Medical and mental health services utilization among requalified and former Drug Addiction and Alcoholism recipients of SSI

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This article examines the impact of the elimination of the Supplemental Security Income (SSI) drug addiction and alcoholism (DA&A) disability category—and the consequent loss of Medicaid benefits by most of those terminated from SSI—on the medical and mental health services utilization of affected individuals. Data are from a two-year, five-wave panel study of a random sample of 1,764 former DA&A recipients in nine sites. Respondents were grouped into three categories: those who requalified for SSI on other grounds; those who lost SSI but obtained alternative health coverage; and those who lost SSI and were uninsured. We found, after controlling for covariates, that the uninsured were significantly less likely than those who requalified for SSI to receive any medical or mental health care. Disparities in care were less pronounced between those who requalified for SSI and those

who lost SSI but obtained other coverage. Lack of insurance was associated with greater difficulty in accessing care in four sites, but it was not associated with higher emergency room use.

In the face of growing disparities in health insurance coverage, intensive health cost-containment efforts, and increased market penetration of managed health care systems, health policy researchers have focused increasingly on the interrelationships among health, health coverage, and access to and utilization of care. Despite efforts to study these relationships comprehensively, several areas remain understudied. The broad changes in social service systems over the past decade are of particular interest, especially those affecting chemically dependent people. The stigma associated with substance abuse has resulted in some of the more sweeping and abrupt policy changes.

At the national level, the elimination of drug addiction and alcoholism as a basis for establishing eligibility for Supplemental Security Income (SSI) disability benefits—and the consequent loss of Medicaid benefits by most of those terminated from SSI—provides an appropriate context in which to examine the consequences of such changes. The loss of Medicaid coverage by former SSI recipients for drug addiction and alcoholism (DA&A) is of particular relevance in light of the more extensive legislative reforms intended to reduce social service costs by moving participants in many types of welfare programs to greater workforce participation—reforms that may result in the intended or unintended loss of or reduction in ancillary health insurance.

A number of national access-to-care studies have examined the relationship between insurance coverage and health care utilization and health outcomes. A review of six major

national studies conducted during the 1980s and 1990s (Berk and Schur, 1998) found a consistent association between lack of coverage and fewer ambulatory care visits, greater difficulty obtaining medical and surgical care, and greater difficulty obtaining care for specific supplementary services (e.g., mental health care, prescription drugs, eyeglasses, dental care). Lack of coverage is also associated with increased use of hospital emergency departments for routine care (Ahern and McCoy, 1992; Cunningham and Whitmore, 1998; O'Toole et al., 1999) and poorer health care outcomes (Hadley, Steinberg and Feder, 1991).

On the whole, the review found that national surveys estimate that the uninsured are anywhere from two to five times more likely than those with insurance to have difficulty getting health care. The magnitude of the effect of a lack of coverage varies across surveys, in part due to methodological differences among studies (e.g., sampling techniques, survey length, telephone vs. face-to-face contact) but also as a result of differences in the operationalization of the concepts of utilization and access (Berk and Schur, 1998). Operational indicators of access include: having a regular source of care, difficulty obtaining care, unmet need for supplementary health services, number of ambulatory care visits, use of the emergency department as a regular source of care, and having fair or poor health but no doctor visits. The Institute of Medicine (Millman, 1995) has urged the development of more sensitive, clinically based indicators of access that better distinguish between appropriate and inappropriate use of health care.

Differences in utilization and access between the insured and the uninsured vary by geographic location. Site differences affect both the number of uninsured in a community and the magnitude of the disparity between the medical care utilization of covered and uncovered groups (Cunningham and Kemper, 1998). Similarly, variation in access by location also has been found in studies of mental health care (Rosenberg

and Hanlon, 1996; Rosenheck and Lam, 1997a, 1997b). The sources of geographic variation are not well understood, but they probably include contextual factors such as local policies, population characteristics and density, the level of penetration of Medicaid managed-care systems, and per capita funding for health services. In particular, some states provide more comprehensive publicly subsidized coverage than others (Rajan, 1998).

Within this larger frame, this paper examines the impact of the termination of the SSI DA&A program on medical and mental health care utilization and access to health and mental health care among former beneficiaries in several sites. The focus is on the association between insurance coverage and access and utilization among affected individuals. Based on research findings regarding the relationship between insurance coverage and utilization of and access to care, we anticipated that compared with DA&A recipients who retained SSI after requalification under another impairment category, the service utilization of those who lost SSI and concomitant Medicaid benefits would be adversely affected. We expected the most pronounced adverse impact to be on those unable to replace lost medical coverage through another public or private source. While we expected to find variation in the pattern of effects across sites, we did not attempt to test the magnitude or causes of the cross-site differences.

