four weeks after the second. In the intervention group, 87% received at least one call, 27% received two calls, and 18% received all three calls. The control group received no intervention or information (Curry et al., 2003).

Follow-ups were conducted at 3 and 12 months. The dropout rate for the intervention group was 21% as compared to the control which was only 5%. The baseline levels for drinks per week were 13.56 for the intervention group and 14.93 for the control group. The follow up at 3 months showed 41% of the intervention group were problematic drinkers, versus 56% for the control group. The percent of binge drinking was also lower in the intervention group, with 13% of participants binge drinking, compared to the control, who reported 22%, at 3 months. Chronic drinking levels (at least two or more drinks per day for the last month), at 3 months were reported as 18% of participants for the intervention and 26% in the control. Drinks per week for the intervention group were 8.4, versus 9.6 for the control group. Although the intervention group reported consuming less drinks per week than the control at 3 months, this was not statistically significant.

At 12 months, at risk drinking for the intervention group was 42% compared to 61% for the control group. Binge drinking was 12% for the intervention group and 17% for the control group. The intervention group also reported less chronic drinking, 25% of participants, versus 28% for the control group at 12 months. Both binge and chronic drinking were less in the intervention group than in the control but the results were not statistically significant. The
average drinks per week for both groups were similar, with the intervention group reporting 9.3
drinks and the control 9.5 drinks per week (Curry et al., 2003).

Liszka Rose et al., (2008) analyzed the effects of the 5 A’s on a group of hypertensive,
problematic drinkers from 21 different primary care practices, in 16 different states, over a two
year period. The goal of her study was to examine the use of alcohol screening on hypertensive
patients and secondarily, examine the effects of an alcohol intervention on blood pressure in
these patients. There were a total of 27,591 participants, 43% male with an average age of 62
years old, in this study. Each practice was randomized into a control group (N=11), or an
intervention group (N=10). The practices using the intervention were taught the brief
intervention (3-5 minute talk about the patients alcohol use), given a brochure on high blood
pressure and alcohol use, received training relevant to alcohol screening, and took part in site
visits where these aspects were reviewed. In the intervention practices, all patients who met the
inclusion requirements of hypertension and problematic drinking were given the intervention.
The control group received “performance feedback materials”, but had no direction or help with
implementation. The performance feedback material consisted of information on health and
preventative measures, along with alcohol use guidelines. (Liszka Rose et al., 2008).

Out of 14,107 participants with high blood pressure in the intervention group, 9,104 or
64.5% were screened for alcohol use, compared to the control group where only 3,162 or 23.5%
of 13,484 patients were screened for alcohol use. On average the likelihood of being screened for
alcohol use was significantly higher in the intervention group. From the intervention group, 214
patients met the criteria for both hypertension and problematic alcohol use. Of the 214 patients
receiving the intervention, 174 or 81% had a follow up blood pressure measurement. The
average systolic blood pressure in the intervention group decreased by 8.3 and averaged diastolic blood pressure also decreased by 3.6. In the control group 168 patients met criteria for both hypertension and problematic alcohol use, but only 126, or 75% had a follow up blood pressure measurement. The control group reported an average systolic blood pressure decrease of 1.0 and an average diastolic decrease of 0.8 (Liszka Rose et al., 2008).

**FRAMES**

Four studies examined FRAMES with problematic drinking, (Rubio et al., 2009; Fleming, Mundt, French, Manwell, Stauffacher, & Barry, 2002; Aalto et al., 2001; and Raj Pal et al., 2007). Raj Pal et al., (2007) examined the use of FRAMES with 90 males engaging in problematic drinking in North India. The participants were taken from a previous community based study which looked at problematic drinkers. This study also examined the progression of participants through the different stages of change. The age of the 90 participants ranged from 20-45 years old with a mean age of 29.7. Participants were screened for alcohol use and their quality of life was assessed. This review focuses on the alcohol use statistics. The 90 participants were quasi-randomly assigned to two groups, 45 in the intervention group and 45 in the control group. The intervention group received two intervention sessions, lasting 45 minutes each, which were separated by three to five days. The control group received a five minute, face-to-face session of simple advice consisting of concern about drinking consequences and advice to cut down. Participants were followed up at one and three months. At the first follow up 87 participants remained in the study, with 86 at three months. (Raj Pal, et al., 2007).

