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<b>14. ABSTRACT:</b> The overriding objective of this research is to reduce hazardous drinking in a military sample by implementing two motivational interventions and comparing them to a treatment-as-usual condition. Individuals who are referred to the Air Force Alcohol and Drug Abuse Prevention and Treatment (ADAPT) program as the result of an alcohol incident or who are self-referred are randomly assigned to one of three interventions: (1) a group motivational intervention, (2) an individual motivational intervention, or (3) a treatment-as-usual group. All participants provide data regarding drinking and related problems at baseline and at 3, 6, and 12 months following the interventions. Analyses focus on (1) determining the effectiveness of the interventions in reducing alcohol use and alcohol-related problems, (2) testing factors that may mediate or moderate responses to the interventions, and (3) determining the cost and cost-effectiveness of treatment. The research includes a large sample (N = 675) and an extended follow-up (1 year) on intervention effects, components that most previous intervention studies have lacked. From a practical perspective, the ability to classify which individuals will benefit from a motivational intervention has important military readiness and alcohol policy implications.					
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## Table of Contents

Cover .....	1
SF 298 .....	2
Table of Contents .....	3
1. Introduction and Objectives .....	4
2. Body .....	6
3. Key Research Accomplishments.....	10
4. Reportable Outcomes .....	11
5. Conclusions .....	12
6. References .....	13
Appendix A: Tape Coding Supervision Plan .....	16
Appendix B: Base Survey .....	18
Appendix C: Presentations .....	19
Appendix D: Revised Statement of Work.....	69

# 1. Introduction and Objectives

Alcohol abuse has been a long-standing problem in the military. The Armed Services have experienced problems with alcohol from the earliest days of military service, in part because heavy drinking has been an accepted custom and tradition (Bryant, 1979; Schuckit, 1977). In the past, alcohol was thought to be necessary for subsistence and morale and, as such, was provided as a daily ration to sailors and soldiers. In the predominantly male U.S. military population, heavy drinking has served as a test of “suitability for the demanding masculine military role” (Bryant, 1974, p. 133), and hard-fighting soldiers have commonly been characterized as hard-drinking soldiers. Alcoholic beverages have been available to military personnel at reduced prices at military outlets and, until recently, during happy hours on base (Bryant, 1974; Wertsch, 1991). In addition, alcohol has been used in the military to reward hard work, to ease interpersonal tensions, and to promote unit cohesion and camaraderie (Ingraham, 1984).

More recently, however, military policy has emphasized the negative effects of alcohol abuse and has sought to foster responsible use (Department of Defense [DoD], 1994, 1997). Since 1972, DoD has established prevention and treatment policies to confront alcohol abuse and alcoholism among military personnel (DoD, 1972, 1980, 1983, 1985, 1994, 1997). In 1986, these directives were combined with broader ones to form a comprehensive health promotion policy that recognized the value of healthy lifestyles for military performance and readiness (Bray et al., 2003; DoD, 1994). Under this policy, DoD directed programs toward preventing the misuse of alcohol, providing counseling or rehabilitation services to abusers, and providing education to various target audiences (Bray, Kroutil, & Marsden, 1995). The DoD Prevention, Safety, and Health Promotion Council (DoD, 1999) put forward a broad-based initiative to address the substantial impact of alcohol use on the military. The strategic plan seeks to reduce heavy alcohol use, promote a responsible alcohol use lifestyle and culture, promote alcohol alternatives, and deglamorize alcohol use. More recently, in 2003, DoD reissued and expanded the health promotion directive (DoD, 2003).

Despite these various policy initiatives, rates of heavy drinking (five or more drinks per typical drinking occasion at least once a week) have remained remarkably stable over the past 2 decades and increased significantly between 1998 and 2002, from 15% to 18% (Bray et al., 2003). Heavy drinking remains at problem levels and is particularly common among young enlisted personnel. High rates of heavy drinking were found among military personnel with a high school education or less (27%), those aged 20 or younger (26%), those aged 21 to 25 (28%), unmarried personnel (26%), and junior enlisted personnel (31%). In 2002, about 10% of military personnel experienced serious consequences from their alcohol use, about 17% experienced productivity loss, and about 12% had alcohol dependence symptoms. Negative effects associated with alcohol use were more common among heavy drinkers than among less frequent drinkers. For example, compared with moderate drinkers, heavy drinkers were more likely to experience serious consequences (30% vs. 4%), productivity loss (45% vs. 12%), and symptoms of dependence (40% vs. 6%) (Bray et al., 2003).

This study seeks to empirically assess the effectiveness of two motivational interventions (MI) compared with treatment as usual in the Air Force Alcohol and Drug Abuse Prevention and Treatment (ADAPT) program. Follow-up assessments are planned for 3, 6, and 12 months. In addition, the study will establish cost-effectiveness indices for these interventions, providing DoD with valuable information that will support policy and funding decisions. Findings from this study will provide information on potential interventions for use by DoD as part of its alcohol abuse

reduction initiative. Specifically, the data will help inform alcohol abuse prevention strategies targeting heavy-drinking personnel. Our findings will also have important implications for DoD's efforts to develop comprehensive plans for treating alcohol abuse among military personnel. Finally, our results will help identify avenues for further investigation. Four major objectives guide the study:

- Evaluate the short- and long-term effectiveness of two MIs with heavy-drinking military personnel. We will test the effects of an MI delivered individually and an MI delivered in a group format to determine whether a group condition (GMI) can produce outcomes similar to those demonstrated with an individual MI (IMI).
- Compare GMI and IMI with a treatment-as-usual control group. Results will provide information on the effectiveness of the current Air Force substance abuse seminar (SAS) and a comparison with two experimental conditions.
- Test factors that may mediate or moderate responses to the interventions. These interventions are promising strategies to reduce harmful drinking in that they may trigger the change process (i.e., problem recognition, concern about drinking, and a desire to change drinking behavior). The assessment portion of the interventions will include measures of factors to be tested as mediators. Knowledge of the change process will offer a better understanding of how MI may lead to behavioral change. A number of individual-level factors may also interact with the interventions to attenuate responses. These factors will be included in the design as potential moderators of the interventions' effectiveness. Factors that moderate effectiveness will help identify populations for whom the interventions work.
- Assess the cost-effectiveness of the three interventions. The cost-effectiveness analysis will provide an estimate of the additional costs, relative to SAS, of achieving a given improvement in effectiveness using either of the MI approaches. The results from this analysis will allow decision makers to make fully informed treatment resource allocation decisions by weighing gains in effectiveness against any additional cost.

An evaluation of outcomes will provide a clearer understanding of the approach with the greatest benefit for military drinkers and the factors that mediate or moderate the intervention. The research includes a large sample (N = 675) and an extended follow-up (1 year) on intervention effects, components that most previous intervention studies have lacked. From a practical perspective, the ability to classify which individuals will benefit from an MI has important military readiness and alcohol policy implications.

## 2. Body

### 2.1 Background

Almost 200,000 new personnel are recruited into active-duty military service each year, entering a force numbering about 1.4 million (DoD, 1999). Young recruits have many of the same issues and problems experienced by civilian young adults. In the civilian population, the 18-to-25 age group has the highest prevalence rates of heavy alcohol use and tobacco use (Substance Abuse and Mental Health Services Administration [SAMHSA], 2003). These high rates among civilian young adults may be exacerbated among military personnel, who are away from family and other social supports and who are facing the stresses of military life, including working in high-risk environments. Indeed, prevalence rates of heavy alcohol use are significantly higher among military personnel than civilians, particularly for males and younger enlisted personnel (Bray et al., 1999).

Alcohol use among military personnel is implicated in lowered work performance, accidents and injury, and serious problems with others and the law. These factors detract from military readiness. According to research conducted by RTI International on behalf of DoD, heavy alcohol use (defined in military studies as drinking five or more drinks per typical drinking occasion at least once a week) decreased slightly between 1980 and 1998, from 21% to 19%; nonetheless, it remains at problem levels and is particularly common among young enlisted personnel (Bray et al., 1999). High rates of heavy drinking are found among military personnel with a high school education or less (24%), those aged 20 or younger (24%), those aged 21 to 25 (26%), unmarried personnel (24%), and junior enlisted personnel (26%). In 1998, about 7% of military personnel experienced serious consequences from their alcohol use, 14% experienced productivity loss, and about 5% could be defined as dependent on alcohol. Negative effects associated with alcohol use were more common among heavy drinkers than less frequent drinkers. For example, compared with moderate drinkers, heavy drinkers were more likely to experience serious consequences from alcohol use (24% vs. 4%), productivity loss (39% vs. 9%), and symptoms of dependence (22% vs. 1%).