Methods

Interview data were obtained from a longitudinal multiple-site study of 1,764 SSI DA&A recipients in nine counties or metropolitan areas in five states. The sites, identified by the name of the largest city within each area, are Chicago, Detroit, Seattle, Portland (OR), and, in California, San Jose, Los Angeles, Stockton, Oakland, and San Francisco. Participants in the study were randomly selected from available

records of SSI DA&A recipients at each site.[1] Five waves of data were collected at six-month intervals over a two-year period, with the baseline (first-wave) data corresponding to the six months prior to the effective date of the elimination of the DA&A program: January 1, 1997. Across sites, follow-up response rates subsequent to the baseline interview averaged about 90%. Elsewhere in this issue, Swartz, Tonkin and Baumohl provide an in-depth description of the study design and methodology.

Measures of utilization and access to care

Four measures operationalized health service utilization and access to care. All were dichotomous and based on self-reported data. Two measures were indicators of service use: One was the report of any medical outpatient-care visits in the six months prior to each interview; the other was the report of any mental health care (inpatient or outpatient) during the same period.[2] Third, as an indicator of barriers to access or to difficulty obtaining care, respondents were asked if they had needed to see a doctor or nurse for a health problem in the preceding six months but were unable to do so. The last indicator was whether a respondent had had any emergency room episodes during the prior six-month period. Because the literature suggests that emergency room use is often a source of health care for poor persons unable to obtain services by other means, we treat this variable as an indicator of access rather than as a measure of utilization *per se.*

Measures of insurance

Insurance coverage and sources of income are closely associated. Recipients of SSI almost always are entitled to Medicaid, while recipients of other income assistance programs such as General Assistance, Temporary Assistance for Needy Families (TANF), or other (non-SSI) disability benefits, such as a veteran's pension, may also be entitled to publicly funded health care. In addition, persons may secure insurance privately or through their employment. To examine the relationship between loss of SSI benefits and health services utilization and access to care, we created a three-category

SSI/insurance variable: (1) requalified for SSI, (2) not on SSI, but consistently insured through some mechanism, and (3) not on SSI and not consistently insured. The indicator is derived in part from the source-of-income variable developed by Campbell, Baumohl and Hunt (this issue) and is similarly based on the pattern of responses provided by a respondent across repeated interviews. All persons designated as SSI recipients for purposes of the source-of-income variable were also designated as SSI recipients for purposes of the SSI/insurance variable. Those not designated as on SSI were then divided into two groups based on their pattern of responses at each follow-up to the question "Do you have any medical insurance?" Those who reported having insurance at a preponderance of the follow-up interviews in which they participated were considered consistently insured, while those who did not were categorized as not consistently insured.[3] This latter group consists of both those who were consistently uninsured and those with sporadic coverage of limited duration.[4] For convenience, we refer to this group as the uninsured.

Predictors of utilization

The social and behavioral model of health care utilization developed by Andersen and subsequently elaborated upon by Andersen and his colleagues (Andersen and Newman, 1973; Andersen, 1995) posits four primary determinants of utilization: predisposing characteristics, enabling characteristics, need, and health service system features. *Predisposing characteristics* refers to demographic and social-structural variables likely to affect a person's inclination to use health care (e.g., gender, age, education, race or ethnicity). *Enabling characteristics* refers to personal and community resources that facilitate use; examples include income, health insurance, and availability of a regular source of care. (Our SSI/insurance variable is of this sort.) *Need* relates to a person's general health and functional state and his or her desire for professional help. Finally, *health system features* are environmental or contextual variables, including local health care

policy and the organization of the service delivery system. In more recent models proposed by researchers in the field (Evans and Stoddart, 1990; Andersen, 1995), health system features are conceptualized as exogenous components that affect utilization not only directly but also indirectly through their effects on predisposing characteristics, enabling characteristics, and need.

Employing the Andersen model, we examined the relationship between SSI/insurance and health service utilization and access after controlling for indicators of predisposing characteristics and need. Our indicators of predisposing characteristics were age, gender, race/ethnicity (white/non-white), and education (high school degree or its equivalent/no high school degree). Age was treated as a continuous variable, and the other three as dichotomous indicators. Three need measures were operationalized: two from the medical and psychiatric composite scores from the Addiction Severity Index (McLellan, 1992)[5] and one representing an index of substance-use severity adapted from Phin (1978).[6] Because the three severity measures were all highly skewed, each was broken down into three categories: low, medium, and high.[7] Finally, because of the repeated-measures design of the study, we controlled for time, treating it as a categorical variable defined by the interview wave (waves one through five). In keeping with Andersen's conceptualization of site as an exogenous variable that affects utilization both directly and indirectly, we analyzed each site separately. Separate analyses also limited confounding that might result from potential sample biases at each site.

