

Follow-up Services After an Emergency Department Visit for Substance Abuse

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The recent introduction of the substance abuse treatment initiation and engagement (IET) measures to the Health Plan Employer and Data Information Set (HEDIS) highlights the importance of this area for managed care organizations (MCOs). The introduction of these 2 measures will draw greater attention to how successfully an MCO identifies and treats members with substance abuse.

Managed care companies, with their limited resources, need to prioritize their efforts to intervene with this vulnerable population. The considerable effort to develop new services needs to be balanced with the possibility of augmenting existing services. Understanding the characteristics of these patients and the follow-up care they require is the first step toward resource prioritization.

Particularly challenging to MCOs are those members diagnosed with substance abuse in an emergency department (ED). As many as 31% of all patients who are treated in an ED have positive results when screened for alcohol problems,¹ and chronic drug users have a 30% higher probability of utilizing an ED than their casual drug- or nondrug-using counterparts.² Despite the prevalence of patients presenting with substance abuse to the ED, the condition is often underdiagnosed³⁻⁵ and therefore not addressed.

Treatment of substance abuse during or after an ED visit has been shown to reduce substance use,⁶ future ED use,⁷ hospital admissions, and bed days.⁸ Brief intervention models for use during an ED visit such as Screening, Brief Intervention, and Referral to Treatment (SBIRT) are available⁹ and show initial promise.¹⁰ However, the interventions that count for the HEDIS treatment IET scores are follow-up interventions subsequent to ED service. We undertook this study to determine what types of services patients were receiving after an ED visit for substance abuse, and to examine whether any factors in the ED visit could predict substance abuse follow-up.

METHODS

We analyzed claims data from 2004 for all health maintenance organization and preferred provider organization enrollees of a large health insurance plan in Hawaii that covers approximately half the state's population. The study population included members who had an ED visit with a diagnosis of substance abuse.

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Objective: The recent introduction of substance abuse treatment measures to the Health Plan Employer and Data Information Set (HEDIS) highlights the importance of this area for managed care organizations (MCOs). Particularly challenging are members first diagnosed in an emergency department (ED).

Study Design: Retrospective claims analysis.

Methods: Claims were abstracted for all members who used an ED in 2004 for a diagnosis of substance abuse in a large commercial MCO. General linear models were used to estimate the association between receiving follow-up care within 14 and 60 days and sex, age, type of primary diagnosis, substance abused, and level of use.

Results: Of the 1235 patients who visited an ED with a diagnosis of substance abuse, 13% received follow-up substance abuse services within 14 days of their ED visit. An additional 36% of patients had an outpatient service that did not code a substance abuse diagnosis within 2 weeks of an ED visit. The diagnosis breakdown of patients' primary diagnoses was 28% substance use, 13% mental health issues, and 59% nonpsychiatric (medical) disorders. The multivariable regression analyses revealed having a nonpsychiatric (medical) primary diagnosis was the strongest predictor of not receiving follow-up care (relative risk = 0.51) at 14 days compared with patients who had a mental health diagnosis.

Conclusions: Training ED staff and nonbehavioral health outpatient providers in treatment follow-up for substance abuse may improve the quality of care for patients. Encouraging providers to code for substance abuse when treatment or counseling is delivered would improve health plan HEDIS scores. Interventions may be needed for frequent ED users with substance abuse.

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The first ED visit for substance abuse in 2004 was found using revenue codes 450 to 459 and the diagnostic codes from the HEDIS substance abuse IET definition. The time period for accessing subsequent services was counted either from the ED visit date or from the inpatient discharge date.

Follow-up services were obtained from claims, supplementing the HEDIS substance abuse IET definition with substance abuse rehabilitation codes (906, 945, 1001, 1002). A diagnosis of substance abuse was required.

To determine outpatient follow-up services, 4 criteria were used: (1) The service had to occur within a date range outside

of inpatient services or rehabilitation services; (2) the service had to be an outpatient procedure code from the HEDIS substance abuse IET definition; (3) the place of service had to be an office, outpatient hospital clinic, community mental health center, or home; and (4) the services had to be for a primary or secondary substance abuse diagnosis.

