Screening, Brief Intervention, and Referral to Treatment in the Emergency Department

An Examination of Health Care Utilization and Costs

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Background: There is increasing interest in deploying screening, brief intervention, and referral to treatment (SBIRT) practices in emergency departments (ED) to intervene with patients at risk for substance use disorders. However, the current literature is inconclusive on whether SBIRT practices are effective in reducing costs and utilization.

Objective: This study sought to evaluate the health care costs and health care utilization associated with SBIRT services in the ED.

Research Design: This study analyzed downstream health care utilization and costs for patients who were exposed to SBIRT services within an Allegheny County, Pennsylvania, ED through a program titled Safe Landing compared with 3 control groups of ED patients (intervention hospital preintervention, and preintervention and postintervention time period at a comparable, nonintervention hospital).

Subjects: The subjects were patients who received ED SBIRT services from January 1 to December 31 in 2012 as part of the Safe Landing program. One control group received ED services at the same hospital during a previous year. Two other control groups were patients who received ED services at another comparable hospital.

Measures: Measures include total health care costs, 30-day ED visits, 1-year ED visits, inpatient claims, and behavioral health claims.

Results: Results found that patients who received SBIRT services experienced a 21% reduction in health care costs and a significant reduction in 1-year ED visits (decrease of 3.3 percentage points).

Conclusions: This study provides further support that SBIRT programs are cost-effective and cost-beneficial approaches to substance use disorders management, important factors as policy advocates continue to disseminate SBIRT practices throughout the health care system.

Key Words: screening, brief intervention, and referral to treatment, overdose, emergency department, health care costs and utilization

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Substance use disorders (SUD) and harmful drug and alcohol use are increasing problems in the United States.[1] Opioid overdoses have been declared a nationwide epidemic, with >28,000 opioid-related deaths in 2014.[2] In addition to the individual and population health risks, patients with SUDs and those who engage in harmful drug and alcohol use also pose a significant toll on health care utilization for the health care system.[3]

Screening, brief intervention, and referral to treatment (SBIRT) is an evidence-based approach for identifying and intervening with individuals who misuse alcohol or other drugs.[4] SBIRT uses a validated screening procedure to classify at-risk patients into risk categories.[5] Those at moderate risk of harm from their substance misuse receive a brief intervention (BI), a short conversation using motivational interviewing principles to encourage behavior change, whereas those at higher risk are referred to appropriate care.[5,6]

Policy advocates contend that SBIRT is cost-effective and cost-beneficial.[7,8] However, the evidence supporting these conclusions is limited and primarily focused on alcohol

TABLE 1. Characteristics of Study Sample by Index Event Year and Index Event Provider (Intervention vs. Control Hospital)