Alcohol use was measured by totaling the number of days the participant used alcohol in the 30 days prior to the follow up. The intervention group averaged 24.71 days at baseline, 9.67
days at the one month follow up, and 10.07 at three months. The control group averaged 26.07
days at baseline, 2.73 days at one month, and 19.05 days at three months. The stage of change
for the intervention group at baseline were reported as, 17 participants in pre-contemplation, 21
in contemplation, and 7 in the action stage. The control group at baseline were reported as, 6 in
pre-contemplation, 32 in contemplation, and 7 in the action stage. At the first follow up, the
intervention group contained 16 participants in the contemplation stage and 27 in the action
stage. The control had 2 participants in the pre-contemplation stage, 23 in the contemplation
stage, and 19 in the action stage. At three months the stages of change returned to rates closer to
baseline for both groups. The intervention group contained 22 in pre, 13 in contemplation, and 7
in the action stage. The control had 13 in pre, 26 in contemplation, and 5 in the action stage (Raj

Aalto et al., (2001) examined an adaptation of FRAMES on 202 participants over a three
year period in Finland. Participants were male with ages ranging from 20 to 60 years old.
Patients were given an alcohol use questionnaire and 350 participants who met inclusion criteria
were asked to attend a feedback session one to three weeks later, 296 attended the session.
Participants were placed into three different groups, A, B, and C, by randomization. The three
groups were similar on all measures except for education, with Group C reporting less education
when compared to Groups A and B. Group A contained 109 participants and was offered a 10-
20 minute brief intervention at baseline, 2, 6, 12, 18, and 30 months. Group B contained 99
participants and was offered a 10-20 minute intervention at baseline, 12, and 24 months. Group
C contained 88 participants that were given advice to cut back on drinking and told to follow up
with their doctor if they had any health problems. Group C was unaware they would be having a
follow up in 36 months to track their progress. Both groups A and B received a “self-help”
booklet at the baseline session (Aalto, et al., 2001).

Final outcome was assessed at 36 months. At baseline, group A reported 16.9 drinks of
alcohol consumed per week. 36 months after treatment, group A reported an average of 17.1
drinks of alcohol per week. Group B at baseline showed 19.2 drinks of alcohol per week and at
the follow up reported 19.8 drinks of alcohol per week. Group C started at baseline with 19
drinks and ended with 22.8 drinks of alcohol per week. The number of times the participants
drank per week was also recorded. Group A showed they drank 1.9 days per week at baseline
and at follow up it was still 1.9 days per week. Group B reported 2.5 days per week, and at the
follow up it had increased to 2.8 days per week. The control group, group C, drank an average of
2 days a week at baseline and 2.3 days a week at follow up. Another important aspect of drinking
examined was the amount consumed per occasion. Group A showed, on average, they consumed
10.4 drinks per drinking occasion. At follow up, that amount had decreased slightly to 10 drinks.
Group B consumed 8.7 drinks per occasion at baseline and at follow up it had decreased to 7.9
drinks per occasion. Group C had reported 8.7 drinks consumed at baseline and at the end of 36
months that number had increased to 9.5 drinks of alcohol per occasion (Aalto, et al., 2001).

Rubio and colleagues (2009) used FRAMES as a brief intervention to look at the effects
on 674 men and women binge drinkers (340 in the intervention group and 334 in the control) in
Spain over a 12 month period. All participants were between the ages of 18 and 65 years old.
Rubio not only addressed binge drinking, he also reported the amount of alcohol consumed per
week and the rates of excessive drinking. Twenty primary care centers were used to recruit
participants for this study. All patients were screened with the AUDIT and then invited to a face
to face interview session to determine eligibility. Participants were randomized by computer into an intervention and control group. The intervention group, 371 participants, received a booklet on “general health” and went through two, face-to-face sessions lasting 10-15 minutes, spaced four weeks apart. A nurse from the patient’s primary care office contacted them at two and eight weeks after the first intervention to reinforce the intervention. The control group, 381 participants, received the same “general health” booklet the intervention group did but did not receive face-to-face or phone contacts. All participants had a follow up at 12 months (Rubio, et al., 2009).

The primary aim of this study was to evaluate the effect of FRAMES on binge drinking. The average number of binge drinking episodes in the baseline month was 2.95 for the intervention group and 2.95 for the control. At the 12 month follow up binge episodes decreased to 1.14 for the intervention group and also decreased to 1.56 for the control. At the time of the follow up, the percent of participants who have had a binge drinking episode in the last 30 days was also recorded. Both the intervention and control were 100% at baseline measurements. At the 12 month follow up, the percent of participants in the intervention group who had a binge episode in the past 30 days had decreased to 52.29%. In the control the percent had decreased to 67.19%. The number of drinks in the last seven days at baseline was 27.42 for the intervention and 26.90 for the control. Twelve months after the intervention, the number of drinks per week dropped to 19.20 for the intervention and 22.24 for the control (Rubio, et al., 2009).