For this report we have termed substance abuse services subsequent to discharge “substance abuse follow-up.” Services performed with the outpatient procedure code list but without a substance abuse diagnosis were also examined. Postdischarge services rendered without a substance abuse diagnosis are termed “untreated/uncoded” services. We used the term untreated/uncoded because we did not know whether substance abuse was not addressed (untreated) or whether it was addressed but the substance abuse diagnosis code was not included on the claim (uncoded).

To examine what factors were most strongly associated with receiving follow-up care, we estimated general linear models using a Poisson regression model with a robust error variance. We ran 2 models. The first included a dichotomous variable indicating receipt of follow-up within 14 days, and the second examined follow-up within 60 days. Independent variables included sex, age, type of primary diagnosis, substance used, and level of use (eg, dependence). Results are shown in the form of relative risk. All analyses were conducted using STATA v.9.0.

RESULTS

Emergency Department Services

Of the 64 194 patients who accessed an ED in this health plan during 2004, 1235

■ **Table 1.** Characteristics of Patients Seen in the ED for Substance Use

	All Visits, %	Follow-up Within 14 Days, %
Sex		
Male (n = 802)	65	13
Female (n = 433)	35	15
Age, y		
10-19 (n = 94)	8	14
20-29 (n = 269)	22	7
30-39 (n = 195)	16	19
40-49 (n = 286)	23	17
50-59 (n = 213)	17	16
60-69 (n = 98)	8	9
70-79 (n = 55)	4	7
80+ (n = 25)	2	4
Primary diagnosis		
Mental health (n = 155)	13	19
Substance abuse (n = 346)	28	22
Medical (n = 704)	57	8
Medical with substance abuse* (n = 30)	2	10
Substance used		
Alcohol (n = 823)	67	11
Amphetamine (n = 89)	7	19
Barbiturate (n = 7)	1	29
Cannabis (n = 33)	3	6
Cocaine (n = 21)	2	5
Drug-induced disorder (n = 53)	4	34
Drug withdrawal syndrome (n = 48)	4	25
Opioid (n = 31)	3	29
Polysubstance (n = 52)	4	8
Other or unspecified substance (n = 78)	6	15
Level of substance use in ED		
Abuse (n = 782)	63	9
Dependence (n = 228)	18	16
Intoxication (n = 65)	5	20
Other/unspecified (n = 63)	5	22
Withdrawal (n = 97)	8	28

*Represents diagnoses outside the range of alcoholic/drug psychoses (291.x to 292.x) or alcohol/drug use disorders (303.x to 305.x, excluding 305.1) whose description indicates substance use (eg, alcoholic cirrhosis, alcoholic gastritis, alcoholic hepatitis). ED indicates emergency department.

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(1.9%) were for a diagnosis of substance abuse (0.2% of the entire population). A little less than half (44%) were admitted to the hospital from the ED. The characteristics of the patients accessing services and the substance abuse follow-up received are presented in **Table 1**.

Follow-up Substance Abuse Services

Overall, 13% of the patients who accessed an ED for a diagnosis of substance abuse received follow-up substance abuse services within 14 days of their ED visit. An additional 3% received follow-up substance abuse services or went to inpatient care within 60 days of their ED visit. A description of the follow-up substance abuse services received can be found in the **Figure**.

Compared with patients not admitted on the initial ED visit, patients with an initial admittance from the ED were more likely to be readmitted both within 14 days and between 14 and 60 days (11.5% vs 3.7% over 60 days), less likely to receive outpatient substance abuse follow-up within 14 days