	Coefficient SD					
	2010 (Preintervention)		2012 (Postintervention)			
	Control Hospital (N = 3112)	Intervention Hospital (N = 2817)	Control Hospital (N = 3678)	Intervention Hospital (Experimental Group) (N = 2546)	Significance	Statistical Test
Age (y)	37.0 (13.1)	34.5 (13.0)	37.3 (13.0)	35.5 (13.0)	***	ANOVA
% Female	60.4 (0.49)	69.1 (0.46)	60.4 (0.49)	68.8 (0.46)	***	χ^2
% White	50.7 (0.50)	47.5 (0.50)	49.8 (0.50)	42.7 (0.49)	***	χ^2
% Black	46.4 (0.50)	49.9 (0.50)	45.5 (0.50)	54.8 (0.50)	***	χ^2
% Other	2.9 (0.17)	2.6 (0.16)	4.7 (0.21)	2.6 (0.16)	***	χ^2
Months covered before index event	8.4 (4.3)	10.9 (3.8)	10.7 (3.7)	11.1 (3.6)	***	ANOVA
Months covered after index event	11.1 (3.4)	11.1 (3.5)	10.9 (3.5)	11.2 (3.4)	***	ANOVA
No. claims in year before index event	124.3 (167.5)	110.2 (149.2)	118.6 (172.5)	118.1 (162.4)	$P = 0.012$	ANOVA
Proportion inpatient	0.03 (0.07)	0.04 (0.09)	0.03 (0.07)	0.04 (0.10)	***	ANOVA
Proportion outpatient/ED	0.70 (0.22)	0.68 (0.24)	0.79 (0.20)	0.68 (0.23)	***	ANOVA
Proportion pharmacy	0.27 (0.22)	0.28 (0.23)	0.18 (0.19)	0.28 (0.23)	***	ANOVA
No. claims in year after index event	160.2 (199.0)	109.0 (155.8)	145.1 (177.6)	94.1 (133.4)	***	ANOVA
Proportion inpatient	0.02 (0.06)	0.03 (0.09)	0.02 (0.06)	0.03 (0.09)	***	ANOVA
Proportion outpatient/ED	0.70 (0.21)	0.67 (0.26)	0.75 (0.20)	0.66 (0.26)	***	ANOVA
Proportion pharmacy	0.28 (0.21)	0.30 (0.26)	0.23 (0.20)	0.31 (0.26)	***	ANOVA
Any medical claim in 30 d following index event	0.75 (0.43)	0.69 (0.46)	0.76 (0.43)	0.71 (0.46)	***	χ^2
Any inpatient event in year before index event	0.19 (0.39)	0.19 (0.39)	0.17 (0.37)	0.18 (0.39)	$P = 0.051$	χ^2
Any inpatient event in year following index event	0.20 (0.40)	0.16 (0.37)	0.20 (0.40)	0.14 (0.35)	***	χ^2
Any behavioral health claim in year before index event	0.48 (0.50)	0.37 (0.48)	0.48 (0.50)	0.38 (0.49)	***	χ^2
Any behavioral health claim in year following index event	0.50 (0.50)	0.38 (0.49)	0.50 (0.50)	0.38 (0.48)	***	χ^2
Total health care costs in year before index event	9579.6 (18251.0)	11011.3 (52866.4)	8810.4 (17149.5)	12371.3 (51178.8)	$P = 0.0011$	ANOVA
Inpatient costs	1776.6 (7294.8)	5501.1 (49853.1)	1605.2 (6542.8)	6092.5 (47593.4)	***	ANOVA
Outpatient/ED costs	6212.5 (13607.6)	4053.9 (9163.2)	6161.1 (12969.1)	4474.5 (10228.9)	***	ANOVA
Pharmacy costs	1590.7 (3393.1)	1456.2 (4022.6)	1045.0 (3092.9)	1804.3 (4717.2)	***	ANOVA
Total health care costs in year after index event	12096.4 (21376.0)	10214.6 (33373.6)	10699.4 (19411.9)	9679.4 (37440.9)	$P = 0.008$	ANOVA
Inpatient costs	2279.9 (9031.6)	4488.9 (28298.6)	1931.4 (8257.0)	4148.4 (33562.4)	***	ANOVA
Outpatient/ED costs	7773.9 (15716.7)	4373.5 (11296.8)	7298.4 (14152.2)	4314.5 (11135.7)	***	ANOVA
Pharmacy costs	2042.7 (4078.9)	1352.2 (3917.6)	1470.6 (3909.6)	1216.4 (3690.1)	***	ANOVA

Authors' analysis of data from the Safe Landing project. Statistics are unadjusted (ie, propensity score weights are not applied).
Patient data ranges from 2009 to 2013.
Specialty alcohol/drug treatment claims and detox claims identified using procedure codes/modifiers.
Behavioral health events identified by source of claim.
Patients were drawn from 2 hospitals based on whether they had an ED visit in 2010 or 2012.
ED and outpatient claims combined.
ANOVA indicates analysis of variance; ED, emergency department.
***$P < 0.001$.

screening and brief intervention (SBI) within primary care settings.[7–10] In a 2009 review, Latimer et al[9] concluded that cost-effectiveness evidence for alcohol SBI is scarce, and it is unclear whether SBI for alcohol misuse results in net cost savings. Bray et al[11] found little evidence that alcohol SBI would reduce downstream health care use and costs after reviewing the literature from 1962 to 2010.

