Evidence for Funding Screening, Brief Intervention and Referral to Treatment (SBIRT) within Pennsylvania Emergency Departments

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A. Introduction

Risky or hazardous alcohol and drug use has been associated with many deleterious health outcomes including poor birth outcomes, injuries, gastrointestinal disorders, psychological problems, cardiovascular disease, cancer, sexually transmitted diseases, among others, resulting annually in $184.6 billion in medical, social and workplace productivity losses (Harwood et al., 1998). In 2002, the Office of National Drug Control Policy (ONDCP) also noted the high costs associated with risky or hazardous alcohol and/or drug use making it one of the most costly health problems in the United States (ONDCP, 2002). Research conducted by the Robert Wood Johnson Foundation (RWJ) suggests that every dollar invested in substance use disorder treatment yields $7 worth of economic benefits to society, those benefits including decreased costs associated with medical care, mental health services, criminal activity, employment earnings and government welfare payments (Ettner et al., 2005).

One very promising method to stem the overwhelming public health burden and attendant social costs associated with problem alcohol and drug use is screening, brief intervention, and referral to treatment (SBIRT). SBIRT is a comprehensive and integrated approach to the delivery of early intervention and treatment services through universal screening for persons at risk and for those identified with substance use disorders. Research on various components of SBIRT have been conducted during the past 25 years, including the development of screening tests, clinical trials of brief intervention and implementation research (Babor et al., 2007). Screening and brief intervention has been widely studied and reported to be highly effective in reducing risky or hazardous[1] substance use (especially alcohol use) for patients within various healthcare settings (Solberg et al., 2008). It has been well established that when screening and brief intervention is applied in healthcare settings, especially emergency departments (EDs), patient alcohol use (and some drug use), alcohol-related accidents, injuries, trauma, mortality and depression are reduced (D'Onofrio et al., 1998; Gentilello et al., 1999; Longabaugh et al., 2001; Crawford et al., 2004). Although screening and brief intervention as an approach for risky or hazardous drug use has not been studied as extensively as with similar alcohol use (Babor & Kadden, 2005), a number of recent clinical studies provide compelling evidence that SBIRT programs may be effective in reducing risky/hazardous drug use as well, especially when applied in EDs. For example, screening and brief intervention applied within ED's has been demonstrated effective for decreasing cocaine and heroin use (Bernstein et al., 2005), cannabis use (Stephens et al., 2007), amphetamine use (Baker et al., 2006) and benzodiazepine use (Cormack, 1992; Heather, 2004). Further, in 2005, Babor & Kadden found that one or two sessions of motivational interviewing during a brief intervention were more efficacious than receiving no substance use disorder treatment at all. Providing an intervention in an ED setting is further supported by Babor & Kadden (2005) for patients who utilize alcohol and/or drugs as many of these individuals utilize this type of medical setting (ED) as their primary care or their only access to health care and it may be the only opportunity for a patient to receive preventative services.

The literature has consistently established that the application of screening and brief intervention programs that target alcohol use with ED and trauma center patients are also cost effective (Gentilello et al. 2005; Fleming et al. 2002). For example, these studies have estimated that for each dollar spent on screening and brief intervention services $2-4 will be saved in terms of healthcare costs (primarily reflected in future ED and hospital visits). Given the extensive

[1] Risky or hazardous substance use is alcohol and/or drug use that increases the risk of the individual developing long term health problems (including a substance use disorder).

documentation of screening and brief intervention clinical and cost effectiveness and cost benefits its application within Pennsylvania EDs can be recommended.
This paper will discuss the evidence and Pennsylvania experiences supporting the implementation of SBIRT, specifically in the emergency department (ED) setting. Suggestions for funding mechanisms are also discussed.

B. Brief Overview of SBIRT

In 2003, Pennsylvania in addition to six other states was funded by the Substance Abuse Mental Health Services Administration (SAMHSA) to implement statewide programs, entitled Screening, Brief Intervention and Referral to Treatment or SBIRT. This evidence-based practice includes screening and brief intervention and more intensive intervention services that include a systematic and facilitated referral to substance use disorder treatment for appropriately screened patients. SBIRT models cover the continuum of substance use, abuse or dependence.

Traditional substance use disorder treatment assists individuals who are struggling with diagnosed conditions such as alcohol or drug dependence or abuse. Typically, the type of care that is provided has substance-associated symptom remission as a treatment goal, and also strives to help the person begin and sustain a recovery process that includes abstinence from the problematic substance. The SBIRT model, on the other hand, begins with a focus on *risk* and targets individuals who might be relatively symptom free of a diagnosable substance use disorder, but who could be at risk for negative consequences due to their consumption patterns. Risk is defined as the likelihood that an individual will incur harmful consequences through exposure to particular events or behaviors. An individual's risk from hazardous consumption does not necessarily have to point to a consequence like chronic substance dependence to be significant. In fact, problem drinkers spend four times as many days in the hospital than the national average, mostly from drinking-related car crashes, but also from heavy alcohol use–associated health problems (Fleming et al., 2007; Solberg, Maciosek & Edwards, 2008).

SBIRT is primarily concerned with helping individuals who are using substances in a risky or hazardous way, not those patients who meet criteria for a substance use disorder as determined via a diagnostic nosology system such as the Diagnostic & Statistical Manual of Mental Disorders (DSM) or International Classification of Diseases (ICD) (WHO, 2007). SBIRT concentrates on opportunities to help individuals understand their alcohol and/or drug associated risk and helps them reduce or eliminate this risk. SBIRT assumes that most at-risk persons will not need traditional treatment for a substance use disorder because they will not meet diagnostic criteria. Thus, the goals of SBIRT are as follows:

- Routinely screen all patients in medical settings to identify patients at risk for substance use disorders.
- Provide brief interventions (short counseling or advice sessions) to all at-risk patients.
- Provide access to brief treatment or intensive intervention to patients who screen positive for specific levels of hazardous alcohol and/or drug use, fail to change their use or behavior as a result of a brief intervention, refuse referrals to specialized treatment, and need follow-up to maintain abstinence or reduction.
- Provide effective referral to specialized treatment that enhances the likeliness of a patient entering and remaining in treatment.
- Enhance communication between primary care physicians (PCPs) and drug and alcohol providers to coordinate effective care.
- Increase overall clinical (and when appropriate, recovery oriented) coordination of care for patients.