Since 1972, the DoD has been establishing prevention and treatment policies to confront alcohol abuse and alcoholism among military personnel (DoD, 1972, 1980, 1983, 1985, 1994, 1997). In 1986, these directives were combined with broader ones to form a comprehensive health promotion policy that recognized the value of good health and healthy lifestyles for military performance and readiness (Bray et al., 2003; DoD, 1994). Under this policy, DoD directed programs toward preventing the misuse of alcohol, providing counseling or rehabilitation services to abusers, and providing education to various target audiences (Bray et al., 1995). The DoD Prevention, Safety, and Health Promotion Council (DoD, 1999) recently put forward a broad-based initiative to address the substantial impact of alcohol use on the military. The strategic plan seeks to reduce heavy alcohol use, promote a responsible alcohol use lifestyle and culture, promote alcohol alternatives, and deglamorize alcohol use.

An important target group for education and enforcement of DoD alcohol abuse policies is young adult personnel. Heavy alcohol use is common among young adults in the civilian household population, from whom military recruits are drawn. Findings from the 2000 National Household Survey on Drug Abuse (NHSDA) indicate that about 38% of young adults aged 18 to 25 were binge drinkers (drank five or more drinks per occasion on at least 1 day in the previous 30 days) and 13% were heavy drinkers (drank five or more drinks per occasion on 5 or more days in the previous 30 days) (SAMHSA, 2003). Both binge drinking and heavy drinking were relatively stable among young adults during the 1990s, although both increased significantly between 1997 and 1998.

Heavy drinking was particularly common among young adult males (47%), Whites (43%), those with a college education (41%), and those employed full time (41%). Heavy drinking decreased between 1999 and 2000 for those in college (from 43% to 41%) but was stable among other young adults (34%).

Research suggests that brief interventions can be effective with young adult populations (Anderson et al., 1998; Bien, Miller, & Tonigan, 1993; Marlatt et al., 1998; Miller, 2000; Monti et al., 1999). A brief intervention for alcohol use is typically defined as minimal interaction with a medical or mental health professional, focusing on the health risks associated with drinking and ranging from several minutes to several sessions. Brief interventions are particularly effective for individuals who do not have severe alcohol dependence but are drinking at harmful levels—the target population for this research. Thus, brief interventions are a cost-effective way of providing services to more individuals while saving more intensive efforts for those requiring more intensive treatment (Dimeff et al., 1999).

One of the most successful brief interventions used to date has been motivational interviewing (Zweben & Zuckoff, 2002; Butler et al., 1999). MI is conceptualized as a style of therapeutic interaction that has at its core the belief that individuals are responsible for changing their (drinking) behavior and for sustaining the changed behavior (Miller & Rollnick, 1991). Because MI includes techniques that allow the individual to explore ambivalence about changing and techniques that avoid triggering defensive behaviors, this approach is particularly useful for people who are reluctant to change and/or are ambivalent about changing. MI-based approaches have demonstrated effectiveness in young adult samples (Marlatt et al., 1998; Miller, 2000; Monti et al., 1999). Because heavy-drinking military personnel are likely to be in the 18-to-25 age group, we believe that MIs may be effective in reducing abusive drinking behaviors in this population.

Although decision makers often find it necessary to weigh the costs required to achieve any gains in effectiveness, there is little existing published research that can be used for guidance. There is no published evidence on the cost-effectiveness of group MI. Moreover, there is no published evidence on the cost-effectiveness of similar prevention interventions conducted in the Air Force. Therefore, to help policy makers allocate treatment resources within the Air Force, a rigorous cost-effectiveness analysis of these treatment alternatives compared with treatment as usual is necessary.

## **2.2 Year 3 Activities**

RTI was awarded this contract on March 1, 2004. Year 3 of the project has consisted of recruiting study participants and collecting Phase I data (baseline), obtaining final Phase II IRB approval from the Fort Detrick HSRRB, implementing Phase II data collection (3-, 6-, and 12-month follow-ups), conducting booster MI trainings at participating installations, tape coding of MI sessions, recruiting additional participating installations, and presenting the study design and initial baseline data at the Community Prevention Division Research Meetings and the Military Health Research Forum.

### **2.2.1 Phase I (Baseline) Data Collection**

Recruitment for study participants continued during Year 3 at Eglin AFB, Offutt AFB, and RAF Lakenheath. As of March 26, 2007, we had a total of 132 participants enrolled in the study (40 at Eglin AFB, 72 at Offutt AFB, and 20 at RAF Lakenheath). Of the 132 total participants, 115 were enrolled in Year 3.

The target N for the study is 675 (225 in each treatment condition). Because of staffing issues at Eglin AFB and RAF Lakenheath, enrollment was significantly lower than expected.

### **2.2.2 IRB Approvals**

Final approval for Phase I of the study was obtained from the RTI IRB in January 2004, from the Wilford Hall IRB in August 2004, and from Fort Detrick HSRRB on July 19, 2005. Approval for Phase II of the study was obtained from the RTI IRB on November 4, 2005, from the Wilford Hall IRB on January 27, 2006, and from the Fort Detrick HSRRB on May 4, 2006.

### **2.2.3 Phase II (Follow-up) Data Collection**

Phase II data collection commenced April 18, 2006. As of March 26, 2007, 74 follow-up surveys have been completed (44 three-month, 29 six-month, and 1 twelve-month).

### **2.2.4 MI Training**

MI booster training was conducted for ADAPT staff and study personnel at Eglin AFB (April 2006), Offutt AFB (May 2006 and December 2006), and RAF Lakenheath (April 2006). Travis AFB was added as a study site, and MI training was conducted in September 2006. The training and booster training included reinforcing skills needed for administering the two MI intervention conditions (IMI and GMI), as well as study procedures and requirements. Tinker AFB, Travis AFB, and RAF Lakenheath withdrew from the study because of time and staffing constraints. We are currently searching for replacement installations to increase the number of participants.

### **2.2.5 Tape Coding**

To maintain treatment integrity throughout Phase I and across installations, IMI and GMI treatment sessions are audiotaped and rated for MI adherence. During Year 3, RTI personnel coded audiotaped IMI and GMI interventions sessions and provided feedback to therapists as needed. The Tape Coding Supervision Plan is included as **Appendix A**.

### **2.2.6 Installation Recruitment**

Installation issues have been a major obstacle in attaining the goals of this project. Since the study has begun, three installations withdrew from the study because of time and staffing constraints (Tinker AFB during Year 2, RAF Lakenheath and Travis AFB during Year 3).

We are currently working with our Air Force liaison (Maj Nicole Frazer) to identify installations for recruitment as study sites.

A base survey was developed to determine whether a base may be suitable for the MI study and to aid in installation recruitment. The Base Survey is included as **Appendix B**.

### 2.2.7 Presentations

During Year 3, the following presentations on study design and initial baseline data were given at the Community Prevention Division Research Meetings and the Military Health Research Forum.

Olmsted, K., Hunter, C., and Brown, J. M. *Motivational Interventions to Reduce Alcohol Use in a Military Population*. Presented at the Military Health Research Forum, San Juan, Puerto Rico, May 1-4, 2006.

Brown, J.M. *Motivational Interventions to Reduce Alcohol Use in a Military Population*. Presented at the Air Force Community Division Research Meeting, Crystal City, Virginia, June 7, 2006.

Cowell, A. and Brown, J. M. *Interventions to Reduce Alcohol Use in a Military Population, Cost Analyses*. Presented at the Air Force Community Division Research Meeting, San Antonio, Texas, December 7, 2006.

The presentation PowerPoint slides and poster are attached as **Appendix C**.

### 2.3 Project Schedule

Because of a much lower than anticipated participant recruitment rate and installation withdrawals, we will be applying for a no-cost extension. The no-cost extension will allow us to lengthen the participant recruitment period and give us time to recruit additional installations to meet our target N of 675 participants without additional funding. The timeline for the statement of work has therefore been adjusted (see **Appendix D** for the revised statement of work).

### **3. Key Research Accomplishments**

Accomplishments during Year 3 include the following:

- Obtained final clearance for Phase II (follow-up) from the Fort Detrick HSRRB IRB.
- Conducted MI trainings at Eglin AFB, Offutt AFB, RAF Lakenheath, and Travis AFB.
- Collected Phase I (baseline) data on 115 participants.
- Collected Phase II (follow-up) data (44 three-month, 29 six-month, and 1 twelve-month assessment).
- Presented the study design and initial baseline data at the Community Prevention Division Research meetings on June 7, 2006, in Washington, DC, and on December 7, 2006, in San Antonio, TX.
- Presented a poster on initial baseline data at the Military Health Research Forum May 1-4, 2006, in San Juan, Puerto Rico.
- Coded participant MI audiotaped sessions and provided feedback to therapists.
- Began initial data editing and cleaning on Phase I and Phase II data.

## **4. Reportable Outcomes**

There are no final reportable outcomes to date; data collection is still in progress. Please see Appendix A for initial baseline data outcomes.

## **5. Conclusions**

No conclusions can be made at this time because the main study has not been completed.