However, some studies suggest that SBIRT may be cost-effective and cost-beneficial, specifically in emergency department (ED) settings. A quasiexperimental study by Estee et al[12] resulted in significant Medicaid savings associated with SBIRT when it was implemented in EDs in Washington state. In addition, Barbosa et al[13] found that SBIRT services cost $8.63 less in ED settings compared with outpatient settings and resulted in 13.7% more patients drinking below threshold levels. A study conducted by Gentilello et al[14] also suggested that SBIRT applications within an ED result in a subsequent reduction in ED readmissions up to 36 months after the interventions.

The Pennsylvania Department of Human Services (DHS) studied the costs of care in different health care settings for Medicaid patients. ED visits and repeated admissions to hospitals were identified as some of the highest cost drivers.[15] Moreover, a significant proportion of the patients receiving Medicaid who were high ED and hospital utilizers also had diagnoses of SUD. Thus, the Pennsylvania DHS' Medicaid Office sought to apply ED-based interventions that could reduce downstream costs (largely mediated via reduced ED visits and hospital readmissions). Given the ED-associated SBIRT research and DHS' need to find a way to reduce ED and hospital admissions among its Medicaid patients, the program titled Safe Landing was developed, which implemented SBIRT services within 1 ED in Allegheny County, Pennsylvania.

The aims of the Safe Landing program and this study were 2-fold: (1) determine whether the implementation of the ED SBIRT services resulted in significantly reduced downstream health care costs; and (2) determine whether the implementation of the ED SBIRT services resulted in significantly reduced patient ED visits.

METHODS

Study Setting and Intervention

This study was a retrospective analysis of a quality assurance intervention, in which the project team compared a group of adult patients who received ED SBIRT services from January 1 to December 31 in 2012 from the intervention hospital where Safe Landing was implemented against 3 groups of ED patients who did not receive SBIRT services. One control group consisted of patients who received ED services at the intervention hospital in 2010 (before implementation of Safe Landing). The other 2 control groups included patients who received ED services at a different, but comparable, hospital in 2010 and 2012, respectively. This design controlled for time trend effects (eg, statewide policy changes) and hospital effects (ie, intervention hospital vs. control hospital). The 2 hospitals were programmatically similar and compared based on patient demographics (age, race, and sex), number of claims, and total health care costs (Table 1). Both hospitals are located in Pittsburgh's metropolitan area, and each of the hospitals is a part of 1 of the 2 largest health systems. The study team received Institutional Review Board exemption to conduct this study.

The Safe Landing intervention involved several systematic steps for each patient. First, the patient was asked validated questions concerning their substance use ("triage screen" or "prescreen") by the triage nurse.[16] The "triage screen" was embedded into the intervention hospital's electronic health record (EHR). If the patient's answers indicated the patient was at risk for overdose, then additional screening questions were asked by the treatment nurse using the evidence-based alcohol, smoking, and substance involvement screening test (ASSIST) screening instrument (screen).[17] Next, numerical values tallied from the patient's ASSIST responses were used to calculate a "risk score" in an automated manner in the EHR system of the intervention hospital (with levels being: no-risk, low-risk, moderate, high, and significant). On the basis of the patient's ASSIST score, the patient received brief feedback (no-risk/low-risk) or a BI (moderate risk) from the treatment nurse.

Patients scoring with high or significant ASSIST risk levels were identified for referral to SUD treatment and received a BI intended to boost patients' commitment to accept a referral and immediately pursue rehabilitation and recovery services upon discharge. When these high-risk patients expressed a willingness to seek specialty treatment, the intervention site ED staff (nurses and social workers) facilitated access to specialty treatment and services via a "warm handoff"—the process of introducing the patient to the behavioral health provider in real time. The BIs and referrals to SUD treatment were noted in a designated part of the EHR using the Health care Common Procedure Coding System (HCPCS) associated with SBIRT services.[18]

Trained ED staff conducted the interventions. Training consisted of 3-hour-long didactic lecture modules held at various timepoints beginning in May 2010 and concluding in June 2011. Four sessions were held for each module to capture the entire ED staff. The first module trained ED staff on addiction and overdose, specifically the scope of the problem in the intervention ED's catchment area, and an introduction to SBIRT. The second module trained ED staff on how to conduct screenings, assess patient risk level, and conduct BIs using motivational interviewing techniques.[19–21] The third module trained ED staff on referral to treatment and proper protocols for completing "warm hand-offs" of patients to recovery supports and treatment. Several booster sessions were provided upon the health system's request to reinforce concepts covered in the curriculum and ensure continued program fidelity. New staff received training on all modules as they were hired.