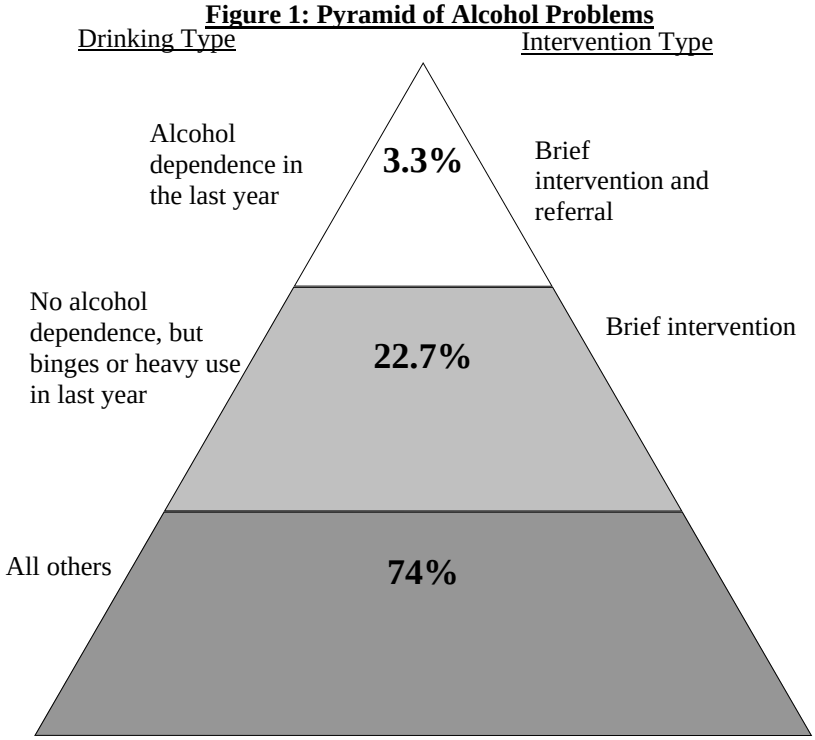
SBIRT involves the application of an appropriate screening instrument such as the three question Alcohol Use Disorders Identification Test-C (AUDIT-C) (Saunders, Aasland, Babor, De La Fuentes & Grant, 1993) and the ten question Drug use Screening Test-10 (DAST-10) (Skinner, 1982), and the application of a brief intervention is based upon the results of that screen. While there are other screening instruments available (such as the 8 question (plus subquestions) ASSIST or Alcohol, Smoking and Substance Involvement Test), the use of shorter instruments in the ED setting is recommended due to its high patient volume and compressed clinical administration time frames (Tuunanen, Aalto & Seppa, 2007).

The following table briefly defines and depicts the various levels of SBIRT.

SBIRT Component	Definitions (Babor et al., 2007)
Screening and Brief Interventions	• Screening is a procedure used to assess the likelihood that an individual has a substance use disorder or is at risk of negative consequences from use of alcohol or other drugs. A number of reliable and valid self-report screening assessments for substance use have been developed over the past two decades and several screening tools can estimate risk levels (i.e., low, medium, high) for developing substance-related harm. Screening programs are typically folded into the medical routine (e.g., during the check-in or vital signs process) in health care facilities where at-risk patients may be found.
Brief Intervention	• Brief interventions are short (i.e., 5 to 15 minutes in duration) counseling or advice-focused sessions between a health care provider and patient. The brief intervention includes feedback, advice and motivation to reduce substance use. Brief interventions are typically delivered to patients at low to moderate risk but may be also used to motivate higher risk individuals to accept a referral to more intensive treatment.
Brief Treatment or Intensive Intervention	• Brief treatment or intensive intervention refers to the delivery of time-limited, structured (or specific) therapy for a substance use disorder by a trained clinician and is typically delivered to those at higher risk or in the early stages of dependence. Brief treatment or intensive intervention generally involves 2-6 sessions of cognitive-behavioral or motivational enhancement therapy with patients who are seeking help.
Referral to Treatment	• Referral to treatment is a process that facilitates access to care for patients screening at high risk for substance use problems. Patients who require a more intensive level of care (as identified through the screening process) are linked to substance or mental health treatment agencies for a formal diagnosis and possible treatment. The referral process often evolves from the brief intervention where patients can be motivated to accept a referral to substance use disorder-specific services; this is done by clinically trained staff within the medical setting.

As stated previously, SBIRT is primarily focused on individuals who would not typically be referred for substance use disorder treatment. In fact, an estimated 95-97% of the persons who receive an SBIRT screen will not require a referral to substance use disorder treatment. The following figure from SAMHSA's Alcohol Screening & Brief Intervention for Trauma Patients (SAMHSA, Committee on Trauma Quick Guide, 2007) depicts the approximate percentage of persons within EDs who are expected to receive brief interventions and referrals to intensive intervention or substance use disorder treatment.

Figure 1: Pyramid of Alcohol Problems



Currently, SBIRT has been implemented with SAMHSA funding in eleven states. The different states have implemented the program in a variety of settings including, public health clinics, schools, primary care settings, federally qualified healthcare centers, emergency rooms and trauma units. Program monitoring outcomes of SAMHSA's first funding cohort, of which Pennsylvania was a member, show that states have effectively implemented a variety of complex evidence-based SBIRT programs reaching large numbers of patients in need of services for at-risk substance use. Performance monitoring measures, based on GPRA[2] data (May 15, 2008), indicate that for the first cohort of states:

- 614,910 patients have been systematically screened in medical and other community settings for at-risk alcohol use and illicit drug use.
- 140,775 (23%) of those patients screened positive for at-risk use, abuse or dependence on alcohol and/or other drugs
- Of those positive, 69% were "at-risk" patients who received a brief intervention; the remaining 31% received referral for brief treatment or more intensive substance abuse treatment.