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# APPENDIX A

## Tape Coding Supervision Plan

### Quality Monitoring

In order to address our research questions, we must ensure that we are actually delivering the interventions we intend to deliver. For this reason, we have designed a manualized treatment protocol that you will follow in the sessions. We will chart your progress in delivering the MI and will give you feedback on your progress.

Our objective is not to teach you more about MI – but rather to teach you HOW to learn MI. Just as your clients learn how to modify behavior, learning MI is an ongoing process that will occur throughout the course of the study and beyond.

#### I. Certification Process

##### A. Practice tapes

Each therapist will be asked to submit 3 mock MI sessions that will be reviewed by Dr. Brown. One tape will be generic MI skills, one tape will be group MI skills, and one will be individual MI skills. We ask that the mock MI sessions be conducted with volunteers who pretend to be typical clients presenting for substance abuse treatment in your program. The tapes should be 20 minutes in length and should demonstrate key MI behaviors. We will rate each segment according to global scores and behavior counts:

Global Scores:

- Empathy and Understanding
- MI Spirit
- Adherence to the protocol

Behavior Counts:

- Giving Information (in an MI adherent fashion)
- Questions (Open/Closed)
- Reflections

##### B. Certification Criteria

To assure that we are delivering MI in the study, we will adopt the standard practices for MI certification. These will include the following criteria:

- |                             |         |
|-----------------------------|---------|
| ○ Global MI Spirit Rating   | ≥ 5 / 7 |
| ○ % MI-Adherent Responses   | ≥ 95%   |
| ○ Reflection/Question Ratio | ≥ 2.0   |
| ○ % Complex Reflections     | ≥ 55%   |
| ○ % Open-Ended Questions    | ≥ 55%   |

We will work with you to ensure that you obtain certification. If certification criteria are not met within the first three taped interviews we review, we will ask you to submit additional tapes to be reviewed for certification.

### **Certification Timeline**

- Week 1 (1st week after training) Submit Practice Tape #1
- Week 2 Supervision teleconference to review Tape #1
- Week 3 Submit Practice Tape #2
- Week 4 Supervision teleconference to review Tape #2
- Week 5 Submit Practice Tape #3
- Week 6 Supervision teleconference to review Tape #3  
and to discuss certification status
- Week 7 Submit Practice Tape #4 (if needed)
- Week 8 Supervision teleconference to review Tape #4  
and to discuss certification status

### **II. Ongoing Monitoring**

Even the best interventionists have a tendency to “drift” from the protocol over time. To help maintain treatment integrity across the course of the study, ongoing monitoring of the interventionists will be conducted by Dr. Brown. Motivational intervention sessions will be audiotaped, and a random sample of audiotapes from each interviewer will be reviewed for treatment integrity. The use of MI-adherent behaviors (double-sided reflections, change statements, open-ended questions, and summaries) and MI non-adherent behaviors (closed-ended questions, directive statements, confrontations, and defensive responses) will be coded and addressed. If you struggle with the interventions before or after the certification process, we will increase the amount of monitoring we provide to help you obtain your goals as an interventionist.

### **III. Research Supervision Teleconferences and Coaching Sessions**

For each pre- or post-certification review, Dr. Brown will conduct 30 minute research feedback teleconferences or coaching sessions. Prior to these calls, an electronic copy of your feedback will be provided to you, and your ratings will be reviewed with you over the phone. The purposes of these teleconferences or coaching sessions are to provide research supervision (vs. clinical supervision) and to discuss your progress, experiences, and observations with MI. We will practice MI during each coaching session, giving you an opportunity to practice as an MI interventionist and as a client. We will also use the time to problem solve any areas of the protocol or MI that you have had difficulties applying.

These calls will be biweekly during the pre-certification period and will occur approximately once a month subsequently. During the interim periods, you are also encouraged to call Dr. Brown if you should have any questions or concerns about the interventions.

## APPENDIX B

### Base Survey

#### PROGRAM CHARACTERISTICS

Please fill in the following characteristics about the ADAPT program on your base. Use an average over the past six months as a reference point for numbers.

<u>Base Name</u>	<u>Total active duty population</u>	<u>Total # patients/month in alcohol abuse awareness seminars</u>	<u># Groups conducted/mo</u>	<u># with Alcohol Abuse/mo</u>	<u># with Alcohol Dependence/mo</u>
------------------	-------------------------------------	---	------------------------------	--------------------------------	-------------------------------------

#### STAFF CHARACTERISTICS

Please fill in the following characteristics about the staff in the ADAPT program on your base.

<u>Last</u>	<u>First</u>	<u>Rank/Title</u>	<u>Date leaving current job</u>	<u>Participated in TEAM project</u> Yes or No	<u>Any additional MI training</u> Yes or No
-------------	--------------	-------------------	---------------------------------	--	--

**How much support for the new group MI project do you believe there is at each of the following levels?**

	<u>No support</u>	<u>A little support</u>	<u>Not sure</u>	<u>Moderate support</u>	<u>Widespread support</u>
ADAPT Clinic					
Mental Health Flight					
Medical Group					
Wing					

**On a scale of 1 - 7, with 1 being "not at all" and 7 being "extremely:"**

How important do you believe the Group MI project is? \_\_\_\_\_

If chosen, how confident are you that your program could do the project? \_\_\_\_\_

**How close are you to getting the SUAT in your program?**

\_\_\_\_\_

# APPENDIX C

## Presentations

# Motivational Interventions to Reduce Alcohol Use in a Military Population

Kristine L. Rae Olmsted, MSPH<sup>1</sup>; Maj. Christine Hunter, PhD<sup>2</sup>; Janice M. Brown, PhD<sup>1\*</sup>

<sup>1</sup>RTI International, Research Triangle Park, NC; <sup>2</sup>Office of the U.S. Surgeon General

\*Presenting author

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Presented at the Military Health Research  
Forum, San Juan, Puerto Rico, May 1-4, 2006  
RTI International is a trade name of Research Triangle Institute.

## 1. Background

In 1998, an estimated one in five military personnel were heavy alcohol users. In 2003, it was estimated that the Department of Defense (DoD) spends more than \$600 million each year on health care costs related to alcohol abuse, and an additional \$132 million to care for babies with fetal alcohol syndrome. Because alcohol dependence and problematic drinking can be expensive to treat and can result in serious health consequences including liver damage, impaired immune and endocrine system function, cardiomyopathies, polyneuropathies, psychosis, and can result in unintended consequences such as high-risk sex, occupational injury, drunk driving, domestic violence, and other negative social and/or health outcomes, the DoD would benefit from studies illustrating the performance of different alcohol interventions, as well as the cost-effectiveness of those interventions.

There is scant evidence regarding the effectiveness of specific alcohol use interventions in military populations, including motivational interviewing (MI). This study will empirically assess the effectiveness of two MI-based interventions compared with the Air Force's Substance Abuse Seminar (SAS). Findings from this study will provide information regarding potential interventions for use by the DoD as part of its alcohol abuse reduction initiative. Specifically, the data will help inform alcohol abuse prevention strategies targeted toward heavy-drinking personnel. Our findings will also have important implications for the DoD's efforts to develop comprehensive plans for treating alcohol abuse among military personnel. Finally, our results will help identify avenues for further research.

## 2. Objectives

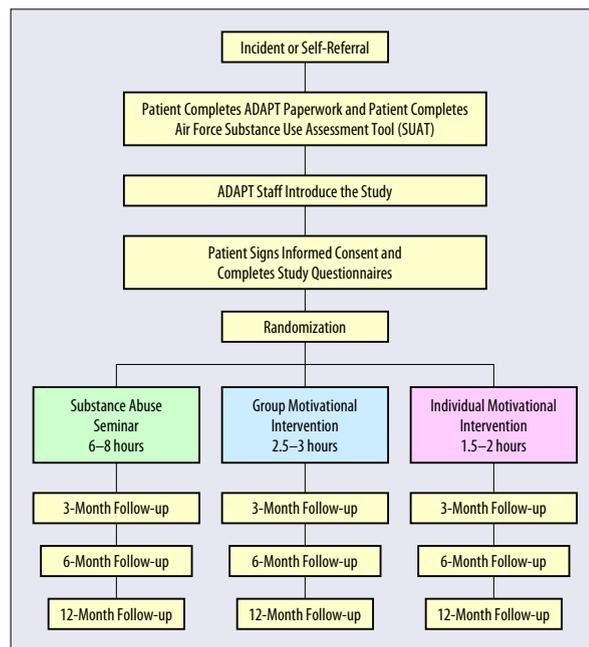
The specific objectives for this study are to:

- Objective 1: Evaluate the short- and long-term effectiveness of two motivational interventions with heavy-drinking military personnel.** We will test the effects of a motivational intervention delivered individually and in a group format to determine whether a group MI condition can produce outcomes similar to those demonstrated with individual MI.
- Objective 2: Compare the group and individual motivational interventions with a SAS control group.** Results will provide information concerning the effectiveness of the current Air Force treatment and a comparison with two experimental conditions.
- Objective 3: Test factors that may mediate or moderate responses to the MI interventions.** Motivational interventions are thought to be effective in reducing harmful drinking to the extent to which they trigger the change process (i.e., problem recognition, concern about drinking, and a desire to change drinking behavior). The assessment portion of the intervention will include measures of these factors to be tested as mediators and/or moderators of the intervention.
- Objective 4: Assess the cost-effectiveness of the three interventions.** The cost-effectiveness analysis will provide an estimate of the additional cost, relative to the SAS, of achieving a given improvement in effectiveness using either of the MI interventions. The results from this analysis will allow decision makers to make fully informed treatment resource allocation decisions by weighing gains in effectiveness against any additional cost.