Fleming et al., (2002) reports on the use of FRAMES for 774 problematic drinkers, both male and female, in the U.S. over a 48 month period. All participants were between the ages of 18 and 65-years-old. Participants were recruited from their own primary care provider. Patients
were asked to fill out a health questionnaire, which contained questions about alcohol use. If the patient had a positive screen they were asked to take part in a “face-to-face” interview to determine if they met inclusion criteria. If the participants met the inclusion criteria and agreed to be in the study, they were then randomly assigned to the intervention (N=392) and control groups (N=382). The intervention group was given a “general health” booklet which talked about diet, exercise, smoking, alcohol use, and many other health issues. They also took part in two 15 minute intervention sessions scheduled one month apart and two, 5 minute follow-up phone calls from the primary care nurse. These calls were made two weeks after each intervention to help reinforce each session. Follow ups were done by telephone at 6, 12, 24, 36, and 48 months (Fleming, et al., 2002).

Fleming and colleagues (2002) examined multiple alcohol related outcomes: number of drinks in last seven days, number of binge episodes in the last month, and percent of each group who reported binge drinking in the last 30 days. The number of drinks in the past 7 days for the intervention group was approximately 19 drinks at baseline. The males in the intervention group at baseline reported an average of 21.3 drinks in the last seven days. This number decreased to 14.4 drinks in the last seven days at the 6 month follow up and generally remained at that level throughout the rest of the study. The females were similar to the males, with 14.8 drinks at baseline which decreased to 8.4 drinks. Their level, on average was also maintained throughout the study. The control group, as a whole, reported approximately 19 drinks in the last 7 days at baseline. The control group also decreased the intake to approximately 15 drinks at the 6 month mark and remained around that level through 48 months. Fleming did not distinguish results between males and females in the control group. (Fleming, et al., 2002).
The number of binge episodes in the last 30 days at baseline for both groups was around 5.5. Binge drinking for both groups dropped at 6 months, 3 episodes for the intervention group and 4 for the control. At 24 months the intervention group increased to 4 binge episodes and remained there at 48 months while the control group reported 6 binge episodes at 24 months and 5 at 48 months. The percent of participants who binge drank in the last 30 days was also reported. For the intervention group, at baseline 85% had a binge episode in the last 30 days, changing to 60.5% at 6 months, 57.4% at 12 months, 62.5% at 24 months, 61.5% at 36 months, and 63.8% at 48 months. At baseline, 86.9% of the control group engaged in binge drinking in the previous 30 days, 72.8% binged at 6 months, 71.5% at 12 months, 74.4% at 24 months, 70.7 at 36 months, and 70.4% at 48 months. (Fleming, et al., 2002).

Fleming et al., (2002) also looked at health care utilization and mortality between the groups. Throughout the study the intervention group utilized the emergency department 302 times and had acquired 420 days in the hospital. The control group made 376 emergency department visits and had 664 days in the hospital. Mortality was also a factor between the two groups. A total of ten participants, seven in the control and three in the intervention group, died during this study. All seven participants in the control group drank more than the average 19 drinks per week at base line and 15 drinks per week at follow up points. On average, per week, the seven participants drank 24 drinks at baseline, 26 drinks at the 6 month follow up, and continued to drink 20 or more drinks throughout the rest of the study. Of the three participants who died in the intervention group, one drank more than 30 drinks per week through the entire study and the other two averaged 25 drinks at base line and decreased their drinks per week to seven or less for all follow ups. Average drinks per week at baseline for the intervention group was also 19.
Summary of Previous Reviews - Emergency Department

Havard and colleagues (2008) reviewed studies examining the efficacy of brief interventions performed in the ED for problematic drinkers. Thirteen studies met their inclusion criteria and were reported on in their meta-analysis. Over half of the studies used motivational interviewing as the brief intervention. The length of the interventions ranged from 5 to 60 minutes. Havard reported the effects of these interventions on drinking were inconclusive at 3, 6, and 12 months. However, Havard did report a non-alcohol use outcome at 6 and 12 months; patients receiving a brief intervention had half the risk of sustaining an alcohol related injury at 6 and 12 months, when compared to patients receiving normal care (Havard, Shankshaft, & Sanson-Fisher, 2008). This suggests that the intervention may have caused individuals to consume alcohol more safely, if not actually reducing the amount consumed.