As of the May 2008 GPRA data, the Pennsylvania SBIRT project has screened 73,432 medical patients and provided SBIRT services to over 11, 138 patients who are at-risk of substance use disorders or who are already experiences problems associated with substance use. In sum, SAMHSA's SBIRT programs, implemented in over 60 sites in diverse clinical and cultural settings, are providing services to a very large number of individuals with varying degrees of severity; most of whom would otherwise not have received a brief intervention or encouraged to seek further substance use disorder treatment.

[2] Per the SAMHSA-CSAT Government Performance Results Act (GPRA) data collected by each state.

C. Evidence Supporting the Targeted Implementation of SBIRT within ED Setting

As demonstrated above, SBIRT can be applied within various generalist healthcare settings such as general health care clinics, physicians' offices, and hospital EDs/trauma centers. However, given the patient volume, the overwhelming weight of the literature indicating SBIRT's clinical and cost effectiveness within EDs (and trauma centers), and recent accreditation requirements for trauma centers[3] to implement SBIRT, a deliberate effort that facilitates the application of SBIRT within EDs is a logical and recommended first step to realizing SBIRT application across all Pennsylvania healthcare settings.

There is a large amount of literature supporting the efficacy of SBIRT in an ED setting. In 2005, Hungerford estimated that greater than 50% of patients seen within an ED setting screened positively for alcohol or drug use. Further, SAMHSA reported a 15% increase from 2004 to 2005 in the number of patient visits that were associated with drug misuse or abuse (SAMHSA, 2005). According to SAMHSA, an estimated 56 percent of these ED visits involved patients using one or more illicit drugs, and an additional 34 percent combined risky or hazardous drug use with alcohol consumption. Risky or hazardous substance use is associated with both short and long term adverse health effects, and also significantly contributes to the number of individuals seen by health care providers in EDs seeking treatment for medical problems or traumatic injuries following incidents of violence, or accidents involving automobiles or machinery (D'Onofrio, Becker, Bruse & Woolard, 2006; Cunningham, et al, 2003; Walsh, et al., 2004). Accordingly, the ED provides an excellent opportunity to develop and implement a comprehensive and integrated approach to treat risky or hazardous substance users that involves SBIRT. Screening and brief intervention treatment protocols delivered in the ED to patients exhibiting risky alcohol use have been effective in reducing the total number of alcohol drinks and the maximum number of drinks per drinking occasion following intervention (Bertholet et al., 2005).

The ED setting may be regarded by many health professionals as an important location at which patients who misuse or abuse drugs (often in association with alcohol) can be identified and receive appropriate interventions (Hungerford & Pollock, 2003). By providing SBIRT services to patients in the ED, physicians may be able to prevent future injury, health problems, suicide attempts, victimization and other serious health problems related to substance use (Fleming et al., 2007). To date, the majority of studies regarding screening and brief interventions within EDs have targeted alcohol use (Cherpital, 1993; El-Guebaly et al., 1998; D'Onofrio et al., 1998; Cherpital et al., 2003; Gentilello, 1999; Crawford et al., 2004; Fleming et al., 2007). One study in particular, however, lends significant credence to the notion that the ED can be an effective SBIRT venue for addressing drug use: Bernstein et al. (1997) reported that interventions delivered in the ED connected substance dependent/abusing patients with community treatment and self-help resources using a "negotiated interview" approach demonstrated a significant 45% reduction in severity of drug problems (expressed as a composite score of harmful drug use consequences such as medical problems, neglect of family and illegal activities) in a pre/post design for patients enrolled in this project (Project ASSERT).

The most common cause of injuries in the United States is alcohol abuse and dependence (Gentilello et al., 1999; Soderstrom, Smith & Dischinger, 1997), and, as mentioned above, many such injuries result in ED visits. Several studies have pointed out that patients within an ED who

[3] Recently, new requirements were put in place by the American College of Surgeons' Committee on Trauma (ACS-COT) to address the need for SBI. The ACS-COT requires that Level I and Level II trauma centers have a mechanism to identify problem drinkers and, in addition, requires Level I centers have the capability to provide brief interventions for screen-positive patients (SAMHSA, 2007).

have injuries associated with hazardous substance use may be very receptive to screening and brief intervention practices (e.g., it becomes a "teachable moment" upon which the motivational interviewing can capitalize upon specific substance-associated adverse consequences). The application of SBIRT within EDs has been shown to reduce both alcohol intake and injury recidivism for adult patients (Gentilello et al., 2005). Monti et al. studied the effects of screening and brief intervention on the adolescent population in an urban ED setting and found six months post intervention a significantly lower incidence of alcohol related injuries, fewer incidents of drinking and driving and adverse social consequences in addition to a significant reduction in alcohol intake for participating adolescents (Monti et al., 1999).

By participating in preventative measures such as SBIRT, EDs (and trauma centers) play a large role in public health strategies. The US Preventive Services Task Force reports that the majority of deaths among Americans below the age of 65 are preventable, and that the most productive avenue for preventing these deaths would be via interventions conducted in a clinician's office (US Preventive Services Task Force, 1996). The ED represents a setting where risky/hazardous alcohol and other drug use are the primary causes of presenting injuries. Identifying patients with alcohol and substance use issues and conducting an effective intervention will therefore decrease the number of injuries, deaths and other associated health risks leading to an improvement of the overall public health within the community.

D. Costs Associated with the Provision of SBIRT Services in an ED Setting and the Cost Effectiveness/Cost Benefits

Gentilello (2005) suggested that implementation of screening, brief interventions, and referral to treatment in EDs and trauma centers could save nearly $1.8 billion annually in healthcare costs alone. More specifically, the study found that patients who received a brief intervention in a trauma center setting were 50% less likely to be re-hospitalized in the following three years and 48% were less likely to be re-injured in the following eighteen months. Additionally, the intervention group also had fewer motor vehicle accidents and arrests post intervention, avoiding the costs and expenses associated with injuries and the criminal justice system. Further, Gentilello's research showed that alcohol interventions within trauma centers were associated with a subsequent reduction in patient alcohol intake. He maintains that screening and brief intervention activities should be routine care in trauma centers (Gentilello et al, 1999, 2005).