## 3. Study Design

The purpose of the study is to test the effectiveness of two brief intervention strategies for reducing heavy episodic drinking and negative consequences among military personnel. Individuals who are referred to a participating Air Force installation's ADAPT (Alcohol and Drug Abuse Prevention and Treatment program) for assessment (N=750) will be randomly assigned to one of three groups. Each treatment intervention will be conducted by a trained therapist.

- IMI Condition:** Key elements of the IMI approach are (1) using an empathic therapist style, (2) helping participants perceive a discrepancy between their goals and their drinking, (3) eliciting self-motivational statements from participants, and (4) discussing alternatives for helping to change drinking behavior.
- GMI Condition:** A group MI condition will be included to test whether MI delivered in a group setting is more effective than standard treatment (which also consists of a group intervention). While the elements of the GMI approach are the same as those for the IMI approach, individuals assigned to this condition will be seen in groups of six to eight. Each session will last approximately 3 hours.
- Substance Abuse Seminar:** Individuals randomized to the SAS group will receive the education established by Air Force Instruction (AFI) 44-121, Section 3.14, which states: "All patients referred for substance abuse assessment who do not meet diagnostic criteria for alcohol abuse or alcohol dependence will be provided a minimum of 6 hours of awareness education. Substance abuse awareness education incorporates information on individual responsibility, Air Force standards, legal and administrative consequences of abuse, decision making, dynamics of substance abuse, biopsychosocial model of addictions, values clarification, impact of substance abuse on self and others, family dynamics, and goal setting."



## 4. Demographic Data

Characteristic	Percent	
Gender	Male	83.8
	Female	16.2
Marital Status	Married	25.0
	Single, Never Married	68.8
	Legally Separated	6.2
	Family History of Alcohol Problems	12.2
Plans to Deploy in Next 3 Months	GED or Did Not Graduate	6.3
	High School Diploma	87.5
	Associate's Degree	6.2

## 5. General Findings: Alcohol Use

Characteristic	Percent	
Drinks per Week	1 to 2	40.6
	3 to 4	25.0
	5 to 6	21.9
	7 or More	12.5
Heavy Days during Past 30 Days*	1 to 2	56.3
	3 to 4	9.4
	5 to 6	6.2
	7 or More	6.3
Number of Drinking Days during Past 30 Days	1 to 2	68.7
	3 to 4	18.7
	5 to 6	6.3
	7 or More	6.3
	11 or More**	12.5
Mean Number of Drinks per Drinking Day	3 to 4	21.9
	5 to 6	25.0
	7 to 8	31.3
	9 to 10	9.3
	11 or More**	12.5
Number of Drinks on Heaviest Drinking Day	1 to 2	3.1
	3 to 4	25.0
	5 to 6	46.9
	7 to 10	9.4
	11 to 15	6.2
16 to 20	9.4	

\* Five or more drinks per occasion for men; four or more drinks per occasion for women.

\*\* Maximum of 22.

## 6. Alcohol Use During Referral Incident

Figure 1. Reason for Referral

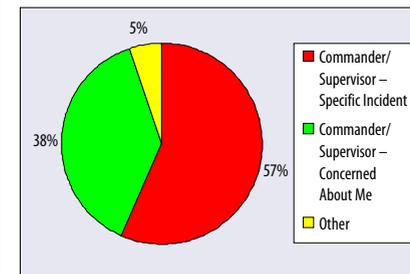


Figure 2. Referral Incident Alcohol Quantity

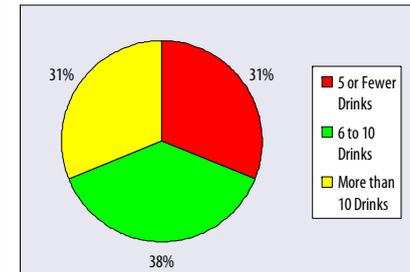


Figure 3. Referral Incident Location

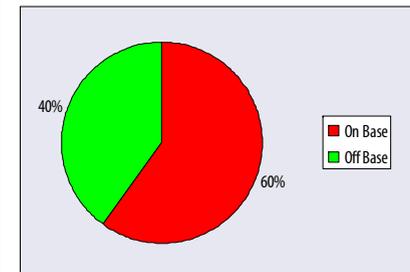
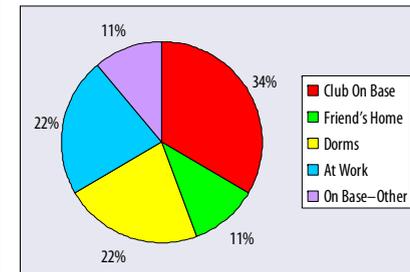


Figure 4. Referral Incident Specific Location



## 7. Alcohol Use: Culture and Productivity

Alcohol Use Culture	% Agree or Strongly Agree
It's hard to fit in in my command if you don't drink	8.1
Drinking is part of being in my unit	16.2
Drinking is part of being in the Military	27.0
Drinking is just about the only recreation available at this installation	2.7
At parties/social functions, everyone is encouraged to drink	24.3
At parties/social functions, nonalcoholic beverages are not always available	35.1

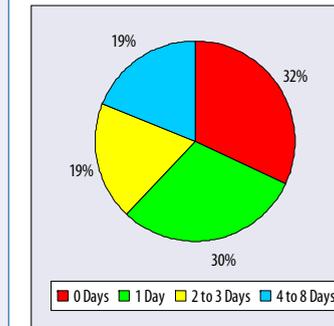
### Productivity Loss Items

How many days/times...

- Were you absent from work or regular duty?\*
- Did you report late to or leave early from work or regular duty?\*
- Were you late for work by 30 minutes or more?\*\*\*
- Did you leave work early for a reason other than an errand or early holiday leave?\*\*\*
- Were you hurt in an on-the-job accident?\*\*\*
- Did you work below your normal level of performance?\*\*\*
- Did you not come to work at all because of an illness/personal accident?\*\*\*

\* Past 30 days \*\* Past 3 months

Figure 5. Productivity Loss (Days)



## 8. Tobacco Use

Figure 6. Cigarette Use

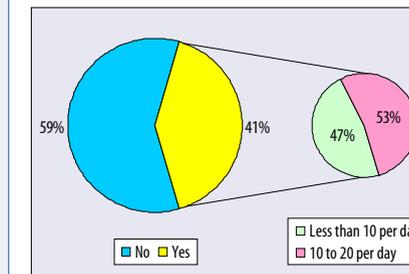
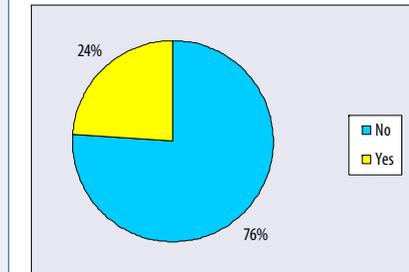


Figure 7. Smokeless Tobacco Use



## 9. Moving Forward

For the current study, data will be collected through approximately Summer of 2008. Analyses will present, for the first time, comprehensive data about effective alcohol interventions in a military population. These data will be vital to understanding additional steps the Air Force might take in addressing issues of alcohol abuse, such as developing new treatment interventions, changing alcohol use policies and practices, instituting additional prevention approaches and programs, and incorporating recruit screening and selection methods.

In addition to providing outcome data for the current Air Force treatment approach, the research will yield comparison data for the cost and cost-effectiveness of alternative approaches. Results will provide key information that can improve the effectiveness of alcohol interventions to reduce alcohol use and its consequences in the Air Force, while directly supporting the efforts and strategic action plan of the Department of Defense (DoD) Alcohol and Tobacco Advisory Council (ATAC).



# Motivational Interventions to Reduce Alcohol Use in a Military Population

*Presented at*

Community Prevention Division Research Meeting

Washington, DC

June 8, 2006

*Presented by*

Janice M. Brown, Ph.D.

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RTI International is a trade name of Research Triangle Institute.