D’Onofrio and Degutis (2002) also reviewed studies looking at the efficacy of brief intervention in the ED. She specifically examined brief interventions ability to decrease morbidity, mortality, and secondarily, decreases in alcohol consumption, alcohol related injuries, and hospital visits. In total, 39 articles were examined. There were 27 studies in her analysis which were combined with the results of 12 studies previously analyzed and reported in the 1996 U.S Preventative Services Task Force (USPHTF) report (U.S Preventative Services Task Force, 1996). The articles from the USPHTF also looked at the role of screening and brief interventions in primary care. Again, MI ranging from 5 to 60 minutes was the most common intervention used in this meta-analysis. Overall, she reports, brief interventions in the ED have positive effects on the variables she was examining, such as, morbidity, mortality, alcohol related injuries, and decreased alcohol consumption. 12 of the total 39 studies reported a decrease in
both morbidity and mortality. Of the secondary outcomes, most significantly, one study showed, 65% of participants reported less alcohol consumption 6 months after receiving a brief intervention. The largest effect of all combined studies was a decrease in alcohol consumption (D'Onofrio & Degutis, 2002).

**Reviewed Articles – Emergency Department**

**MI**

Stein and colleagues (2009) evaluated the effect brief MI had on the participant’s readiness to change drinking behavior and negative alcohol consequences post intervention. 539 patients were recruited from a level 1 trauma center in New England. All patients included had a positive breath analyzer result, ingested alcohol within 6 hours prior to injury, and had a score of eight or greater on the AUDIT. Once patients met inclusion criteria and agreed to participate, their readiness to change (stage of change) was measured. This was measured with the Beiner and Abrams’ Readiness to Change Contemplation Ladder. Negative consequences were measured with DrInc, a 45-item self-report questionnaire that asks the participant about negative consequences they have experienced as the result of drinking. The participants were then randomly assigned to three groups, standard care (SC), brief intervention (BI), or brief intervention with booster session (BIB). The SC group received the normal ED care. BI group received an intervention session lasting 40-60 minutes. The intervention was completed before the patient was discharged from the hospital. The BIB group also received a MI session lasting 40-60 minutes. Afterward they were scheduled for a return appointment 7-10 days later. The booster session consisted of motivational interviewing. All interventionists were trained in giving brief interventions and had previous experience working with patients and interventions. Follow
up was done at three months and one year to track progress. At follow up the contemplation ladder and DrInc measures were repeated. Of the 539 patients, 417 completed the necessary three month and one year follow up (Stein, Longabaugh, Baird, Nirenberg, Carty, Mello, Becker, Minugh, Wirtz, Woolard, Lee, Gogineni, 2009).

Negative consequences and readiness to change were measured at baseline, three months, and one year for all groups. Patients who underwent the BI and BIB showed a statistically significant lower incidence of negative alcohol related consequences when compared to SC at 12 months. At three months the BIB group reported a statistically significant higher level of motivation to change drinking behavior then the SC group. The BI and SC group were found to have similar levels of motivation to change drinking behavior at the three month follow up. Overall, BIB alone was found to be more effective than SC. This was especially true for those participants who started with a higher level of motivation to change at baseline (Stein, et al., 2009).

Mello and colleagues (2005) compared the effects of MI on patients in motor vehicle accidents (MVA) presenting to the ED with subcritical injuries, to patients presenting to the ED with non-MVA related injuries. This study was a secondary analysis of the just described study analyzing MI for adult patients in the ED with alcohol related injuries. All participants for the original study were recruited from a level 1 trauma center. All patients were identified as a problematic drinker through 3 methods, breath analyzer, having consumed alcohol within six hours of injury, and scored positive on the AUDIT. Overall, there were 539 patients that took part in the study. These patients were randomly put into three groups, standard care (N=188), brief intervention (N=182), and brief intervention with a booster session (N=169). Standard care
was normal care for injuries and treatment or discussion about alcohol use at the physician’s discretion. The brief intervention group consisted of a 40 minute MI session. The brief intervention with booster session group received a 40 minute MI session with another intervention session seven to ten days later. All providers conducting the intervention went through training in MI and met with supervisors during the study to ensure proper execution. A follow up was done at 12 months. The original three groups were combined and then split into two groups for this study, patients in a MVA and those not in an MVA. At the 12 month follow up, there were 46 SC, 53 BI, and 34 BIB in the MVA group. In the non-MVA, there were 107 participants in the SC, 95 in the BI, and 98 in the BIB (Mello, Nirenberg, Longabaugh, Woolard, Minugh, Becker, Baird, Stein, 2005).

In the MVA group at 12 months, those receiving the BIB were shown to have a significantly lower amount of post-intervention injuries, mean of 0.35, compared to those receiving SC, mean of 1.14. From these numbers the BIB group had one third the alcohol related injuries the SC group had at 12 months. In the non-MVA group there was not a significant difference in alcohol related injuries between BIB, mean 1.59, and SC, mean 0.82, at 12 months. The results for the group receiving just the BI were not reported (Mello, et al., 2005).

