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Cost of Screening, Brief Intervention, and Referral to Treatment in Health Care Settings☆,☆☆,★

Carolina Barbosa, Ph.D. [a,*], Alexander J. Cowell, Ph.D. [b], Justin Landwehr, B.S. [b], William Dowd, B.A. [b], Jeremy W. Bray, Ph.D. [c]

[a] RTI International, 230 West Monroe St., Suite 2100, Chicago, IL 60606-4901
[b] RTI International, 3040 E. Cornwallis Road, Research Triangle Park, NC 27709
[c] Bryan School of Business and Economics, 462 Bryan Building, P.O. Box 26170, Greensboro NC 27402-6170

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ABSTRACT

Aims: This study analyzed service unit and annual costs of substance abuse screening, brief intervention, and referral to treatment (SBIRT) programs implemented in emergency department (ED), inpatient, and outpatient medical settings in three U.S. states and one tribal organization.
Methods: Unit costs and annual costs were estimated from the perspective of service providers. Data for unit costs came from 26 performance sites, and data for annual costs came from 10 programs. A bottom-up approach was used to derive unit costs and included labor, space, and materials used in each SBIRT activity. Activities included direct SBIRT services and activities that support direct service delivery. Labor time spent in each activity was collected by trained observers using a time-and-motion approach. A top-down approach used cost questionnaires completed by program administrators to calculate annual costs and included labor, space, contracted services, overhead, training, travel, equipment, and supplies and materials. Costs were estimated in 2012 U.S. dollars.
Results: Average unit costs for prescreening, screening, brief intervention, brief treatment, and referral to treatment were $0.61, $6.59, $10.48, $22.63, and $12.06 in ED; $0.86, $6.33, $9.07, $27.61, and $8.03 in inpatient; and $0.84, $3.98, $7.81, $27.94, and $9.23 in outpatient settings, respectively; over half of the costs were attributable to support activities. Across all settings, the average cost to provide SBIRT per positive screen, for 1 year, was about $400.
Conclusions: Support activities comprise a large proportion of costs. Health administrators can use the results to budget and compare how much sites are reimbursed for SBIRT to how much services actually cost.

1. Introduction

Substance abuse and dependence are widely recognized as serious and costly societal problems affecting an estimated 22.2 million people in 2012, or 8.5% of the U.S. population aged 12 or older (American Psychiatric Association, 1994; Substance Abuse and Mental Health Services Administration, 2013). Just as significant are the estimated 22.5 million people who used illicit drugs or drank heavily (five or more drinks on the same occasion) over the past month but did not meet the clinical guidelines for either abuse or dependence (authors' calculations, SAMHDA calculating tool [ICPSR, 2012]). Some of these individuals will develop substance use disorders, but even those who do not may incur societal costs through increased medical care use, increased rates of accident and injury, and lost work productivity (Miller & Hendrie, 2009).

In 2003, the Substance Abuse and Mental Health Services Administration (SAMHSA) launched a major initiative – Screening, Brief Intervention, and Referral to Treatment (SBIRT) – with the aim of integrating services to address unhealthy substance use into medical settings. SBIRT is similar in concept and approach to the internationally known terminology "screening and brief intervention" (SBI), but refers to SAMHSA's SBI program. SBIRT programs use a public health approach to identify people who engage in unhealthy substance use behaviors and then provide an appropriate level of care to those who need it. By screening for unhealthy substance use in addition to dependence, SBIRT services are designed to prevent more severe consequences from occurring (Agerwala & McCance-Katz, 2012; Babor et al., 2007).

In addition to SAMHSA, other national and professional regulatory bodies in the United States (e.g., Surgeon General's Call to Action to Prevent and Reduce Underage Drinking, American College of Surgeons Committee on Trauma, American Academy of Pediatrics, National Quality Forum) have recommended SBI in medical, educational, and criminal justice settings (Padwa et al., 2012). The U.S. Preventive Services Task

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* Corresponding author at: RTI International, 230 West Monroe St., Suite 2100, Chicago, IL 60606-4901. Tel.: +1 312 777 5231; fax: +1 312 456 5250.
E-mail address: cbarbosa@rti.org (C. Barbosa).

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Force recommends that clinicians provide alcohol SBI to adult patients in primary care settings (Moyer, 2013).

SBI has been implemented in a variety of medical settings, including emergency departments (EDs) (Desy & Perhats, 2008; D'Onofrio & Degutis, 2010; Parker, Libart, Fanning, Higgs, & Dirickson, 2012; Sommers et al., 2013), inpatient wards (Broyles et al., 2013; Cruz, 2013; McQueen, Howe, Allan, & Mains, 2009), and primary care settings (Chick, Ritson, Connaughton, & Stewart, 1988; Fleming, 2004; Fleming et al., 2007; Kaner et al., 2007). The efficacy and effectiveness of alcohol SBI in primary care settings have been well established; however, recent studies have shown a lack of effectiveness of SBI targeting drug misuse in primary care settings (Roy-Byrne et al., 2014; Saitz et al., 2014). Despite the range of literature on the implementation and effectiveness of SBIRT, little evidence is available on the costs of providing SBIRT in different medical settings (Bray et al., 2014). As integration of substance abuse services such as SBIRT into general medical care becomes more common in the United States (Buck, 2011), understanding the costs of SBIRT is important for policy makers and treatment providers to allocate scarce resources among various treatment services (Moyer & Finney, 2004; Zarkin, Dunlap, & Homsi, 2004).