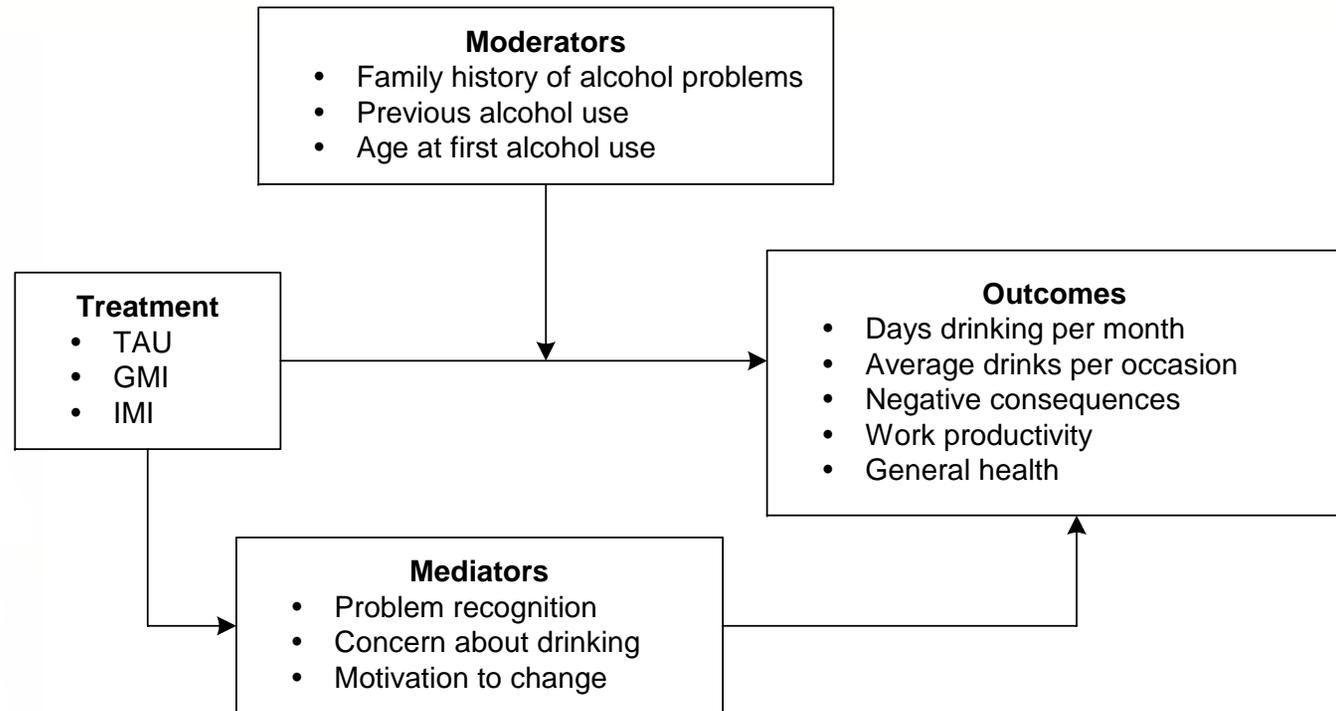




# Technical Objectives

- To evaluate the short-and long-term effectiveness of two motivational interventions with Air Force personnel who have been referred to ADAPT for screening.
- To compare group and individual motivational interventions with each other and with the Substance Abuse Seminar currently offered.
- To test mediators and moderators of the interventions' effects.
- To assess the cost-effectiveness of the three interventions.

# Model of Intervention Effects





# Interventions

- Group Motivational Intervention (GMI)
  - Group format
  - Group dynamics
    - ◆ Group polarization
    - ◆ Production blocking
    - ◆ Social Loafing
  - Alcohol use, problems, solutions
  - 2 to 2.5-hour session
- Individual Motivational Intervention (IMI)
  - Individual format
  - Alcohol use, problems, solutions
  - 1- to 1.5-hour session
- Treatment As Usual (TAU)
  - Group format
  - Education and information
  - 6- to 8-hour session



# Progress to Date

- Finalized follow-up web survey
- Began enrolling participants -1/06
- Conducted six month booster training at Eglin and Lakenheath - 4/06
- Conducted six month booster training at Offutt - 5/06
- Obtained final RTI, Wilford Hall, and Ft. Detrick HSRRB approval to conduct the follow-up - 5/06
- Began collecting follow-up data
- Recruited Travis AFB for a total of 4 bases



# Enrollment

- Eglin
  - IMI = 5
  - GMI = 5
  - TAU = 5
- Offutt
  - IMI = 10
  - GMI = 10
  - TAU = 10
- Lakenheath
  - IMI = 5
  - GMI = 5
  - TAU = 5



# Demographic Data

	<b>Characteristic</b>	<b>Percent</b>
<b>Gender</b>	Male	83.8
	Female	16.2
	<b>Marital Status</b>	
	Married	25.0
	Single	68.8
	Separated	6.2
	<b>Family History (Alc)</b>	12.2
<b>Age</b>		23.3 (19-27)



# Demographic Data (cont.)

	<b>Characteristic</b>	<b>Percent</b>
<b>Education</b>	GED or less	6.3
	H.S. Graduate	87.5
	Associate Degree	6.2
<b>Paygrade</b>	E-2	6.2
	E-3	50.0
	E-4	18.8
	E-5	26.0



# Baseline Alcohol Use

	<b>Characteristic</b>	<b>Percent</b>
<b>Drinks per Week</b>	1 to 2	40.6
	3 to 4	25.0
	5 to 6	21.9
	7 or More	12.5
<b>Heavy Days during Past 30 Days*</b>	0	28.1
	1 to 2	56.3
	3 to 4	9.4
	5 or More	6.2
<b>Number of Drinking Days during Past 30 Days</b>	1 to 2	68.7
	3 to 4	18.7
	5 to 6	6.3
	7 or More	6.3



# Baseline Alcohol Use (cont.)

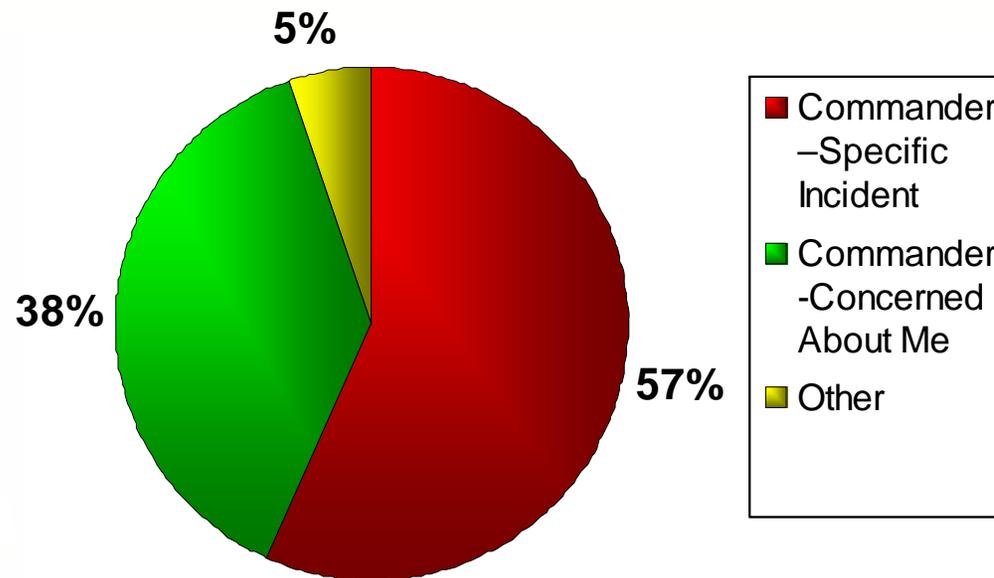
	<b>Characteristic</b>	<b>Percent</b>
<b>Number of Drinks per Drinking Day</b>	3 to 4	21.9
	5 to 6	25.0
	7 to 8	31.3
	9 to 10	9.3
	11 or More**	12.5
	<b>Number of Drinks on Heaviest Drinking Day</b>	
	1 to 2	3.1
	3 to 4	25.0
	5 to 6	46.9
	7 to 10	9.4
	11 to 15	6.2
	16 to 20	9.4