Monti and colleagues (2007) analyzed the effects of brief MI and feedback on 198 problematic drinkers from a level 1 trauma center. Patient’s age ranged from 18 to 24-years-old. Monti included both men, 134 participants, and women, 64 participants. All participants included were treated in the ED, had a positive breath analyzer test of greater than 0.01, a score on the AUDIT of 8 or greater, and were drinking alcohol within six hours prior to the injury. Once patients screened positive and agreed to take part in this study, they underwent baseline
measurements and were randomly split into two groups, one receiving a MI intervention (N=98 participants) and one receiving feedback only (N=100 participants). The MI session consisted of a 30-45 minute intervention, information on risks of alcohol consumption, and a personalized feedback report containing information on their alcohol consumption and negative alcohol related consequences the patient has experienced. They then received two booster session telephone calls at one and three months after the baseline measurements. The first call was a 20 minute session and the second lasted 25-30 minutes. The feedback only group received the same feedback report and informational handouts the MI group did. This contact lasted approximately one to three minutes. The feedback only group also received two booster session phone calls at one and three months each lasting five to ten minutes. All interventionists had previous training in MI. Measurements were taken of number of days alcohol was consumed in the past month, heavy drinking days in the past month (5 or greater drinks in one occasion for men or 4 or more drinks in one occasion for women), number of drinks per week, and number of alcohol related injuries in the past year. These were taken at the 6 and 12 month follow ups. At 12 months only 79 participants in the MI group and 86 participants in the feedback group completed the follow-up assessment (Monti, Barnett, Colby, Gwaltney, Spirito, Rohsenow, Woolard, 2007).

At baseline the number of days in the past month alcohol was consumed was 8.27 days in the MI group and 7.31 days in the feedback group. At six months, in the MI group, the number of days alcohol was consumed in the previous month decreased to 4.73 and at 12 months it decreased even further to 4.52 days. In the feedback only group, at six months the number of days alcohol was consumed in the previous month decreased to 6.19 and at 12 months it had increased slightly to 6.54 days a month. The number of heavy drinking days in the past month at baseline was 5.49 in the MI group and 4.01 in feedback group. At six months, heavy drinking
days for the MI group decreased to 2.87 and further decreased to 2.72 days at 12 months. In the feedback group, heavy drinking days in the past month also decreased at six months to 3.64 days and 3.53 days at the 12 month follow up. The number of drinks per week was also recorded. At baseline the MI group reported consuming an average of 13.07 drinks per week and the feedback group reported consuming 10.77 drinks per week. At six months, drinks consumed per week decreased to 6.63 in the MI group and 9.20 drinks per week in the feedback group. At the 12 month follow up a further decrease in drinks consumed per week was reported in both groups with 6.10 drinks in the MI group and 8.83 drinks in the feedback group. Alcohol related injuries were reported at baseline and at 12 months for both groups. At baseline, the MI group reported an average of 52 injuries in the past year and the feedback group reported an average of 56 injuries. Both groups showed a similar decrease in injuries at the 12 month follow up. The MI group reported 31 injuries at 12 months and the feedback group reported 32 injuries. In total, the MI group reduced alcohol consumption by 45-53% by the 12 month follow up, compared to the feedback group who reduced consumption by 11-18% by the 12 month follow up (Monti, et al., 2007).

D’Onofrio and colleagues (2008) examined the efficacy of brief MI on 494, male and female, problematic drinkers in the ED delivered by emergency practitioners. Three aspects of drinking were analyzed, binge episodes (more than 5 drinks for men or 4 drinks for women in one occasion) in the last 30 days, the number of drinks per week, and alcohol related consequences. Patients were included in this study if, they were at least 18-years-old, came to the ED secondary to an alcohol related injury, and had a breath analyzer test greater than 0.02mg/dl. In total 500 participants met inclusion criteria and agreed to take part in the study. All participants went through baseline alcohol assessment and demographic questions. The
participants were then randomly split into two groups, a brief intervention (N=250) and a scripted discharge group or control (N=250). The BI group received an MI session lasting less than 10 minutes. At the end of the session, patients were asked to sign a “drinking agreement.” The participants in the scripted discharge group were read a statement, lasting less than one minute, containing general health advice about drinking, exercising, smoking and using seatbelts. Follow ups were done at 6 and 12 months by telephone. Throughout the follow ups, three participants in each group could not be reached (D’Onofrio, Pantalon, Degutis, Fiellin, Busch, Chawarski, Owens, O’Connor, 2008).