Subjects, Data, and Measures

Eligible patients included those who had visited 1 of the hospitals' EDs during either 2010 or 2012 and had Medicaid coverage; they were identified by an honest broker (HB). The experimental group from the intervention hospital in 2012 consisted of 2546 patients, and the control group from the intervention hospital in 2010 consisted of 2817 patients. The control group from the control hospital in 2012 consisted of

3678 patients, and the control group from the control hospital in 2010 consisted of 3112 patients. The study was designed as observational, where patients who had claims within the specified timeframes comprised the groups of the study. Random assignment to different treatments was not used. All patients who required brief feedback or a BI received this step of the intervention at the intervention hospital, if desired.

The data comprised Medicaid health care claims from 2010 and 2012 for all study subjects. The HB extracted the claims data for all patients who visited 1 of the hospitals during the years of interest. Each patient was assigned an index ED date, which signifies the first ED visit date of the year for each year. All claims data for these patients for the 12 months preceding and 12 months following the index ED visit were extracted and analyzed.

Health Care Costs

Total health care costs were estimated by summing all allowable charges within general and behavioral health data, excluding the index ED event. Out-of-pocket costs and payment by other payers were not included within the total health care cost calculations, and all costs taken into consideration were covered by Medicaid.

Health Care Utilization

Binary measures were generated for ED visits within 30 days and 1 year of the index event, inpatient claims, and outpatient behavioral health claims where 0 indicated no claim and 1 indicated at least 1 claim in the associated time period before or after the index ED event. Control variables also provided by the HB included patient demographics (age, sex, and race/ethnicity) and the number of months the patient was covered by Medicaid.

Statistical Analyses

Dependent variables were constructed comprising aggregate measures for a patient within the study time period for each of the outcome measures. Multilevel models with individual random effects were estimated using patient demographics and lengths of coverage as controls. The independent variables of interest were an indicator of the index event provider (intervention or control hospital), year of the index event (2010 or 2012), and a preindex or postindex event indicator designating the 12 months before the index ED visit versus the 12 months after. Interacting these variables in the model produces a Differences in Differences in Differences (DnDnD) design.[20,21]

To assess the health care cost-effects of the Safe Landing intervention, health care costs were modeled using a multilevel generalized linear model assuming a γ-distributed dependent variable and a log-link function. γ-generalized linear model is often used to model cost data because of the common positive skew in the data.[22,23] Health care events (ie, 30-day ED use, 1-year ED use, inpatient claims, and outpatient behavioral health claims) were modeled using multilevel linear probability models. A linear probability model was estimated not only due to ease of interpretation, but also because equivalently specified propensity score-weighted nonlinear models were unable to converge. In addition, it has been shown that the use of the linear probability model is suitable in the case where the means of the dependent variables are not close to 0 or 1, as it is in this case.[24]

The DnDnD models are specified as follows:

$$\begin{aligned} Y_{it} = f(&\beta_0 + \beta_1 HOSP_i + \beta_2 POST_{it} + \beta_3 YEAR_i + \beta_4 HOSP_i \\ &\times POST_{it} + \beta_5 HOSP_i \times YEAR_i + \beta_6 POST_{it} \times YEAR_i \\ &+ \beta_7 HOSP_i \times POST_{it} \times YEAR_i + \beta_8 X_{it} + \gamma G_i) + \varepsilon_{it}. \end{aligned}$$