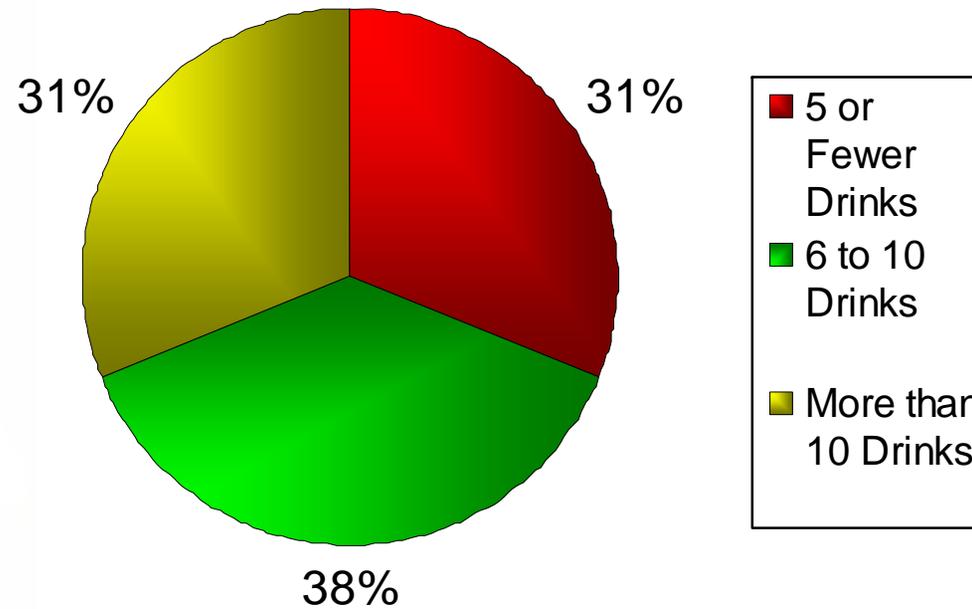
# Alcohol Use: Culture and Productivity

<b>Alcohol Use Culture</b>	<b>% Agree or Strongly Agree</b>
It's hard to fit in in my command if you don't drink	8.1
Drinking is part of being in my unit	16.2
Drinking is part of being in the Military	27.0
Drinking is just about the only recreation available at this installation	2.7
At parties/social functions, everyone is encouraged to drink	24.3
At parties/social functions, nonalcoholic beverages are not always available	35.1

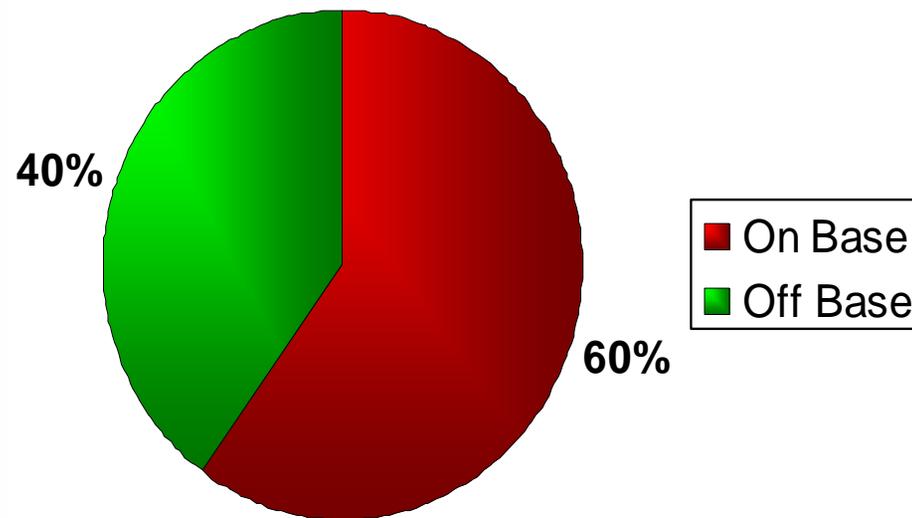
# Reason for Referral



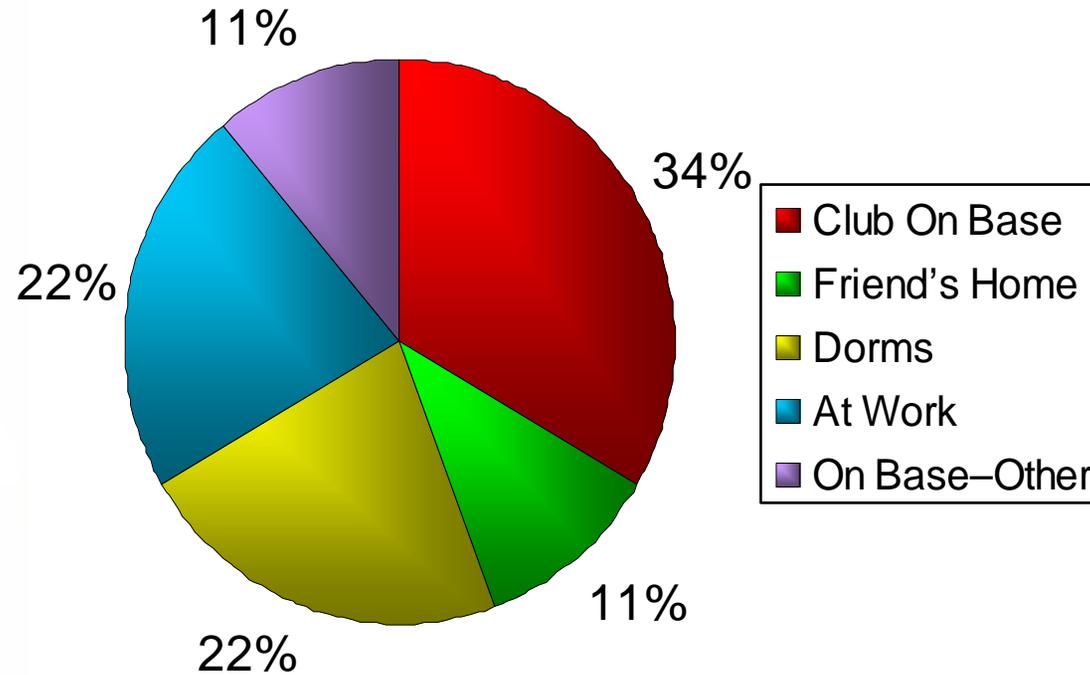
# Referral Incident Alcohol Quantity



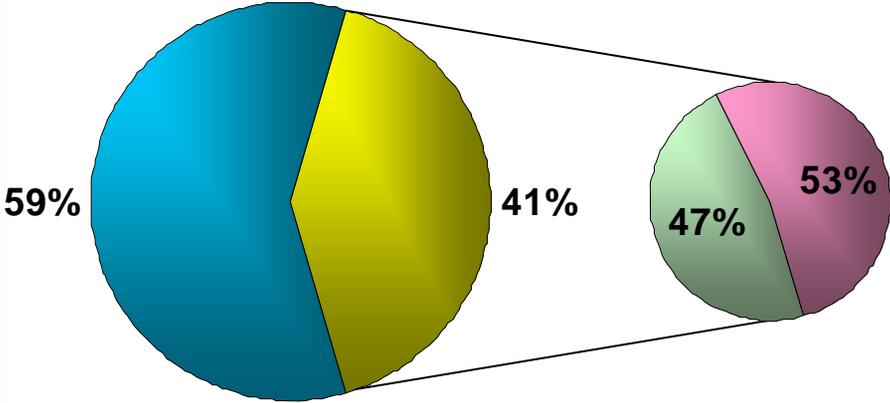
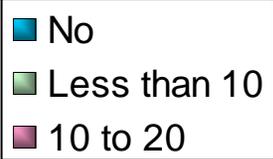
# Referral Incident Location