Gentilello et al. further found that the average cost of a screening in an ED setting was $16 per patient and depending on the individual administering an intervention, the average cost of a brief intervention was $38 per patient. The subsequent savings if screening and brief intervention is completed with an ED patient is estimated to be $600 per patient (primarily savings realized on future ED visits and hospital admissions over a three year period). If screening and brief intervention is not applied, the costs for the same patients was estimated to be $689 for subsequent ED visits and hospital admissions, resulting in estimated cost saving of $89 per patient screened or $330 for each patient receiving a brief intervention (Gentilello et al., 2005).

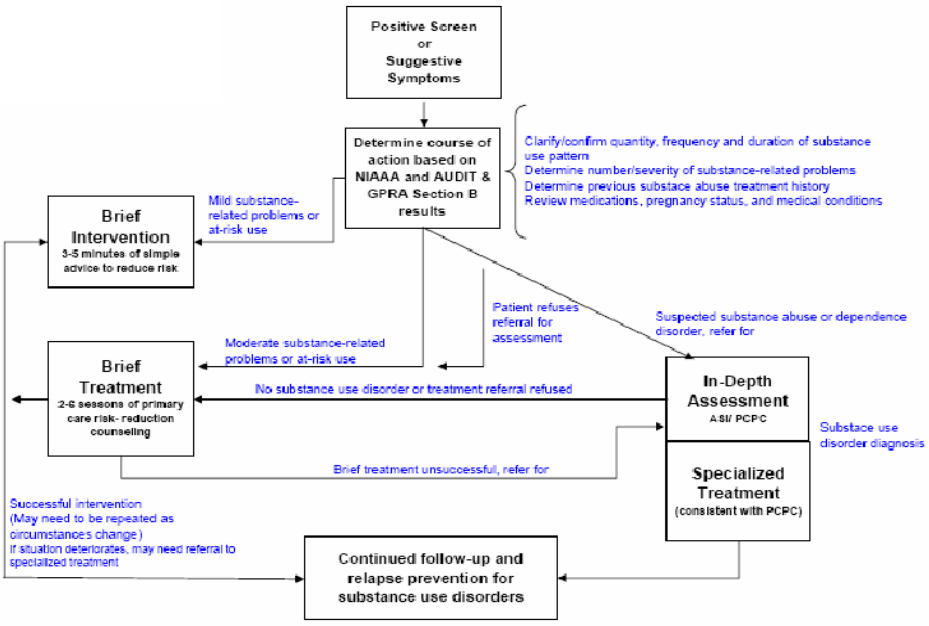
E. Implementation of the PA SBIRT

The Pennsylvania Screening, Brief Intervention, Referral and Treatment (PA SBIRT) initiative has been implemented in four (4) Pennsylvania communities or counties[4] as the result of a collaborative award from SAMHSA's Center for Substance Abuse Treatment (CSAT) to the Honorable Governor Edward Rendell. In late 2003, CSAT awarded the Commonwealth, in addition to six other states,

[4] The four (4) counties are: Allegheny, Bucks, Huntingdon/Mifflin/Juniata, and Philadelphia.

funding totaling $17 million to be applied over five years to participate in a national program designed to extend the continuum of substance use disorder care beyond the traditional support to persons with addictive disorders. As SAMHSA envisioned in their initiative and as described above, this new category includes individuals who are not substance dependent, but misuse substances as demonstrated through heavy consumption, illicit use, and/or harmful physical or psychological effects related to the substances used. The harmful effects associated with current levels of alcohol and/or other drug use can either be evident currently or may place the patient at increased risk for their development later in life (NIAAA, 2004/2005). The PA SBIRT was implemented in an ED located in Philadelphia's Albert Einstein Medical Center (AEMC) beginning in July 2006. From July 2006 to December 2007, AEMC screened 33,910 patients, providing 3,410 brief interventions, 401 brief treatments/intensive interventions, and 1,157 referrals to treatment.

The following figure describes the SBIRT process, as was used with the Pennsylvania SBIRT project.



The PA SBIRT worked (through a SAMHSA technical assistance contract) with Dr. Farrokh Alemi of George Mason University School of Nursing to determine its associated costs. These cost calculations are the first step in assisting the Pennsylvania program in demonstrating the effectiveness and cost benefits of conducting the SBIRT activities and in providing a valid argument for the activation of the Healthcare Procedural Codes (HCPCs) in the state (available online http://sbirt.samhsa.gov/coding.htm). Should additional funding be secured, a formal cost benefit (or effectiveness) analysis will be conducted and utilized in discussions with Medicaid and other insurance payers within the state to gain support, acknowledgment, and payment for SBIRT using existing and new payment mechanisms. Although the cost-benefit (cost effectiveness) work has not been completed (See (b) Below), the cost calculations are described as follows:

a. *Cost of Providing SBI*

The analyses with the PA SBIRT data and sites were conducted utilizing activity-based costing procedures. This cost estimation method was applied to the continuum of SBIRT services (screening, brief intervention, brief treatment and referral to treatment) and is a starting point from which a statewide reimbursement rate can be derived. Using activity-

based costing procedures, the sites' budget is allocated to specific activities, or to staff members (physician, nurse, and healthcare educator) conducting specified activities (screening, brief intervention, brief treatment, referral to treatment). The sites' census or patient flow is determined by site reports of the number of patients that were seen during a specific time period (typically, per annum). The cost or rate for the SBIRT service is calculated by dividing the total yearly cost of the SBIRT program at the sites by the number of SBIRT visits during the same time period. The program costs are estimated from the sites' budget, which includes cost of personnel, supplies, equipment, and the building and operating costs. Additionally, the market value of the building, the market value of the information technology (IT) investments (such as electronic charts), the value of volunteer services and the costs of donated equipment are all taken into consideration when calculating the "loaded" costs of SBIRT services.

In order to collect the information/data needed for the cost analyses, several PA SBIRT sites completed a survey that included individual staff member reports. These surveys recorded the percentage of time spent conducting the SBIRT services, non-SBIRT related activities and grant and non-grant related activities.