Both intervention groups had similar baseline measurements. The average drinks per week at baseline were 13.6 drinks for the BI group and 12.4 drinks for the control group. At six months, the BI group reported the number of drinks had decreased to 9.4 and the control group reported 9.1 drinks. One year after the initial assessment the number of drinks per week had increased from the six month mark in both groups to 9.8 drinks. Over all, this shows an average decrease of 3.8 drinks a week from baseline in the MI group and an average decrease of 2.6 drinks in the control. The number of binge episodes also showed a decrease in both groups at follow up. At baseline, the MI group reported an average of 6 binge episodes a month. This number decreased to 3.4 episodes at six months and then slightly increased to 4 episodes a month at the one year mark. Likewise, the control group reported an average of 5.4 episodes at baseline. Their binge episodes decreased to 3.6 at six months and also had a slight increase at one year to 3.9 episodes. Overall, the intervention group showed an average decrease of 2 episodes a month while the control only showed a decrease of 1.5 binge episodes. There were 18 participants who reported alcohol related injuries in the treatment group and 12 for the control at the baseline measurement. These numbers dropped to 7 participants for the treatment group and 9 for the
control group at the 12 month follow up. Both the control and the treatment group reported 84
participants driving after drinking. Both groups had similar decreases in participants driving after
drinking. The treatment group reported 47 participants drinking and driving and the control
group reported 46 at the 12 month follow up. (D’Onofrio, et al., 2008).

**FRAMES**

Wright and colleagues (1998) examined FRAMES as the brief intervention for 202
participant’s alcohol consumption in England. All participants were seen in the “accident and
emergency department.” The use of an alcohol questionnaire identified 335 patients who were
considered problem drinkers. Once identified as a problematic alcohol user, patient’s full alcohol
history was assessed and they were asked to complete an alcohol dependence questionnaire.
After the patients were assessed, they were then taken through the FRAMES intervention. Of the
335 participants eligible, 202 took part in the intervention. When deemed necessary, patients
were referred out to specialty treatment, such as, psychiatry, specialty alcohol services, and
bereavement counseling. At 6 months a follow up was given to the participants through a “self
completion questionnaire.” Out of the 202 participants, follow up information was obtained from
108. There was no control group used in this study. Wright states, because BI has been shown to
be efficacious and their main goal was to provide adequate care to their patients, they did not use
a control group (Wright, et al., 1998).

Of the participants who responded, six stated they had an increase in alcohol
consumption over the 6 months following the intervention. There were 46 patients who reported
an average decrease of 43% in their alcohol consumption. At baseline, the 46 patients reported
17.1 drinks of alcohol per day. At the follow up that number had decreased to 9.7 drinks a day.
Twenty eight patients stated they were unable to quantify the amount of units drank but reported there was a decrease in alcohol consumption (Wright, et al., 1998).

**SBIRT**

Desy and colleagues (2010) followed up on a feasibility study of SBIRT they conducted using nurses in the ED (Desy, Perhats, and Plaines, 2008). The secondary analysis examined the number of drinks per week, number of days per week the participants drank, number of ED visits, and the number of alcohol related traffic violations within a three month period. All English speaking patients 18 and older, with non-life threatening injuries who screened positive on the CAGE were included. Using participants from only one site of their original study, a total of 94 patients met inclusion criteria and agreed to participate. The participants were randomly assigned to an intervention group (N=49) and a control group (N=42). The intervention group received a five to ten minute motivational intervention, educational brochures, and a list of community resources. The control group was given a list of community resources if it was needed. Follow up was done at three months. In the intervention group, 26 participants were reached for follow up and only 20 were reached in the control (Desy, Howard, Perhats, & Li, 2010).

Baseline measurements were recorded for both groups. The intervention group reported an average of 28.6 drinks per week at baseline. At the follow up the intervention group decreased their drinks per weeks to 8.0. The control group reported an average of 9.9 drinks per week at baseline. At the follow up, the control group reported a decrease in drinks per week to 7.7 drinks or by 20%. The decrease in the intervention group was found to be statistically significant, while the decrease in the control was not. Both the control and the intervention group showed a
statistically significant decline in number of days consuming alcohol per week. At baseline, the intervention group reported 4.3 days per week and the control reported an average of 4.8 days per week. At follow up, both groups reported an average of 2.8 days per week consuming alcohol (Desy, et al., 2010).

The number of ED visits utilized by participants was also recorded. In the intervention group 20% of participants had recurring ED visits as opposed to the control group with 31% of participants with recurring ED visits. Although the intervention group reported less ED visits, the difference between the two groups was not statistically significant. No traffic violations were reported by the control group during the study, while the intervention group reported one violation (Desy, et al., 2010).