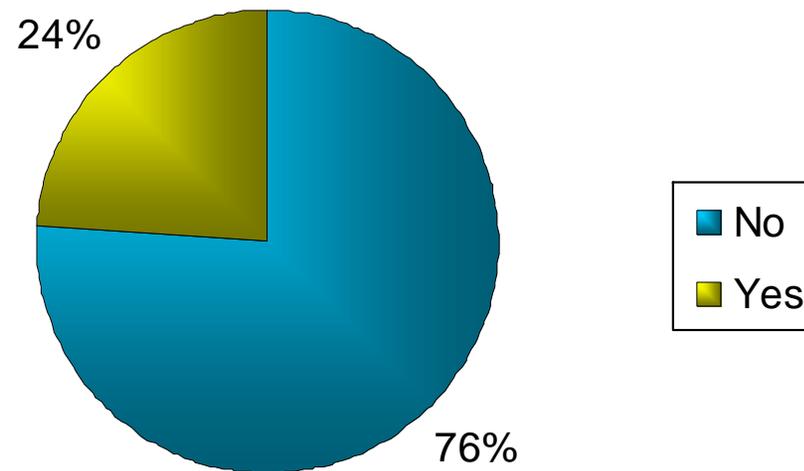
# Referral Incident Specific Location



# Cigarette Use

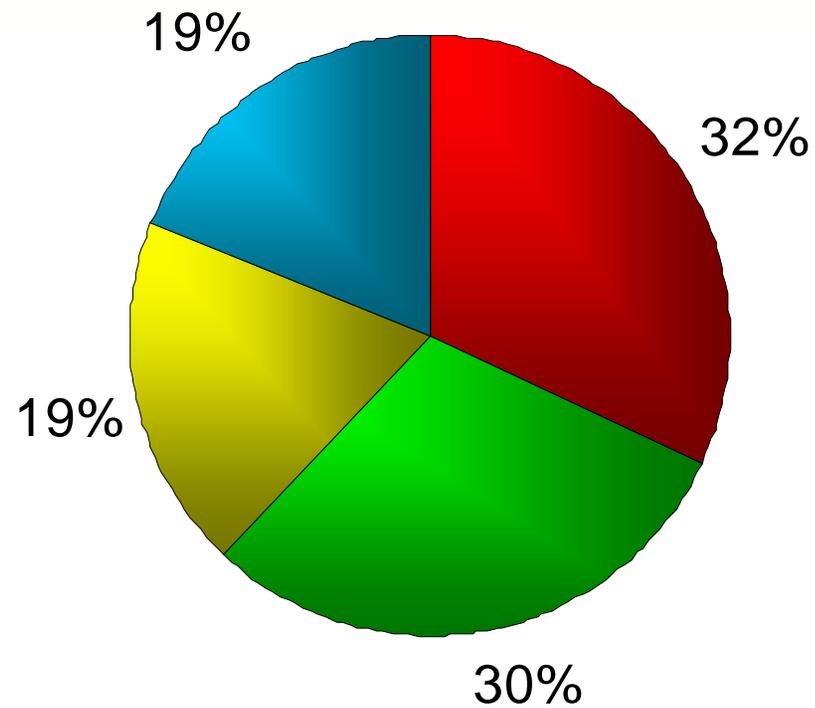


# Smokeless Tobacco Use





# Productivity Loss (Days)





# Challenges

---

- Therapists transferring from study bases (leaving the study)
- Therapists transferring to study bases (joining the study)
- Transfer of Program Managers



# Plans for Next Six Months

- Continue to recruit participants
- Conduct MI training at Travis AFB
- Continue with 3-month follow-up data collection
- Begin 6-month follow-up data collection
- Conduct preliminary analyses on baseline data
- Submit poster presentation of baseline data



# Feedback

---

- Comments on Progress
  
  
  
  
  
  
  
  
  
  
- Concerns



# Motivational Interventions to Reduce Alcohol Use in a Military Population: The Cost-Effectiveness Component

*Presented at*

Community Behavioral Health Division Research Meeting

San Antonio, TX

December 6, 2006

*Presented by*

Alexander J Cowell, Ph.D.

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RTI International is a trade name of Research Triangle Institute.





# Collaborators

---

## **RTI:**

- Janice M. Brown, Ph.D.
- Lei Li, Ph.D.
- Carol Council, M.S.

## **Air Force:**

- Maj. Nicole L. Frazer, Ph.D.



# Structure of Presentation

- Introductions
- Overall study
  - Technical objectives
    - ◆ Focus on cost-effectiveness analysis component
  - Update
- Cost-effectiveness Objective
  - What is cost-effectiveness?
  - Methods
- Conclusions, comments and questions



# Military Relevance

- Supports ADAPT objectives
  - Promote readiness, health, and wellness
  - Minimize negative consequences
  - Return individuals to service
- Provides understanding of effective approaches
- Longitudinal design may identify key events or conditions to target for change
- Provides cost-effectiveness information



# Technical Objectives

- To evaluate the short-and long-term effectiveness of two motivational interventions with Air Force personnel who have been determined to be problem drinkers
- To compare group and individual motivational interventions with each other and with the Substance Abuse Awareness Seminar currently offered
- To test mediators and moderators of the interventions' effects
- To assess the cost-effectiveness of the interventions



# Interventions

	Individual Motivational Intervention (IMI)	Group Motivational Intervention (GMI)	Treatment As Usual (TAU)
■ Format	Individual	Group	Group
■ Focus	Alcohol use, problems, solutions	Alcohol use, problems, solutions	Education and information
■ Length	1- to 1.5-hour session	2.5 to 3-hour session	6- to 8-hour session



# Update

- Eglin, Lakenheath, and Offutt trained and enrolled
- Travis to yet enroll participants
- Baseline to date (keep enrolling until April '08):

	Individual Motivational Intervention (IMI)	Group Motivational Intervention (GMI)	Treatment As Usual (TAU)	TOTAL
Eglin	5	5	8	18
L'heath	7	5	8	20
Offutt	22	20	21	63
TOTAL	34	30	37	101



# Update: Follow-up Rates

- Study will have 3, 6, and 12 month f/u
  - 3 month over all sites & conditions = 46%
  - 6 month over all sites & conditions = 31%
- No large response rate difference across conditions
- Response rate difference across sites
  - L'heath higher response rate for 3 months
  - No differences at 6 months
- Thoughts? Suggestions?



# Change of Gears!

Presentation will now focus on cost-effectiveness component



# Framing a Cost Analysis

---

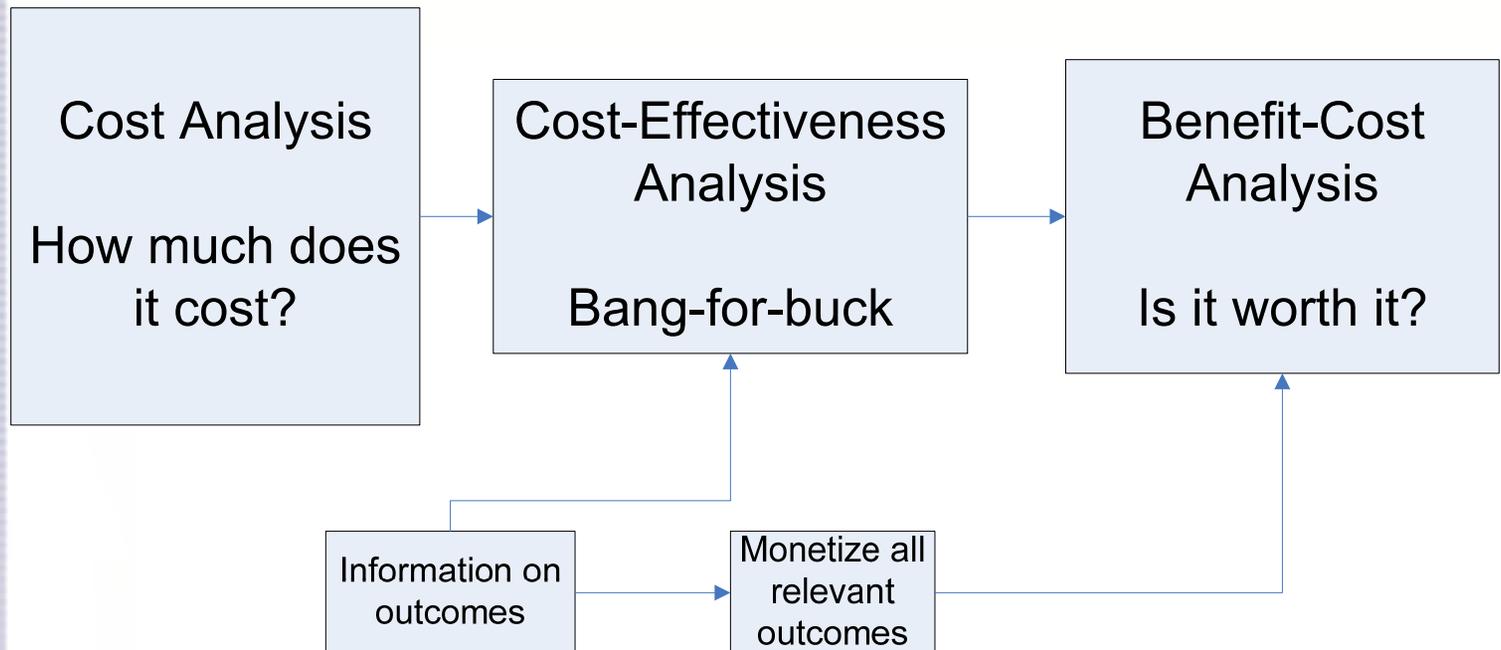
- Perspective
  - Whose costs?
- Types of analyses
  - Cost
  - Cost-effectiveness
  - Cost-utility
  - Benefit-cost