Additional information needed for the activity based cost estimations was gleaned from the Government Performance Results Act (GPRA) data (program census over time). The mission of the Government Performance and Results Act (GPRA) of 1993 is to improve the confidence of the American people in the capability of the Federal Government by holding all Federal agencies accountable for achieving program results. Under GPRA law, the Substance Abuse and Mental Health Services Administration (SAMHSA) is required to set program-specific performance targets, to measure program performance on a regular basis against those targets, and to report annually to Congress on the Centers' results. In short, GPRA is intended to increase program effectiveness and public accountability by promoting a new focus on results, service quality, and customer satisfaction (SAMHSA, 2008).

The following table depicts the program costs associated with the provision of SBIRT at one of the participating PA SBIRT sites, an ED located in urban Philadelphia. Program costs include estimates and calculations for personnel (time and salary), materials (brochures, etc.), and the costs associated with the building (maintenance, occupancy costs), liability, equipment and information technology associated costs (electronic charts, computer tracking systems, etc.).

	Time Period	**# of Patients during time period**	**Program Cost**	**Cost per Screen**	**Cost per Brief Intervention**	**Cost per Brief Treatment/ Intensive Intervention**	**Cost per Referral to Treatment**
Emergency Room	Jan 1, 2006 to December 30, 2007	14,536	$1,223,263	$46.68	$128.99	$142.01	$130.73

The cost of providing a screening (the AUDIT-10 and DAST-10 were the screening instruments utilized by AEMC's ED staff) was approximately $47, while a brief intervention cost $129 per patient. While these costs seem relatively higher than the costs documented by Gentilello in an article published in 2005 and by the figures documented by Washington State in specific, it is important to note that the services provided in the Philadelphia ED were conducted by physicians (i.e. not health educators); thus the costs associated with the services will be more expensive due to the higher physician salaries and related costs. It should be noted, however, that there is some literature suggesting that the application of SBIRT by physicians may have additional effectiveness within an ED setting (D'Onfrio et al., 2006).

b. *Cost Effectiveness/Cost Benefits*

The PA SBIRT is currently negotiating with Research Triangle Institute (RTI) to conduct an in-depth cost effectiveness and/or cost benefit study on the application of SBIRT in Pennsylvania. While no formal cost effectiveness or cost benefit data are available at this time, the PA SBIRT has preliminary data from a sub-sample of patients served at the Philadelphia ED that suggests SBIRT is effective in reducing alcohol and other substance intake from the time of the intervention to the six month follow-up period. The tables below depict the hospital specific data collected by the PA SBIRT project.

Site Start Date: July 5, 2006
Site End Date: December 1, 2007

Albert Einstein Medical Center (AEMC) ED Lifetime Totals

	Screen Negatives N (%)	BI N (%)	BT/II N (%)	RT N (%)	Total Encounters
AEMC ED	28,942 (85%)	3,410 (10%)	401 (1%)	1,157 (3%)	33,910

Change in Alcohol and Illegal Drug Use from Baseline to Follow-Up (by level of SBIRT)
NOTE: The numbers reported are calculated from baseline and only for those follow-ups that have been completed. There are follow-ups still to be completed for this site.

Number of follow-up interviews completed = 62[5]
Male = 35; Female = 26; Transgender = 1
Hispanic/Latino = 6; African American = 51; White = 8
BI = Brief Intervention, BT/II = Brief Treatment/Intensive Intervention, RT = Referral to Treatment

Mean number of days of illegal drug use at baseline and follow-up

	Baseline Mean (SD)	Follow-up Mean (SD)
BI (n=30)	8.27 (11.93)	2.00 (7.48)
BT/II (n=8)	10.88 (12.37)	1.00 (1.77)
RT (n=22)	16.50 (13.56)	3.70 (8.77)

[5] Unlike other members of its SAMHSA-funded cohort which began their follow up processes in year 01, Pennsylvania SBIRT did not begin its follow up process until the beginning of year 03. This has resulted in smaller numbers of patients sampled for follow-up interviews when compared with other SBIRT states.

Mean number of days of at-risk alcohol use at baseline and follow-up

	Baseline Mean (SD)	Follow-up Mean (SD)
BI (n=31)	6.55 (8.70)	3.13 (4.31)
BT/II (n=8)	16.88 (9.58)	3.88 (7.38)
RT (n=23)	16.87 (12.83)	3.87 (5.76)

The above data suggest that Pennsylvania ED's can systematically apply SBIRT to a large number of patients. Moreover, though one cannot make firm conclusions from the data presented because a small number of SBIRT patients received six month follow up interviews and no reference group was used, the patient reported decreased alcohol use at the follow up period is consistent with the literature's indication of SBIRT's effectiveness.

F. Review of SAMHSA Funded ED-based Applications Washington State SBIRT (WASBIRT)

One of the seven original states funded via SAMHSA's SBIRT program was Washington (entitled the WASBIRT project). The WASBIRT project was implemented in nine large hospitals across the state in primarily ED settings. The WASBIRT evaluation was able to collect comprehensive Medicaid encounter data from which it could estimate the potential savings the State realized through implementing the WASBIRT program. A control group was modeled from the Medicaid data using a method involving propensity scores (Estee et al., 2007). The following section discusses the WASBIRT evaluation and its estimation of the program's cost effectiveness, which its lead state agency is using to propose the reimbursement of SBIRT services via the available via Healthcare Common Procedure Coding System (HCPCs) and Current Procedural Terminology (CPT) codes. The federally suggested rates (Medicaid, Medicare and Commercial Insurance) for reimbursement for SBIRT are contained in the Appendix and may also be access via the SAMHSA website (http://sbirt.samhsa.gov/coding.htm).

a. Cost of Providing SBIRT In EDs

The estimated costs for Medicaid patients to receive a screening and/or brief intervention in Washington are $24 and $48, respectively. These rates are being considered by Washington's State Medicaid entity for use with the approved federal HCPCs codes. Further, Washington is considering the following rates for reimbursement based upon the CPT codes of approximately $33 for a screening and $66 for a brief intervention.

b. Cost Effectiveness/Cost Benefits

In 2007, the WASBIRT project conducted in depth analyses on the estimated cost benefits or savings when SBIRT activities were applied in nine ED settings. Specifically, since Washington State could connect the patients who had received SBIRT services with subsequent Medicaid encounter data, they studied the Medicaid population receiving SBIRT services at its ED in comparison with those who had not received SBIRT. Their analyses found that the reductions in costs for patients who received at least a brief intervention were substantial. The reduction in total Medicaid costs after receiving a brief intervention ranged from $185-$192 per member/per month. As with the literature, most of the cost reductions were attributed to declines in costs associated with inpatient hospitalizations and ED admissions. Further, the reduction in costs of inpatient hospitalizations was due to decreases in the number of days for hospital stays. The number of days decreased by .077 - .085, translating to approximately 1,300 fewer hospital days per year for the 1,315 patients who had

received a brief intervention and were included in the analyses (Estee et al., 2007).