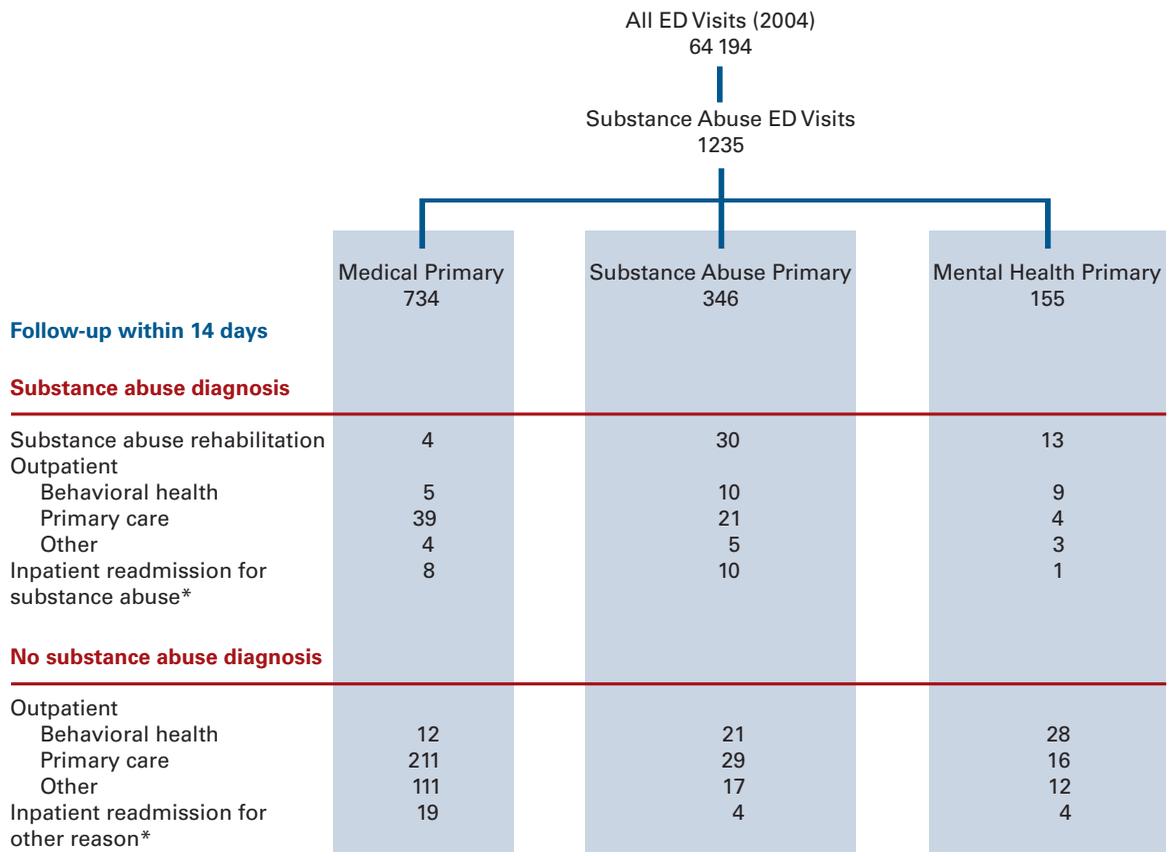
(5.4% vs 10.2%), and slightly less likely to receive other substance abuse follow-up in either time period (3.4% vs 5.8% within 60 days).

Untreated/Uncoded Follow-up Services

An additional 36% of patients had an outpatient service that did not code a substance abuse diagnosis within 2 weeks of an ED visit. Nineteen percent of those patients went on to a rehabilitation or outpatient substance abuse service after 14 days. These patients could have been captured in the HEDIS initiation measure had substance abuse been addressed at the office visit and coded.

A review of the primary diagnosis at the ED visit revealed that 73% of the patients who went on to an outpatient service that did not code a substance abuse diagnosis had a primary medical diagnosis in the ED. Disorders more prevalent in the untreated/uncoded service population than in the overall population included pancreatitis (67% vs 2% overall), ulcers (67% vs 1% overall), congestive heart failure (67% vs 1%

■ **Figure.** Numbers of Patients Followed Up Within 14 Days After ED Visit for Substance Abuse



*Includes patients admitted to a hospital for dual mental health and substance abuse diagnoses and for a primary medical diagnosis with a secondary substance abuse diagnosis. ED indicates emergency department.