Y_{it} is the outcome for person i at time t, $f(\bullet)$ is a link function (log for the cost models and identity link for the utilization outcomes), and ε_{it} is an independent and identically distributed error or residual. Specifying both $f(\bullet)$ and the distribution of ε_{it} yielded various models appropriate for a variety of outcomes. The βs are fixed-effect parameters to be estimated, and γ is a vector of random-effect parameters (ie, variance components) to be estimated. *HOSP* is a dichotomous variable set to 1 when the individual had his/her index ED event at the intervention hospital and 0 otherwise. *POST* is a dichotomous variable set to 1 for observations corresponding to the year following the index visit and 0 otherwise. *YEAR* is a dichotomous variable set to 1 if the individual's index event occurred in 2012, and 0 otherwise. The next 4 items are interaction terms of the preceding 3, and X_{it} is a vector of demographic characteristics (ie, age, sex, and race/ethnicity) and adjustments for partial year follow-up (due to lack of Medicaid coverage through the year). G_i is a vector of indicator variables for each included patient. β_7 captures the change in the outcome for those receiving the index ED event at the intervention hospital when SBIRT was intended to have been delivered relative to the comparison group. Thus, this captured the association between an intention of SBIRT delivery and health care utilization and cost outcomes.

To minimize the impact of observable confounders, a propensity score was estimated and represented the likelihood that each included patient would be in the treatment group.[25] The propensity score was derived from a logit regression of treatment group membership on demographics and preindex event costs and utilization. Kernel matching was used to weight all patients in the comparison groups such that the comparison groups resembled the treatment group in terms of the potential confounding variables. Weights applied to control group members are a function of the distance between their propensity score and those of treated subjects, thus providing for estimates representing the average treatment effect on the treated subjects. Following the application of propensity score weights, standardized differences indicated that the treatment and control groups were sufficiently balanced, as no covariate had a weighted standardized difference exceeding 0.1.[20] The average standardized difference following the application of the weights was 0.016.

RESULTS

Table 1 shows the patient characteristics for the intervention and control groups. Typical subjects were in their late 20s or early 30s. Subjects were predominantly white and African American females. Subjects were covered by Medicaid between 8 and 11 months out of a possible 13 months on an average. There are 13 months total because the month of the index event and the preceding 12 months

TABLE 2. Full-model Outputs of Health Care Costs and Utilization

	Total Health Care Costs in 1 y	Any ED Claim in 30 d	Any ED Claim in 1 y	Any Inpatient Claim in 1 y	Any Outpatient Behavioral Health Claim in 1 y
Intervention hospital × postindex event × index year 2012					
Coefficient SE	−0.405 (0.090)	−0.020 (0.019)	−0.071 (0.022)	−0.047 (0.018)	−0.037 (0.016)
P	***	0.282	0.001	0.010	0.019
Intervention hospital × index year 2012					
Coefficient SE	0.141 (0.088)	0.015 (0.013)	0.041 (0.019)	0.025 (0.015)	0.051 (0.018)
P	0.111	0.243	0.027	0.092	0.005
Postindex event × index year 2012					
Coefficient SE	0.236 (0.051)	0.019 (0.013)	0.039 (0.015)	0.041 (0.013)	0.018 (0.011)
P	***	0.153	0.009	0.001	0.097
Index year 2012					
Coefficient SE	−0.337 (0.052)	0.007 (0.009)	−0.032 (0.013)	−0.036 (0.010)	−0.007 (0.012)
P	***	0.482	0.013	***	0.578
Intervention hospital × postindex event					
Coefficient SE	−0.009 (0.071)	0.009 (0.013)	−0.085 (0.016)	−0.024 (0.013)	0.003 (0.012)
P	0.894	0.505	***	0.066	0.777
Postindex event					
Coefficient SE	−0.055 (0.039)	0.108 (0.010)	0.085 (0.011)	−0.011 (0.009)	0.011 (0.008)
P	0.159	***	***	0.237	0.160
Intervention hospital					
Coefficient SE	−0.142 (0.069)	−0.038 (0.009)	−0.051 (0.014)	−0.006 (0.011)	−0.076 (0.013)
P	0.040	***	***	0.594	***
Age (y)					
Coefficient SE	0.060 (0.010)	0.008 (0.002)	0.008 (0.002)	−0.002 (0.002)	0.026 (0.002)
P	***	***	***	0.325	***
Age squared					
Coefficient SE	−0.000 (0.000)	−0.000 (0.000)	−0.000 (0.000)	−0.000 (0.000)	−0.000 (0.000)
P	0.035	***	***	0.004	***
Female					
Coefficient SE	−0.208 (0.044)	−0.011 (0.008)	0.037 (0.010)	0.034 (0.007)	−0.067 (0.010)
P	***	0.146	***	***	***
Race: black					
Coefficient SE	−0.522 (0.039)	−0.041 (0.007)	−0.007 (0.009)	−0.028 (0.007)	−0.175 (0.010)
P	***	***	0.451	***	***
Race: nonwhite, nonblack					
Coefficient SE	−0.577 (0.138)	−0.075 (0.020)	−0.133 (0.026)	−0.046 (0.016)	−0.223 (0.029)
P	***	***	0.004	0.005	***
Months covered by Medicaid					
Coefficient SE	0.100 (0.006)	−0.001 (0.001)	0.024 (0.001)	0.008 (0.001)	0.010 (0.001)
P	***	0.223	***	***	***
Constant					
Coefficient SE	6.753 (0.199)	0.036 (0.031)	0.203 (0.042)	0.071 (0.029)	−0.089 (0.042)
P	***	0.241	***	0.017	0.035
Observations	24,300	24,300	24,300	24,300	24,300