An Academic ED SBIRT Research Collaborative (2007) study looked at the impact of SBIRT on 699, male and female, ED patients. Participants were recruited from 14 different academic ED’s across the nation. Patients were included if they were at least 18-years-old, medically stable and oriented, and had a positive screen over the limits of low-risk alcohol rating set by the National Institute of Alcohol Abuse and Alcoholism. The screen includes questions about drinking frequency, amount of alcohol consumption on any specific day, the max number of drinks on any certain day in the past month, and the CAGE questions. Once patients gave consent, the number of weekly drinks, the number of days they drank in a week, and the maximum number of drinks per occasion were assessed. A total of 1,132 participants were enrolled in this study. All participants were assigned to the intervention (N=551) or control group (N=581). The intervention group received the SBIRT intervention lasting anywhere between 4 and 24 minutes. They were then assisted in being placed into a specialty alcohol
treatment program or in making an appointment with their primary care physician. The control group was only given a list of “local referral resources.” All participants were contacted at three months by telephone for follow up. 198 participants in the intervention group and 205 in the control group could not be reached (Academic ED SBIRT Research Collaborative, 2007).

At baseline, the intervention group reported 22.5 weekly drinks which decreased to 14.1 at the three month follow up. The control group reported 22.9 weekly drinks at baseline and 17.4 drinks at the follow up. From this data, the control was consuming 3.25 more drinks per week compared to the intervention group at follow up. The maximum drinks per occasion at baseline were 8.7 drinks in the intervention group and 8.4 drinks in the control. The intervention group decreased their maximum drinks to 6.5 versus the control, which decreased their maximum drinks to 7.2 at the follow up. Both groups drank an average of 3.4 days a week at baseline. The number of days in the week the participants drank was not reported for the follow up (Academic ED SBIRT Research Collaborative, 2007).

Madras and colleagues (2009) examined SBIRT across different medical settings and with problematic drinkers and illicit drug users. For this review we will focus only on the outcomes of problematic drinkers presenting to the ED. Six sites were recruited in six different states to be a part of this study. Only site one and two focused strictly on the ED. Every person coming into the participating EDs were screened for problematic drinking with the AUDIT. If the patient screened positive, baseline assessment was done and they were given a brief intervention. Both sites used FRAMES as their intervention. If deemed necessary and/or patients showed addictive drinking behavior they were referred to specialty treatment. A follow up was conducted by phone or face-to-face at six months after the intervention. The follow up rate of
problematic drinkers at site one was reported to be 25.3% (N=2,511) secondary to “program interruption.” The interruption was not specified but was stated to have caused a reduced follow up rate with the participants. Site two reported a follow up rate of 74.2% (N=2,363) for problematic drinking (Madras, Compton, Avula, Stegbauer, Stein, & Clark, 2009).

Site number one reported a total of 2,511 problem drinkers at baseline. At the follow up the number of problem drinkers dropped to 1,095, a decline of 56.4%. Site two reported 2,363 participants at baseline. This number also decreased to 955 problem drinkers, a decline of 59.6%. Madras states site two had a statistically significant reduction in problematic drinking. Site one was not considered to be statistically significant because of the low follow up rate (Madras, et al., 2009).
Discussion

Problematic drinking and low levels of chronic alcohol consumption contributes to numerous health problems, such as, cirrhosis, pancreatitis, cardiomyopathy, and nervous system disorders (Moyer & Finney, 2004/2005). This pattern of drinking also increases mortality (Whitlock, et al., 2002). Health care providers are in an ideal position to screen for, and provide brief interventions for this problem behavior (Moyer & Finney, 2004/2005). These brief interventions work to change patients’ drinking behavior by collaborating with the patient in setting realistic goals for responsible drinking or abstinence (Moyer & Finney, 2004/2005). These brief interventions have been used in family practice/primary care and ER settings resulting in positive outcomes (Whitlock, et al., 2002). The most commonly used brief intervention in this review was MI. Both primary care/family practice and ED frequently used MI as the intervention and reported significant reductions in alcohol consumption, alcohol related injuries, and alcohol related consequences. The success of SBIRT in the ED is likely because it was developed from MI but adapted to the ER environment.

Different outcome measures were used to assess the efficacy of the brief interventions examined in this review. The most common outcome measure was, alcohol consumption as measured by number of drinks per day, number of drinks per week, amount per drinking occasion, excessive drinking (defined as greater than 18 drinks per week for men and greater than 13 drinks per week for women), and binge episodes per month Rubio et al., (2010). All eighteen studies in this review showed brief interventions to be effective in reducing alcohol consumption at the time of follow up. The meta-analysis presented in this review showed the
same results except for the review by Poikolainen (1999) who reported one negative outcome in the use of MI.