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overall), palpitations/tachycardia (67% vs 1% overall), disorders of the musculoskeletal system or connective tissue (55% vs 3% overall), and endocrine/nutritional/metabolic/immunity disorders (54% vs 2% overall). The breakdown of follow-up with and without a substance abuse diagnosis can be seen in [Table 2](#).

Other Findings

A total of 215 patients had another ED visit within 60 days of their initial ED visit for substance abuse in 2004. Seventy percent of these patients had only 1 visit, and 12% had 3 or more visits. Altogether, these patients were responsible for 334 subsequent visits. For 32% of these patients, all subsequent ED visits were for a primary substance abuse diagnosis. Of the 215, 46% received substance abuse follow-up services after their first ED visit in the year, almost entirely at an outpatient setting by a nonbehavioral health provider.

Moreover, 22% of patients with more than 1 ED visit within 60 days of their initial ED visit had an untreated/uncoded service. Of patients with only 1 ED visit within 60 days of their initial ED visit, 34% had an untreated/uncoded service. Among patients who did not return to the ED within 60 days of their initial ED visit, 40% had an untreated/uncoded service.

After adjusting for other factors, the strongest predictor of not receiving follow-up care within either 14 or 60 days was having a primary medical diagnosis ([Table 3](#)). Patients who had a primary medical diagnosis were approximately half as likely as patients with a primary mental health diagnosis to receive follow-up care for substance abuse. Another group that appeared to be at risk for lack of follow-up was patients aged 20 to 29 years.

Patients taking barbiturates or opioids were more likely than patients abusing alcohol to receive follow-up care. Moreover, patients at the level of “intoxication” or “withdrawal” were more likely to receive follow-up than patients at the level of “abuse.”

We also examined differences in sex, severity of substance use, and the differences between facilities. None of these differences were significant.

DISCUSSION

The introduction of a new HEDIS measure has highlighted the importance of follow-up care after an ED visit for substance abuse. The goal of this study was to shed light on characteristics of members who do not receive this recommended follow-up. This information may be used to target specific groups for quality improvement interventions.

In this study, 1.9% (or 1235 of 64 194) of patients who accessed an ED were diagnosed with a substance abuse disorder. A prior study found that 31% of ED patients tested positive for substance abuse,⁴ suggesting that substance abuse may be underdiagnosed in our population.^{11,12} Of patients diagnosed with substance abuse in an ED setting, only 13% received follow-up substance abuse services during the 14 days after their ED visit. An additional 3% received follow-up substance abuse services between 14 and 60 days after their ED visit or hospital discharge.

In addition to the 13% of patients who received substance abuse follow-up within 2 weeks of discharge, an additional 36% of patients accessed outpatient services during the 2 weeks after ED discharge, but substance abuse was not coded in the claim filed for the visit (“untreated/uncoded” services). From the data, it is unclear whether services were not being rendered or whether the substance abuse services being rendered were not being coded with a substance abuse diagnosis. Regardless of whether the service was untreated or uncoded, a significant number of patients were engaging in follow-up behavior. One can also infer a certain amount of motivation for health-maintaining behavior, even if there is denial on the part of the patient concerning the link between substance abuse and health status.

If patients are not receiving substance abuse care during untreated/uncoded services, one possible explanation may be staff attitude and training. Surveys of physicians have revealed that although physicians appreciate the magnitude of the problem that substance abuse presents, they perceive themselves as being unprepared to diagnose substance abuse, find it difficult to discuss substance abuse with their patients, and are skeptical about the effectiveness of available treatments.¹³ Other perceived barriers include that screening would threaten reimbursement, compromise patient confidentiality, and would be too time consuming.¹⁴ Nevertheless, studies suggest this perceived workload is overestimated¹⁵ and patients generally accept substance abuse intervention in medical settings.¹⁶