Robust SEs in parentheses.

Cost modeled as mixed-effect γ-GLM; binary outcomes modeled as mixed-effects linear models.

Data from patients who visited either intervention hospital or control hospital in 2010 and/or 2012. Patients with index events in both years are considered to be separate for the purpose of these models.

Constants were not reported.

GLM indicates generalized linear model.

***$P < 0.001$.

were included. Patients had between 110 and 124 claims in the year before the index event and between 94 and 160 claims in the year after the index event on an average.

Table 2 below shows the full specification of the regression models, with coefficient and interaction estimates. The first row of the table contains the triple interaction, which represents the effect of the interaction net of hospital, year, and time (pre/post) effects. Model output shows a significant negative association between the intervention group and total costs ($P < 0.001$), ED claims after 1 year ($P < 0.01$), inpatient claims after 1 year ($P < 0.01$), and behavioral health claims after 1 year ($P < 0.05$).

Table 3 below details the model predictions from the models shown in Table 2, along with significance tests between the intervention group and the other groups of the study. The model estimates show the magnitude of the changes for the various model effects. Overall, total health care costs declined by 21% for the intervention group ((\$9954–\$7880)/\$9954) in the 12 months following the index event relative to the 12 months prior. The incidence of ED visits and inpatient claims also fell significantly in the intervention group (3.3 and 4.1 percentage points, respectively).

TABLE 3. Estimates of Impacts of SBIRT on Health Care Costs and Utilization

Patient Group	Time Period		Health Care Costs	30-Day ED Visits	1-Year ED Visits	Inpatient Claims	Outpatient Behavioral Health Claims
Control hospital 2010	Preindex	Coefficient	$13,961 ***	15.5% ***	64.7% ***	20.0% ***	41.3%
		P					0.046
	Postindex	Coefficient	$13,215 ***	26.3% ***	73.1% ***	18.9% ***	42.5% ***
		P		0.473			
Intervention hospital 2010	Preindex	Coefficient	$12,119 ***	11.7% ***	59.6%	19.4% ***	33.7%
		P			0.089		0.002
	Postindex	Coefficient	$11,364 ***	23.4%	59.6%	15.9%	35.2%
		P		0.089	0.099	0.088	0.054
Control hospital 2012	Preindex	Coefficient	$9963 ***	16.2% ***	61.5%	16.4%	40.7%
		P			0.0011	0.022	0.016
	Postindex	Coefficient	$11,944 ***	28.9%	73.9% ***	19.4% ***	43.6% ***
		P		0.003			
Intervention hospital 2012 (experimental group)	Preindex	Coefficient	$9954 ***	13.9% ***	60.6%	18.3% ***	38.1%
		P			0.004		0.595
	Postindex	—	$7880	25.4%	57.3%	14.2%	37.7%

Authors' analysis of data from the Safe Landing project.
Data ranges from 2009 to 2013.
ED indicates emergency department; SBIRT, screening, brief intervention, and referral to treatment.
*** $P < 0.001$, relative to experimental group, postindex.