A lack of knowledge about the costs of providing SBIRT may pose a barrier to its widespread adoption. A recent review of 47 published qualitative studies assessing numerous potential barriers to adopting and sustaining SBI concluded that the lack of financial resources for SBI is one of the three most important barriers to implementation (Johnson, Jackson, Guillaume, Meier, & Goyder, 2011). For decision makers to know whether financial resources for SBI are sufficient, they first need detailed estimates on the costs of providing SBI. In addition, a necessary step before conducting a full economic evaluation of SBI, which jointly accounts for both costs and effects, is to accurately estimate the cost of SBI.

A review of the costs of alcohol SBI in medical settings showed that the costs of SBI vary widely in 17 studies and that most studies presented little to no information on the cost methodology (Bray, Zarkin, Hinde, & Mills, 2012). With few exceptions (Bray et al., 2014), studies that calculated the cost of SBI usually present one of three types of cost estimates: the cost of individual SBI services, also known as the unit cost; the average cost of SBI; and the annual cost of SBI (Bray et al., 2012). The average cost and the annual cost of SBI are closely related: the average cost is the annual cost of SBI divided by the number of patients served in a year.

Both the unit cost of individual SBI services and the average/annual cost of SBI are relevant to decision makers. An understanding of the unit costs of individual SBI services, such as the cost of providing one screen, is vital for performance site administrators when budgeting for labor, space, and material resource needs. Unit costs also provide insight to insurers and reimbursement administrators responsible for setting service reimbursement rates. Unit costs can also be used to convert health care utilization into costs and to compare costs across studies. One advantage of using a unit cost rather than an average or annual cost is that it can be used by decision makers to forecast the impact on budgets if they hypothetically change the service mix of bundles of services. However, unit costs have two major limitations that average or annual cost estimates do not have. First, estimating unit costs requires many study resources. Second, unit costs may fail to account for activities that cannot be attributed to an individual patient, such as general administrative activities. If these costs are to be included, they must be apportioned between different services that share those resources (Drummond, Sculpher, Torrance, O'Brien, & Stoddart, 2005; Gold, Siegel, Russel, & Weinstein, 1996). Annual costs provide financial information for funding and performance measurement. They can usually provide the costs of individual expense categories – such as labor, materials, and overhead – and of running SBI as a whole. The advantages of annual costs are that they can be computed more readily than unit costs and they include all of the costs necessary to deliver services. Because annual costs are typically estimated using a less detailed approach, they cannot be used to disentangle the cost of SBI implemented under different clinical protocols or in settings with different unit prices (Bray et al., 2012).

The current study provides estimates of the cost to implement SBIRT, both from the point of view of an individual unit of service and in terms of annual operating costs. Unit costs are separated into service and support labor, materials, and space, and can be used to inform additional analyses of cost-effectiveness and financial sustainability. Annual operating costs are valuable for policy makers and other stakeholders to plan SBIRT implementation.

1.1. SAMHSA SBIRT programs

Five-year grants were awarded to four grantees, which represent three states and one tribal organization and were located in the Southeast, Midwest, and Northwest regions of the United States. The four grantees contained 11 SBIRT programs that functioned as umbrella organizations to administer SBIRT delivery in 192 performance sites. Performance sites nested within programs were sometimes affiliated with one another, but this was not necessarily the case. In some cases, SBIRT programs were administered by hospital systems and comprised only sites within that hospital system. In other cases, SBIRT programs were administered by behavioral health providers whose staff went to other, non-affiliated sites in the community to conduct SBIRT. In this context, programs are defined by a common SBIRT administrative structure.

Performance sites were emergency departments and trauma centers (EDs); medical, surgical, and psychiatric inpatient hospital settings (inpatient); and outpatient hospitals and ambulatory clinics (outpatient). At those sites, all individuals presenting for care, but not specifically seeking treatment for substance use, were screened and received appropriate feedback, intervention, or treatment. Although implementation varied across programs, typical procedures were as follows. Patients were screened for a range of unhealthy substance use behaviors. Most sites used a short, one-to-four question prescreen on substance use to assess whether a patient should be screened more thoroughly with a full screen. The two common full screens used were the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) for adults (Ali et al., 2002; Humeniuk, Henry-Edwards, Ali, Poznyak, & Monteiro, 2010) and the car, relax, alone, forget, friends, trouble test (CRAFFT) for adolescents (Knight, Sherritt, Harris, Gates, & Chang, 2003; Knight, Sherritt, Shrier, Harris, & Chang, 2002). Two of the four grantees screened only adult patients (age 18+), while the other two screened adolescents (12+ and 14+, respectively), in addition to adults. Patients screening negative were usually offered brief advice and/or a pamphlet on the dangers of unhealthy substance use.

Almost all patients who screened positive received a time-limited brief intervention (15 min or less) delivered using a motivational interviewing approach (Miller & Rollnick, 2002) or other recognized method to increase awareness regarding substance use and motivation toward behavioral change. For patients needing more intensive services, some sites also offered brief treatment, which consisted of multiple, structured, cognitive–behavioral or motivational enhancement therapy sessions that could take up to one hour. In the most severe cases, or if the site did not offer brief treatment, patients were referred to specialty treatment at an external provider. Depending on the performance site, prescreens were administered by SBIRT practitioners and general medical staff such as nurses or medical assistants, or self-administered as part of the intake paperwork. All SBIRT activities subsequent to prescreen were generally performed by an SBIRT practitioner. SBIRT practitioners were generally Master's level or higher, and about half were certified or licensed in addiction treatment. Most or all of their time was devoted to SBIRT activities.

This study draws on all components of SBIRT delivery, from prescreen to referral to treatment, to calculate unit costs of SBIRT delivery in ED, inpatient, and outpatient settings, and the annual cost of running an SBIRT program.