# Technical Objective 4: Cost-Effectiveness

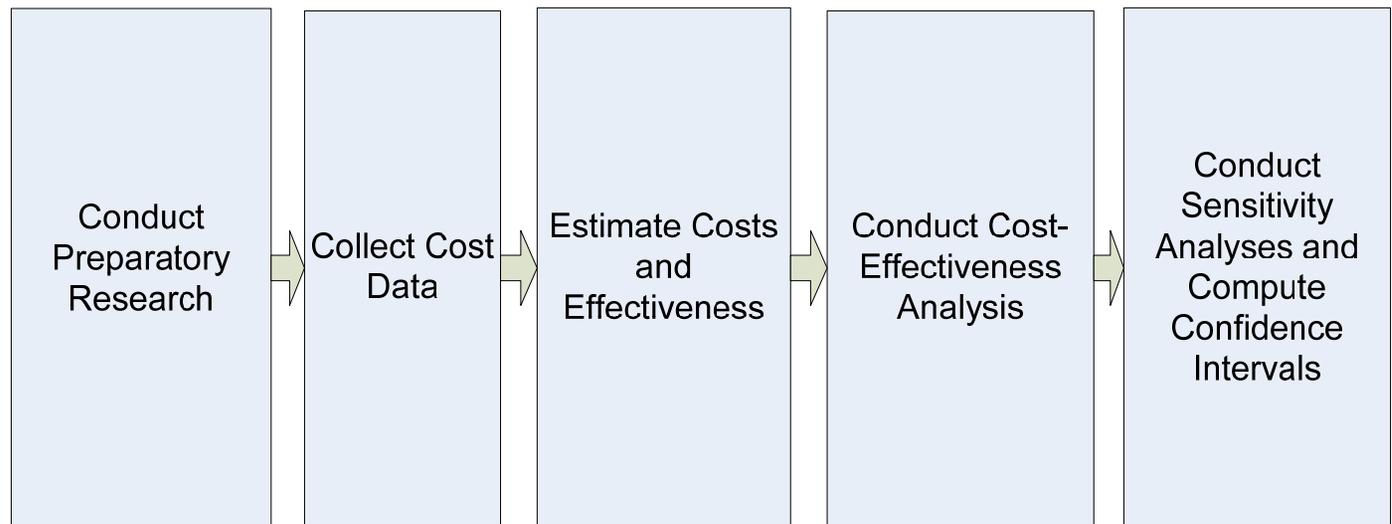
- What is Cost-effectiveness?
  - Results describe trade-off between an improvement in the outcome and the cost required to achieve it, or
  - How much does it cost to achieve a 1 unit improvement in the outcome, or
  - “bang for buck” (really “buck per bang”)

# Where Cost-Effectiveness Fits With Other Cost Analyses



# The Five Steps of Cost-Effectiveness Analysis

- Please also look at your handouts for more detailed version of diagram





# Step 1: Conduct Preparatory Research

- Conduct a focused process study
  - To understand how resources are used in the intervention
- Develop a taxonomy of these resources
- Design data collection instruments
  - Labor drives almost all costs
  - Can some outcomes in the main outcome study be monetized (e.g. productivity)?
- Collect start-up costs (e.g. training)



## Step 2: Collect Cost Data

- Specifically designed quarterly instrument
  - Examples available on request
- 5 sections covering 5-8 pages
  - Section 1: ADAPT manager information
  - Section 2: Staff salaries
  - Section 3: Number of each intervention delivered by each staff member
  - Section 4: Typical time per session
  - Section 5: Space of intervention room



## Step 2: Collect Cost Data

- Process preserves anonymity of response
  - Human subjects concern
- Coupled with specifically designed logs for bases to use
  - RTI does not see logs
- Already have information on grade-level salaries
- Will collect information on value of space used



## Step 3: Estimate Costs and Effectiveness

- Estimate cost per client for each intervention
  - Conceptually straightforward
  - Can be practically complex
- Estimate effectiveness of the interventions
  - Main study will provide this for
    - ◆ Days drinking per month
    - ◆ Average drinks per occasion
    - ◆ Negative consequences
    - ◆ Work productivity & general health



## Step 4: Conduct Cost-Effectiveness Analyses

- Chose one outcome of interest
- Eliminate dominated interventions
- Compute Incremental Cost-Effectiveness Ratio (ICER) for all non-dominated interventions
- Prefer intervention that costs the least for every 1 unit improvement in the outcome
- Do over for other outcomes of interest



## Step 5: Conduct Sensitivity Analyses and Compute Confidence Intervals

- Sensitivity analysis
  - How robust are conclusions to variations in the assumptions made in the model?
  - E.g. vary the way in which administrative overhead is apportioned
- Compute confidence intervals for ICER
  - Bootstrap techniques



# Status

- Collected three quarterly data reports for all three sites
- Collected training cost data for all three sites
- Range of provider salaries across three bases
  - \$24,000 - \$80,000



## Status (cont'd)

- Average time spent delivering interventions
  - In hours
  - Weighted by number of sessions delivered

	IMI	GMI	TAU
Eglin	1.2	2.2	6
L'heath	1.4	2	3.5
Offutt	1.5	2.8	2.8
All bases	1.4	2.7	3.5



## Status (cont'd)

- Average time spent supporting interventions
  - In hours
  - Weighted by number of sessions delivered

	IMI	GMI	TAU
Eglin	1	0.5	1.5
L'heath	0.5	0.5	0.6
Offutt	0.3	0.6	0.7
All bases	0.5	0.6	0.7



## Status (cont'd)

- Average time spent delivering and supporting
  - In hours
  - Weighted by number of sessions delivered

	IMI	GMI	TAU
Eglin	2.2	2.7	7.5
L'heath	2.0	2.5	4.1
Offutt	1.7	3.4	3.4
All bases	1.9	3.3	4.1



# Challenges

- Need to collect information on value of space used
  - Realtor estimates, if sold
  - Cost-to-build
  - MEPRS (Medical Expense Performance and Reporting System)



# Plans for Next 6 Months: Cost-Effectiveness Analysis

---

- Continue collecting quarterly cost data
- Train Travis on collecting costs using the quarterly cost instrument
- Obtain preliminary estimates of following cost components
  - Training
  - Staff labor in on-going interventions
  - Value of space



# Plans for Next 6 Months: Analysis Extensions

- Cost-effectiveness study will feed into a benefit-cost analysis from the Air Force perspective
- Benefit-cost analysis answers, “is a given intervention worth it?”
- Begin to estimate value of outcomes that can be monetized
  - Examples
    - ◆ participant days absent from work



# Feedback

---

- Comments on Progress
  
- Concerns

## APPENDIX D

### Revised Statement of Work

**Title: Motivational Interventions to Reduce Alcohol Use in a Military Population**

**PI: Janice M. Brown, Ph.D.**

- Task 1.* Obtain Study Approvals, Months 1–24
- Prepare and submit RTI Institutional Review Board (IRB) materials.
  - Prepare and submit regional and/or individual base IRB materials to the Air Force.
  - Prepare and submit Ft. Detrick Human Subjects Research Review Board (HSRRB) materials.
  - Conduct study briefings at all participating Air Force bases.
- Task 2.* Prepare Computer Assessment, Months 1–6
- Purchase study computers.
  - Program computer assessment.
- Task 3.* Conduct Motivational Interviewing (MI) Training of Alcohol and Drug Abuse Prevention and Treatment (ADAPT) Staff, Training of Tape Coding Staff, Months 7–9 and ongoing as new bases join the study
- Prepare intervention manuals.
  - Conduct MI training of ADAPT staff at RTI.
  - Send PI and data manager to the Center on Alcoholism, Substance Abuse and Addictions (CASAA) in Albuquerque for intensive tape coding training.
  - Hire tape coding staff.
  - Conduct training of tape coding staff at RTI.
- Task 4.* Pilot Assessment, Months 10–22
- Set up computers at Air Force bases.
  - Conduct pilot test of instruments at one Air Force base.
  - Ensure seamless data collection for Air Force assessment tool and web-based assessment.
- Task 5.* Participant Recruitment, Months 22–52 (Data collection period extended to allow for an adequate number of participants to test for effectiveness)
- Begin participant recruitment and continue until complete (N=675).
  - Transfer Air Force baseline assessment data to RTI.
- Task 6.* Booster Training for MI Counselors and Tape Coders, Every six months, Months 22–48
- Conduct booster training sessions for MI counselors to ensure treatment integrity.
  - Conduct booster training of tape coders at RTI to ensure coding consistency.
- Task 7.* Follow-Up Assessment, Months 25–55
- Contact study participants for follow-up assessment.
  - Conduct 3-month follow-up assessments.

- Task 8.* Treatment Cost Assessment, Months 25–52
- a. Develop tailored cost analysis instrument with input from Air Force treatment personnel on definitions and structure of instrument.
  - b. Collect cost data at the Air Force bases from treatment personnel.
  - c. Calculate costs per client from raw cost data.
- Task 9.* Follow-Up Assessment, Months 28–56
- a. Contact study participants for follow-up assessment.
  - b. Conduct 6-month follow-up assessments.
- Task 10.* Follow-Up Assessment, Months 34–62
- a. Contact study participants for follow-up assessment.
  - b. Conduct 12-month follow-up assessments.
- Task 11.* Data Analysis, Months 24–65
- a. Conduct analysis of baseline data.
  - b. Conduct preliminary and final analysis of 3-month data.
  - c. Conduct preliminary and final analysis of 6-month data.
  - d. Conduct preliminary and final analysis of 12-month data.
  - e. Conduct longitudinal data analysis.
- Task 12.* Report and Manuscript Preparation, Months 12, 24, 36, 48-66
- a. Prepare and submit annual reports.
  - b. Prepare conference presentations, beginning in Year 2.
  - c. Prepare and present final briefings for participating Air Force bases.
  - d. Prepare manuscripts and submit for publication.