Washington SBIRT estimated that potential savings in total statewide Medicaid costs could be as much as $2.7-$2.8 million per year for working age disabled patients who would receive minimally a brief intervention if the SBIRT project would continue post federal funding in 2008 within the nine EDs where the program is currently operating. Additional analyses on treatment for injuries, medical conditions, patient demographics and patient substance use disorder treatment history will be conducted by the WASBIRT project to determine the extent to which these factors may contribute to the effectiveness of brief interventions (Estee et al., 2007). These results can be made available at a future date.

Washington State Follow-up Data (April 2004 – July 2007)

In addition to the PA SBIRT follow-up data, WASBIRT follow-up patient data is also presented to further support and prove SBIRT effectiveness in reducing substance use. Washington State SBIRT conducted analyses on their follow-up data to assess the difference in alcohol use in past 30 days, number of days of binge drinking and, the number of days of drug use in the past 30 days. As the tables depict below, there was a 40% decrease in the average number of days of alcohol use in the past 30 days (7.3 days to 4.4 days). For those patients who received either brief treatment (intensive intervention) or a referral to treatment, there was a 70% decrease in the number of days of alcohol use in the past 30 days (11.2 days to 3.4 days). Further, there was a 45% decreased in the number of days of drug use for brief intervention patients and a 65% decrease in the number of days of drug use for patients who received either a brief treatment (intensive intervention) or referral to treatment.

As previously mentioned, it is important to note that the WASBIRT project employed chemical dependency counselors within each of the participating ED settings who performed all of the SBIRT services. The PA SBIRT utilized physicians and other medical staff to conduct the SBIRT services. However, even taking into consideration the two different project models, the six month follow up evaluation results suggest that patients who participate in ED-associated SBIRT activities do decrease their substance use.

Mean number of days of alcohol use in past 30 days

	Baseline Mean	Follow-up Mean
BI (n=2,797)	7.3	4.4
BT/II or RT (n=605)	11.2	3.4

Mean number of days of binge drinking in past 30 days

	Baseline Mean	Follow-up Mean
BI (n=2,799)	4.0	1.7
BT/II or RT (n=599)	8.3	1.8

Mean number of days of drug use in past 30 days

	Baseline Mean	Follow-up Mean
BI (n=2,807)	5.7	3.1
BT/II or RT (n=602)	8.0	2.8

Texas SBIRT – InSight Program

The Texas SBIRT or InSight program was implemented in various hospital settings, including EDs. This project is located in eight Harris County Hospital District locations, including Ben Taub General Hospital (ED and other units), four community clinics, and three school-based clinics. This project utilizes general healthcare staff and a specially-trained multidisciplinary SBIRT team to screen and serve over 44,000 patients. An analysis of 853 InSight patients when compared with other hospital patients revealed a reduction in use of ED and inpatient services, resulting in a total cost reduction of more than $4 million for Harris County Hospital District in the year following receipt of InSight services (not including costs of related physician services) (Texas SBIRT: InSight, 2008).

The InSight program evaluation used a pre/post design and found that based upon patient self report six months after having received SBIRT services patients who received at least a brief intervention largely reported significant reductions in reported days of heavy drinking and drug use, significant improvements in mental health status, and significant improvements in general health status. The magnitude of these improvements varied depending upon the severity of the patients' alcohol and/or drug use. The InSight program also applied activity-based cost accounting processes to the patients who had received services at the hospital where SBIRT was applied and evaluated patient healthcare costs at baseline and at six months after the SBIRT services were applied. The results of this pre/post cost effectiveness evaluation indicated that there was a significant reduction in per patient costs (again primarily associated with ED and inpatient hospital stays) for patients who received the SBIRT intervention when compared with a suitable group of patients who did not receive the SBIRT intervention (InSight Presentation, January 2008).

G. Additional Studies and Resources to Substantiate Funding SBIRT Activities within PA EDs and Beyond

There has been growing support on a national level for SBIRT activities. As previously noted, there is a large amount of published literature substantiating SBIRT's clinical (i.e., improved health benefits and decreased alcohol and other drug use) and cost effectiveness. In addition to the literature and research, a growing number of organizations are championing the program (such as the National Highway Traffic Safety Administration (NHTSA), The American College of American Surgeons' Committee on Trauma, and the Emergency Nurses Association, among others). The Emergency Nurses Association (ENA) found the benefits of applying SBIRT in an ED setting to include reduced ED visits, decreased risk for all types of patient injuries and the potentially reduced rate of motor vehicle accidents and crashes (ENA, 2000).

The following section identifies various studies in these (and additional) areas that may be helpful in supporting the implementation of SBIRT in EDs across the Commonwealth. While all of the relevant articles, studies and research cannot be included, the following section includes those that are the most compelling and support the application, implementation and

sustainability of SBIRT in ED settings in PA. Further, the PA SBIRT has access to a comprehensive bibliography that contains over 204 pages of references supporting screening and brief intervention, including 13 pages of published articles, research and studies specific to the ED and trauma center settings that was developed by SAMHSA-CSAT for the SBIRT initiative.

Babor et al., 2006: Babor and colleagues found significant decreases in alcohol usage three months post intervention in addition to differential reductions in weekly alcohol consumption at 12 months post intervention in a quasi-experimental study conducted with patients in fifteen clinics. Further, they found the average incremental costs of the interventions were $4.16 per patient (when conducted by a licensed practitioner) and $2.82 when conducted by mid-level specialists (healthcare educators).