The data indicate that patients diagnosed with alcohol abuse were less likely to receive follow-up services than patients diagnosed with other drug dependencies, such as amphetamine, barbiturate, or opioid addictions. This finding may be because alcohol is considered a legal substance, literature exists stating that it has positive protective effects at low consumption levels, and evidence supports that it is the physician’s drug of choice.¹⁷

Provider training should especially focus on encouraging substance abuse follow-up, even when the primary medical diagnosis is not necessarily associated with substance abuse. Although individuals with a primary medical diagnosis had

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■ **Table 2.** Emergency Department (ED) Visit and Follow-up by ED Diagnosis

Primary diagnosis category	ED Visit			Follow-up Within 14 Days	
	N	Overall		For Substance Abuse Diagnosis, %	For Untreated/ Uncoded Service, %
		%	Admitted From ED, %		
Substance abuse	346	28	23	22	18
Mental health	155	13	68	19	35
Depression	52	4	94	23	42
Psychosis	36	3	56	19	31
Adjustment disorder	22	2	45	32	27
Bipolar affective disorder	18	1	94	6	39
V Codes and mental disorder not otherwise specified	13	1	69	15	23
Anxiety disorders	11	1	0	9	45
Other	3	<1	33	0	0
Medical	734	59	0	8	44
Injury	245	20	40	6	45
Diseases of the digestive system	142	11	57	8	43
Other	32	3	78	6	44
Digestive symptoms	27	2	7	7	26
Pancreatitis	27	2	89	11	67
Gastritis	25	2	8	8	24
Ulcer	15	1	100	0	67
Liver	9	1	100	11	33
Hepatitis	7	1	57	14	43
Diseases of the circulatory system	113	9	65	7	46
Other	49	4	80	4	49
Chest pain	33	3	30	15	30
MI	13	1	100	0	46
CHF	12	1	100	8	67
Palpitations/tachycardia	6	<1	0	0	67
Symptoms, signs, and ill-defined conditions	75	6	27	16	39
Other	29	2	10	17	31
Syncope	23	2	43	13	48
Fever	18	1	33	22	39
Dizziness	5	<1	20	0	40
Diseases of the respiratory system	34	3	56	9	35
Diseases of the musculoskeletal system/connective tissue	31	3	32	6	55
Endocrine, nutritional, metabolic diseases, and immunity	24	2	50	8	54
Other diagnoses (n < 20)	70	<1	57	11	40
Totals	1235	100	44	13	36

CHF indicates congestive heart failure; MI, myocardial infarction.

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■ **Table 3.** Relative Risk of Follow-up Within 14 and 60 Days Related to Characteristics of Patients Seen in the ED for Substance Use

	Follow-up Within 14 Days	Follow-up Within 60 Days*
Sex		
Male (n = 802)	1	1
Female (n = 433)	0.92 (0.71-1.2)	0.96 (0.78-1.2)
Age, y		
10-19 (n = 94)	1	1
20-29 (n = 269)	0.52 (0.28-1.0)	0.50 (0.28-0.88)
30-39 (n = 195)	1.5 (0.86-2.6)	1.4 (0.89-2.3)
40-49 (n = 286)	1.3 (0.77-2.3)	1.3 (0.79-2.0)
50-59 (n = 213)	1.7 (0.99-3.1)	2.0 (1.2-3.2)
60-69 (n = 98)	1.1 (0.52-2.3)	1.4 (0.76-2.4)
70-79 (n = 55)	0.78 (0.28-2.2)	0.95 (0.42-2.1)
80+ (n = 25)	0.63 (0.21-1.9)	0.63 (0.26-1.5)
Primary diagnosis		
Mental health (n = 155)	1	1
Substance abuse (n = 346)	1.0 (0.70-1.4)	0.87 (0.64-1.2)
Medical (n = 734)	0.51 (0.36-0.72)	0.49 (0.37-0.65)
Medical with substance abuse [†] (n = 30)	0.65 (0.25-1.7)	0.69 (0.34-1.4)
Substance used		
Alcohol (n = 823)	1	1
Amphetamine (n = 89)	1.6 (1.0-2.5)	1.5 (0.98-2.2)
Barbiturate (n = 7)	3.8 (1.9-7.5)	4.3 (2.2-8.4)
Cannabis (n = 33)	0.62 (0.17-2.3)	0.89 (0.37-2.2)
Cocaine (n = 21)	0.39 (0.05-2.8)	0.88 (0.32-2.4)
Drug-induced disorder (n = 53)	4.5 (0.71-28.8)	2.8 (0.88-8.9)
Drug withdrawal syndrome (n = 48)	0.89 (0.50-1.6)	0.91 (0.59-1.4)
Opioid (n = 31)	2.1 (1.2-3.7)	1.9 (1.2-3.1)
Polysubstance (n = 52)	0.79 (0.32-1.9)	0.63 (0.28-1.4)
Other or unspecified substance (n = 78)	1.3 (0.73-2.3)	1.5 (0.93-2.3)
Level of substance use in ED		
Abuse (n = 782)	1	1
Dependence (n = 228)	1.2 (0.84-1.8)	1.3 (0.94-1.7)
Intoxication (n = 65)	2.0 (1.2-3.1)	1.8 (1.2-2.7)
Other/unspecified (n = 63)	0.69 (0.11-4.4)	1.1 (0.34-3.5)
Withdrawal (n = 97)	2.4 (1.5-3.8)	2.4 (1.7-3.5)