DISCUSSION

Potential Effects on Health Care Costs and Public Policy

This project has several salient considerations regarding how to address SUDs. SUDs can lead to increased health care utilization and costs,[3] and this study suggests that SBIRT programs may have the potential to improve patient outcomes via reductions in health care utilization, and resultant decreased costs.

The current study found that the implementation of an ED-based SBIRT program was associated with 21% lower health care costs from preindex event to postindex event. This translates to ~$2100 per patient per year. This reduction in health care costs could be linked mainly to decreased inpatient use, which accounted for ~72% of the change in costs in the SBIRT group. Complementing this overall decrease in inpatient costs, there was also a statistically significant reduction in 1-year ED visit rates. In addition, there was a moderate effect on the use of behavioral health care, which also contributed to a small portion of the decrease in costs. However, as a sensitivity analysis, models were estimated using only health care costs that were unrelated to behavioral health care; the reduction in behavioral health care costs in these models is virtually unchanged.

There are a number of possible explanations for the association with lower costs. First, Safe Landing may have prevented patient relapses requiring detoxification and associated acute treatment. A decrease in patient relapses means the costs necessary for these patients and visits would be negated. Second, BIs may have prevented the need for more intensive treatment, reducing the number of referrals to more expensive treatment services, and thus reducing overall costs at this level. Third, through patient awareness, the triage screening may have had an impact upon patient alcohol and drug use by patients. Finally, it is possible that some reductions are because of improvements in general health and a reduction in accidents associated with decreased substance use. These are just a few interpretations, but future research on the types of inpatient and behavioral health care patients receive is needed to understand the types of patients and care possibly influenced by SBIRT.

The SBIRT Safe Landing program makes an important contribution to the literature on the impact of SBIRT implemented in real-world settings rather than traditional randomized clinical trials. Few studies have rigorously analyzed the potential reduction in health care costs associated with SBIRT. Even fewer studies are set in the ED and focused on the potential to reduce ED visits.[26] A challenge to estimating the impact of SBIRT on health care costs in a real-world setting is a lack of adequate control groups because it is often not feasible to generate such a sample by design. However, Estee et al[12] used a control group of patients drawn from Medicaid claims data and propensity scores matched to SBIRT patients and concluded that SBIRT did reduce health care costs. Our project also used claims data and propensity score matching, but across 3 different control groups, allowing for time and setting factors to be accounted. As Raven et al[26] note, it is essential that future studies remain rigorous when studying interventions in the ED so that more definitive results can be made about intervention effectiveness for improving patient care or reducing health care costs.

A plausible next step of the Safe Landing program, and therefore a focus of a future study, would be to consider the cost of the intervention and determine its cost-effectiveness. The focus of the current study was on the impact of SBIRT on health care costs and health care utilization. However, a future study could examine the cost savings of an SBIRT intervention in terms of health care utilization versus the cost of delivering SBIRT. A study of this nature would provide valuable insight into the true cost-effectiveness of SBIRT services, and in particular, ED-based SBIRT services.

Finally, besides potentially attenuating downstream health care costs, the application of SBIRT within the ED could provide a significant strategy communities can use to reduce overdose risk.[27] The results of analyses conducted with Allegheny County service data indicated an average of 6–14 ED visits per day were related to overdose, and persons who died from overdose had touched an ED at least once in the year before their death.[28] The impact of providing SBIRT services within community EDs on subsequent overdose risk is worthy of future study and could provide further support for implementing SBIRT in this health care setting.

CONCLUSIONS

In this study, SBIRT implementation showed the potential to reduce health care costs and utilization as measured by Medicaid claims data. As the United States health care system moves toward reducing health care costs while also improving patient health, it will be important to provide evidence that new and existing methods can achieve these goals.[29] SBIRT use in the ED has the potential to achieve these objectives in a manner that can be readily incorporated into existing practice settings.

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