Bray: Jeremy Bray of Research Triangle Institute (RTI) is currently the Principal Investigator of an NIH/NIAAA-funded RO1 study estimating the cost-effectiveness of alcohol screening and brief intervention delivered in an employee assistance program (EAP). His research has focused on two primary areas of interest: the economics of substance abuse and mental health, and economic evaluation of behavioral health interventions, including the cost-effectiveness of substance abuse treatment and prevention (Bray & Zarkin, 2006; Babor et al., 2006; Bray et al., 2007). Articles published have estimated the costs and effectiveness of employee assistance program (EAP) services, screening and brief intervention programs, behavioral and pharmacological therapies for alcohol dependence, and workplace prevention and early intervention programs. Many of his published articles give economic research findings on the cost effectiveness of SBIRT.

D'Onofrio et al., 1998: An article by D'Onofrio et al. supports the utilization of SBIRT activities within the ED setting due to the timeliness of the intervention (post crisis, injury, etc.) as patients are more receptive to education at these times and due to the number of individuals who present at EDs who have used alcohol, other substances and may be under the influence while in the ED.

Gentilello et al., 2005: As previously discussed, Gentilello's research on SBIRT shows a decrease in hospital admissions, re-injury, arrests, motor vehicle accidents and alcohol intake for patients receiving at least BIs. The study findings also support and discuss the Institute of Medicine's stand that the responsibility to provide counseling for patients with mild to moderate alcohol abuse or early dependence lies with the general staff in hospitals, not within the addiction specialists providers/specialists.

National Highway Traffic Safety Administration (NHTSA): The NHTSA widely supports screening and brief intervention activities be widely applied because of the recent (within the past five years) increase in alcohol-related traffic deaths, which followed a period of sustained decreases in such deaths during the 1990's and 1980's. In 2005, 16,685 individuals in the United Stated died in an alcohol-related traffic accident, representing 39% of all traffic related deaths (NHTSA, 2006). NHTSA has partnered with several organizations including: the American College of Emergency Physicians, the American College of Surgeons Committee on Trauma, the American Academy of Family Physicians and the National Hispanic Medical Association. The purpose of the collaboration is to create materials which promote alcohol screening implementation. NHTSA also collaborates with the Center for Disease Control (CDC), the National Institute for Alcohol Abuse and Alcoholism (NIAAA) and the National

Institute of Drug Abuse (NIDA) on several projects that promote the use of SBIRT.

Rockett et al., 2003: This research group conducted a study that looked at seven (7) EDs within the state of Tennessee. Specifically they compared documented psychoactive drug-related diagnoses for adult ED patients (via medical records) with substance use disorder treatment need assessed through self-report and toxicology screenings. The study highlights the importance of EDs screening for problem alcohol and drug use not only to identify those who may be at risk for misuse or risky use, but for also for those who fall within the substance abuse and dependence categories. This research groups' published studies underscore that these patients have an increased risk for additional or future illnesses and injuries and present at the ED more frequently than those who are not abusing or dependent upon substances. The study found that less than 10% of ED patients who needed substance use disorder treatment were receiving such treatment.

Zarkin et al., 2003: This article discusses the costs associated with the start-up and implementation of screening and brief intervention at several sites across the country. While the sites are primary care offices (MCO), it gives an estimate of what possible implementation, training and start-up costs may be required in various settings (different cities, different staff conducting activities, etc.).

H. Resources Required to Support Effective Application of SBIRT within PA EDs

There are multiple resources available that can assist in the effective implementation of SBIRT across the Commonwealth. In order to effectively implement (and sustain) a SBIRT program, there are several components EDs would need to assist them in adopting such a program.

1. First, the ED would need **training and ongoing technical assistance** in the area of SBIRT implementation and sustainability. Physicians and other identified staff would need brief training and periodic technical assistance to gain the necessary knowledge in the application of screening, brief interventions, and referring patients who are identified as needing additional or more intensive interventions or treatment.

2. Second, the ED would have to develop, **implement and follow a pre-defined SBIRT procedure or model**. ED's would need to determine:

- Which screening instruments would be utilized with patients?
- Who would conduct the screenings with patients (considering all shifts and staffing)?
- What will a brief intervention consist of – which intervention methods will be utilized?
- What process will be developed to assist patients in need of more intensive interventions or a referral to treatment?
- How will the emergency department follow-up to assure that patients are reaching more intensive interventions or referrals to treatment?

3. Third, it is essential that the **ED (and staff) are aware of and have a working relationship with the substance use disorder treatment provider network** or central intake unit in their respective counties/areas. The results of a physician focus group conducted by the PA SBIRT indicated that having a patent referral system for SBIRT patients requiring substance use disorder treatment would improve the chances that the physicians would implement SBIRT in their practices (Holland, 2007). Any effort to

implement SBIRT within an ED should occur in partnership with the local SCA or appropriate County Human Service entity. Further, the ED should develop and implement a comprehensive follow-up plan for those patients that are in need of additional, extensive or on-going substance use treatment. This will allow ED staff to monitor and assure that patients are receiving the appropriate treatment to which they were referred.

Multiple organizations and agencies were involved in the implementation of the PA SBIRT project in 2004 and continue to support SBIRT activities, training and education. The already established SBIRT infrastructure will be a valuable resource for EDs across the state looking for assistance with the implementation of an SBIRT program, and will lessen the cost necessary to develop and sustain an effective statewide supportive infrastructure. The infrastructure needed for training, implementation and sustainability already exist and are well regarded by SAMHSA's national cross-site effort. This infrastructure could be financially supported at the State's discretion via various means including (but not limited to): (1) Using federal block grant funds to support the development of SBIRT-related prevention, intervention and treatment liaison activities; (2) Setting aside the cost of supporting the infrastructure in the Medicaid budget managed by HealthChoices vendors on a per member per month rate for each patient receiving SBIRT services (though there is much to recommend the clinical reimbursement rates occurring within the General Medical component (not the behavioral healthcare carve-out component) of the Medicaid system); and/or (3) Seeking ancillary funding via local healthcare organizations (especially large academic medical centers) and large county health and human service entities to support infrastructure functions, again at a suitable per patient screened rate.