Values presented as relative risk (95% confidence interval).

*Includes patients who went for follow-up within 14 days.

[†]Represents diagnoses outside the range of alcoholic/drug psychoses (291.x to 292.x) or alcohol/drug use disorders (303.x to 305.x, excluding 305.1) whose description indicates substance use (eg, alcoholic cirrhosis, alcoholic gastritis, alcoholic hepatitis).

ED indicates emergency department.

less substance abuse follow-up than persons with a primary substance abuse or primary mental health diagnosis, certain subgroups of medical diagnoses had higher rates of substance abuse follow-up than other subgroups of medical diagnoses. Of the disorders labeled digestive disorders, 38% could be identified as possibly alcohol-based (gastritis, pancreatitis, and hepatitis), and the substance abuse follow-up for these patients was equivalent to the overall substance abuse follow-up. It is possible that patients with these conditions may more readily associate their medical condition with their substance abuse and therefore be more motivated to enter treatment by attending substance abuse follow-up. In the current study, patients complaining of chest pain, syncope, fever, or ill-defined symptoms also had better substance abuse follow-up than the overall population. These conditions may possibly have an element of discomfort or fear associated with them and, if substance abuse was associated as a possible cause, may have resulted in more substance abuse follow-up.

The perception of health problems may be as important for substance abuse follow-up as the presence of a particular medical diagnosis. For example, in 1 survey of 12 437 people, individuals who self-reported health problems had a 13.5 adjusted odds ratio of entering alcohol treatment over others who also reported drinking during the past year. This effect was stronger than traditional clinical features such as increased tolerance, ingesting more alcohol than intended, and alcohol-related behavior.¹⁸

One medical diagnosis group that may be overlooked for inter-

vention is trauma, which was a prominent medical diagnosis group in the current study. Alcohol in particular has received research attention,¹⁹ as alcohol-related ED visits are 1.6 times as likely as other visits to be injury-related.²⁰ Alcohol's relation to injury in the ED was the subject of an international conference in Berkeley, California, in October 2005, that highlighted some intervention efforts which were more effective for reducing alcohol-related injuries than standard care.²¹

One limitation with a claims data analysis is that it does not identify providers who may be intervening with patients with substance abuse disorders in ways that are not captured in claims. For example, the patient may not be ready to enter formal treatment, but may nonetheless receive benefit from brief motivational interventions in the “teachable moment.”²²⁻²⁷ Another possible intervention that could be occurring but not reflected in claims is referral to a self-help group such as the 12-step approach. A comment in the March 2005 *Academic Emergency Medicine* journal titled “Brief interventions for problematic behaviors in the emergency department: don’t overlook ‘12-step’ recovery programs that advocate total abstinence (and don’t be afraid to delegate the intervention task to a qualified, trained assistant)”²⁸ suggests that the belief that Alcoholics Anonymous is a better treator of alcohol abuse than mental health professionals is prevalent.