Other outcome measures used in these studies of brief interventions included: hypertension (HTN), alcohol related injuries, and alcohol related visits to the ED. Liszka Rose et al., (2008) showed the 5 A’s significantly reduced HTN in the intervention group two years after the intervention. Mello et al., (2005) found that MI brief intervention, in the ER, with a booster session greatly decreased the number of injuries and alcohol related consequences compared to standard care. Desy et al., (2010) reported participants in the BI group had fewer recurring ED visits when compared to the control group. Brief interventions effect more than just amount of alcohol consumed but translate into real health benefits.

The long term outcome of the brief interventions varied from study to study depending on the length of time until follow up and if a booster session was used. All studies comparing a brief intervention with a booster session to a brief intervention and/or a control group showed those with a booster session to be most efficacious. Across studies having more than one follow-up assessment, without booster sessions, it was typical that as more time passes the drinking outcomes of the intervention and control groups become similar. These studies suggest that multiple interventions (in the form of booster sessions) are likely to produce more permanent changes than a onetime intervention.

The limitation of this study is the narrow inclusion/exclusion criteria. Many of the studies analyzing brief interventions were conducted in the 1980s and 1990s. The 10-year limit used in this review was an attempt to examine the most recent findings in this area, taking advantage of advances made in both the interventions themselves and the methods used to study them.
Realizing the large number of studies being excluded, it was decided to briefly review previous reviews conducted in this area that cover pre-2000 studies. However, the end result was having small numbers of studies addressing certain interventions. The decision to examine only studies conducted in the USA also limited the number of studies to be reviewed. In fact, this was so limiting that some non-USA studies needed to be included. It was hoped that by limiting studies to the US the results would be more generalizable to US medical settings. It is believed this remains true except for FRAMES where the bulk of the studies examined in this review were conducted outside of the US. An additional limitation of this review was the variation in alcohol consumption outcome variables. Studies reported consumption amounts in ounces, grams, standard ethanol content (SEC), units, or drinks. For this review these amounts were standardized and reported as drinks for better understanding and congruity. Another limitation to this review was two of the studies in primary care, Raj Pal et al., (2007) and Miller et al., (1993) were not done in a medical setting. These two studies used participants from the community. This emulated the type of patient population a health care provider would see in Primary care/Family practice. Finally, this was a qualitative review, describing study results rather than a quantitative review where statistical analysis would be used to determine the outcome of the review. Quantitative studies are considered the gold-standard in reviews.
Conclusion

The conclusion drawn from this review is that brief interventions are a valid, efficacious treatment for adverse health behaviors, such as, problematic drinking. Many of these studies not only showed brief interventions to decrease the amount of alcohol consumed, but they also decrease adverse health and social consequences. Brief interventions should be routinely used in the medical setting.

Physician assistants (PA) work in both primary care and emergency medicine settings and will often encounter patients with alcohol related problems in the course of their practice. Based on the results of this review, PA’s need not specialize in addiction medicine to offer substantial help to this patient population. By understanding the importance of regular screening and learning the basics of implementing brief interventions such as MI, PA’s can assume an important role in the health of the patients they care for. Despite strong support for the efficacy of interventions like MI, the present health care system often focuses on acute care rather than preventive care. The time pressures on healthcare staff often reinforce focusing only on immediate and acute patient needs. However, with proper training, motivational interviewing can be effectively used by PA’s in 10 to 30 minutes. PA’s may have more time to spend with patients than their physician counterparts and so this is an area where the PA can make a unique and meaningful contribution to the patient’s overall health. This highlights the importance of PA programs of integrating brief intervention training into the PA curriculum.

The use of screens and brief interventions for alcohol related problems are feasible and effective in medical settings when it is seen as important to the patient’s health. PA programs can enhance their use by also making screening (the use of the AUDIT) and brief interventions (the
use of Motivational interviewing) an important part of a PA’s education. With proper training in brief interventions comes effective and efficient delivery of the intervention. As this review has shown, the effective delivery of brief interventions in the medical setting, not only decreases alcohol consumption but improves the patient’s physical health.
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Abstract

Objective: To determine the efficacy of brief interventions (5 A’s, FRAMES, Motivational Interviewing and SBIRT) for problematic drinking in the primary care and ED setting. Methods: Four data bases were used: PubMed, UpToDate, Access Medicine and CINAHL. The literature search resulted in 17 articles for this review. Results: All articles reviewed showed the brief interventions studied to decrease alcohol consumption on at least one of the alcohol measures when compared to usual care or no care at all. Brief interventions using booster sessions were shown to sustain reductions in alcohol use better than brief interventions alone. A few studies found brief interventions improved health indicators, reduced alcohol related harm and healthcare utilization. Conclusion: Brief interventions are an efficacious treatment for problematic drinking in the primary care and ED setting. Physician Assistants can be trained to use these interventions to decrease alcohol consumption and improve their patient’s health.