The key stakeholders who participated in the PA SBIRT project are described as follows:

a. **PA Dept. of Health, Bureau of Drug & Alcohol Programs**: BDAP was the state lead entity involved with the PA SBIRT project from its inception. BDAP supports screening and brief intervention programs in general medical settings and has access to resources that would assist emergency departments interested in implementing a screening and brief intervention program. This organization hired the State SBIRT Coordinator.
b. **University of Pittsburgh School of Pharmacy – Program Evaluation Research Unit (PERU)**
c. **Institute for Research, Education, and Training in Addictions (IRETA)**
d. **Allegheny/Bucks/Philadelphia Single County Authorities (SCAs)**
e. **PA SBIRT Sites** (a complete listing of sites that participated is contained in the Appendix).

I. Executive Summary

Risky or hazardous alcohol and/or drug use is associated with many adverse short term and long range health outcomes that translate to billions of healthcare dollars per year (Gentilello, 2005). Screening patients in a variety of healthcare settings for problematic alcohol and drug use and providing appropriately matched interventions (entitled Screening, Brief Intervention and Referral to Treatment or SBIRT) has been well established in the literature as a clinically and cost effective practice (Gentilello et al. 2005; Fleming et al. 2002). Patients who receive SBIRT have been demonstrated to have long term decreased alcohol and drug use patterns as well as improved health status (D'Onofrio et al., 1998; Gentilello et al., 1999; Longabaugh et al., 2001; Crawford et al., 2004) and the application of SBIRT has been repeatedly demonstrated to result in substantial savings, especially to the state Medicaid system (Ettner et al., 2005). Moreover, the data presented here from Substance Abuse, Mental Health Services Administration (SAMHSA) funded projects

within Pennsylvania and other states suggest that SBIRT can be reliability and validly implemented in various healthcare settings, resulting in similar improvements in patient outcomes and savings in system costs as demonstrated in the research literature. Many of the PA SBIRT sites continue to conduct SBIRT activities and have sustained the programs that were implemented in order to continue to address substance issues with their patients including the AEMC ED. Additionally, several new sites have initiated the program, showing that there is interest across the state in the SBIRT program.

As established, one of the sites in which SBIRT implementation has been repeatedly demonstrated to have the greatest potential for reaching efficiently a large number of patients with well established improved clinical outcomes and healthcare system savings, is the Emergency Department (ED). In addition, Joint Commission on Accreditation of Healthcare Organizations (JCAHO) has recently announced they are drafting standards for SBI in a variety of medical settings to screen all patients for alcohol and other substance use. The American College of Surgeons Committee on Trauma has already established requirements for Level I and II to implement intervention program with patients, giving further leverage to first implementing SBIRT within Pennsylvania EDs. Finally, the Pennsylvania SBIRT has demonstrated experience in the application of SBIRT within an ED in Philadelphia, and can generalize its learnings for application to other EDs statewide. Therefore, it is recommended that the Pennsylvania Medicaid system begin its implementation of SBIRT within EDs using the Pennsylvania experience and established infrastructure as a way of ensuring this effort's success.

Based upon the Pennsylvania SBIRT's experience, we recommend the following components as necessary for the successful implementation of SBIRT within any ED:
(1) Appropriately applied (and probably via a distance e-learning vehicle) ongoing brief training and technical assistance;
(2) Linkage with the local SCA or HealthChoices vendor to ensure facilitated referrals to the substance use disorder treatment system;
(3) Appropriate reimbursement rates that reflect the true costs of providing SBIRT within a Pennsylvania ED setting; and
(4) A pre-defined and systematic implementation model that is based upon Pennsylvania and national experience.

The following Pennsylvania SBIRT infrastructure is available to support the above components:

- PA Dept. of Health, Bureau of Drug & Alcohol Programs
- University of Pittsburgh School of Pharmacy – Program Evaluation Research Unit (PERU)
- Institute for Research, Education, and Training in Addictions (IRETA)
- Allegheny/Bucks/Philadelphia Single County Authorities (SCAs)
- PA SBIRT Sites (a complete listing of sites that participated is contained in the Appendix).

J. Summary Recommendation

It is recommended that there be a closed-end demonstration project during which one or two Medicaid General Medical vendors test the application of SBIRT using appropriately derived reimbursement rates within one ED site (each) within separate counties for a six month period, following the Pennsylvania recommendations listed above.

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L. Appendix

List of Participating PA SBIRT Sites

Allegheny County	Bucks County	Huntingdon/Mifflin/ Juniata County	Philadelphia County
1. Sto Rox Health Clinic 2. Mercy (3 offices) 3. West Penn General Medicine 4. West Penn Family Practice 5. UPMC Magee Women's Hospital	1. Doylestown Free Clinic 2. Bucks County Health Improvement Program (BCHIP) 3. Juvenile Programs 4. Planned Parenthood of Bucks County (Bensalem, Bristol, Doylestown, Quakerstown and Warminster offices)	1. Lewistown Emergency Department 2. Family Health Associates 3. Huntingdon Family Practice 4. Broadtop Medical Center 5. J.C. Blair Memorial Hospital Emergency Department	1. Albert Einstein Medical Center Emergency Department 2. Public Health Center #2 3. Public Health Center #3

Federal Reimbursement Rates for SBI (SAMHSA, 2008)

Payer	Code	Description	Fee Schedule
Commercial Insurance	CPT 99408	Alcohol and/or substance abuse structured screening and brief intervention services; 15 to 30 minutes	$33.41
	CPT 99409	Alcohol and/or substance abuse structured screening and brief intervention services; greater than 30 minutes	$65.51
Medicare	G0396	Alcohol and/or substance abuse structured screening and brief intervention services; 15 to 30 minutes	$29.42
	G0397	Alcohol and/or substance abuse structured screening and brief intervention services; greater than 30 minutes	$57.69
Medicaid	H0049	Alcohol and/or drug screening	$24.00
	H0050	Alcohol and/or drug service, brief	$48.00

		intervention, per 15 minutes	