Interventions to address these issues on a provider level can be directed to either the individual provider who rendered the untreated/uncoded service or the ED facility, or both. Further process mapping for a specific population—ascertaining whether a substance abuse follow-up plan was made in the ED, if that plan was communicated to the provider who rendered the service labeled “untreated/uncoded,” whether the service truly was untreated or uncoded—would be required before targeted interventions could be planned.

One example of a program to address substance abuse that combines provider and MCO resources is “Cutting Back,” a primary care alcohol screening and brief intervention program for harmful drinkers funded by the Robert Wood Johnson Foundation.²⁹ The program has been implemented in 10 primary care practices associated with MCOs in 5 states through a system of training, technical assistance, and feedback. In that study, the overall screening rate was 19% to 24% and the intervention rate for individuals screened ranged from 57% to 73%. The most extensive research in identifying and effecting change at the facility level has been carried out by the Department of Veterans Affairs.³⁰ In that study, screening for

Take-away Points

Of patients diagnosed with substance abuse in an emergency department (ED) setting, only 13% received follow-up substance abuse services during the 14 days after their ED visit.

- Provider training should focus on encouraging substance abuse follow-up, even when the primary medical diagnosis is not necessarily associated with substance abuse.
- An additional 36% of patients had an outpatient service that did not code a substance abuse diagnosis within 2 weeks of an ED visit, indicating an opportunity for intervention and to raise Health Plan Employer and Data Information Set scores.

alcohol was less likely at more academically affiliated centers, and follow-up evaluation of a positive screening was less likely at the largest facilities where there may be greater system-level barriers.

Interventions may also be patient-based. Many patient-based interventions for EDs focus on frequent users. Frequent users of EDs are a fairly well-studied group³¹⁻³⁴ that can be affected positively by case management.³⁵ This study suggests that, as patients who did not have a subsequent ED visit were more likely to receive an “untreated/uncoded” service, interventions to address less frequent users may be needed to capture a broader patient base than interventions focused on frequent users.

Limitations of the Current Study

One limitation of the current study is that without a detailed record of what occurred during the untreated/uncoded service, it is not possible to determine whether a service did not address substance abuse or whether the service did address substance abuse but the claim was not coded with a substance abuse diagnosis. An additional limitation with the current study is that the claims-based analysis did not include referral data. We do not know if a physician made a referral and recommendation for follow-up and the patient did not act or if the physician failed to address the issue in a follow-up plan.

However, even with these uncertainties, the finding that patients are attending these “uncoded/untreated” services suggests a teachable moment might exist (ie, a second teachable moment after the one during the ED visit). As a typical MCO relies on claims data for intervention and project evaluation, optimal MCO intervention would incorporate not only clinical strategies to address substance abuse but also claims documentation issues.

Another limitation of the current study is lack of data on socioenvironmental factors such as education, employment, work-place pressures, social pressures, and legal issues found to predict initiation of substance abuse treatment.³⁶⁻³⁹

CONCLUSIONS

A significant number of patients with substance abuse are engaging in follow-up behavior (ie, they are retaining information about appointments; arranging transportation to appointments; taking time off from work, school, or everyday life to keep appointments; etc). This finding suggests that an opportunity exists for training providers to address the substance abuse needs of these patients. That certain medical diseases or complaints seemed more readily associated with substance abuse in providers' minds suggests that the diagnoses for which providers suspect substance abuse need to be broadened.

On the patient side, patients who perceive themselves as having greater health problems are more likely to follow up with substance abuse services, suggesting that interventions that associate a patient's substance abuse with his or her primary medical diagnosis may prove fruitful.

For populations such as the one described in this study, MCOs could address the needs of substance abuse patients in the ED and increase their HEDIS scores by training ED staff and nonbehavioral health providers to address substance abuse, focusing on specific medical diagnoses.

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