Analysis   PROC GENMOD (SAS software version 8) was used to conduct a generalized linear model analysis by applying the generalized estimating equations (GEEs) method for dichotomous, repeated-measures outcome variables (Liang and Zeger, 1986; Nagelkerke, 1991; Nelder and Wedderburn, 1972). This method allows analysis of correlated observations within cases and permits analysis of data from all partici-

pants, including those with incomplete or missing follow-up data at one or more time points. We performed the regression with logit link and an unstructured correlation matrix and obtained odds ratios (ORs) to examine differences in utilization and access among the three categories of the SSI/insurance variable. We analyzed each site separately using the same model. In each site the time effect, demographic variables (male, high school graduate, white, and age), and severity scores (medical, psychiatric, and drug) were included in the model as covariates. To be included in the model, a demographic variable had to be significantly associated with utilization or access in at least one of the study sites.
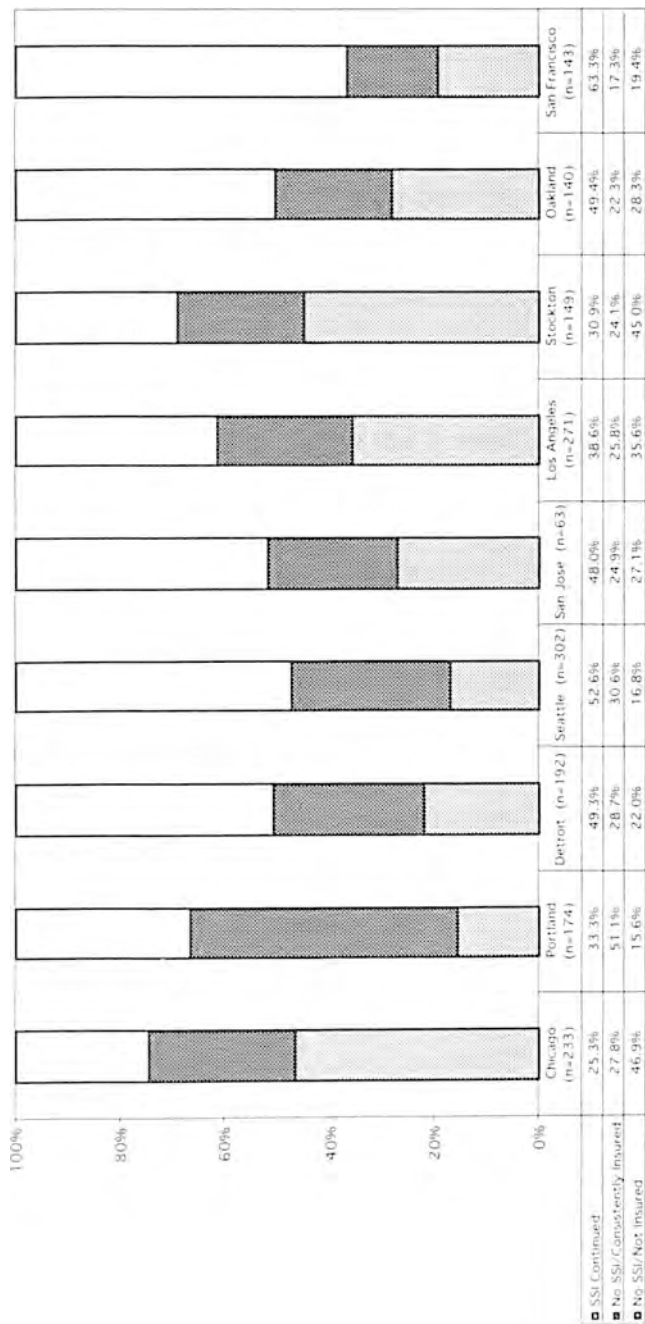
For each of the four measures of utilization and access, we tested five nested models sequentially, with an additional variable (or group of variables) added at each step until all variables were in the model. The first was the initial model, with no covariates. In the four subsequent models, variables were added in the following order: (1) the set of dummy variables representing the time covariate, (2) the demographic covariates and their two-way interactions, (3) the set of dummy covariates for the three severity scores, and (4) the SSI/insurance status variable. We examined the changes in deviance between nested models at each stage to determine whether the variable or group of variables added at that stage accounted for a significant improvement in goodness of fit over that of the previous model. Data were weighted to adjust for sample biases with respect to the gender, age, and race/ethnicity of the SSI DA&A population at each site (see Choudhry and Helba, this issue, for a discussion of weighting procedures).

Results

Insurance status   Figure 1 shows the distribution of the weighted SSI/insurance variable for respondents in each site. The percentages of those who lost SSI and were not insured after the policy

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FIGURE 1
SSI/insurance status pattern variable by site (weighted data)

	Chicago (n=233)	Portland (n=174)	Detroit (n=192)	Seattle (n=302)	San Jose (n=63)	Los Angeles (n=271)	Stockton (n=149)	Oakland (n=140)	San Francisco (n=143)
SSI Continued	25.3%	33.3%	49.3%	52.6%	48.0%	38.6%	30.9%	49.4%	63.3%
No SSI/Consistently insured	27.8%	51.1%	28.7%	30.6%	24.9%	25.8%	24.1%	22.3%	17.3%
No SSI/Not insured	46.9%	15.6%	22.0%	16.8%	27.1%	35.6%	45.0%	28.3%	19.4%

change range from 15.6% to 46.9%, with an average of 28.5%. The lowest rates were in the Northwest, where Portland and Seattle had 15.6% and 16.8% uninsured, respectively. Although participants in both Portland and Seattle were more likely than those in other sites to have some form of insurance, in Seattle the source was more likely to be linked to SSI (52.6% SSI vs. 30.6% other sources), whereas in Portland, insurance was more likely to be obtained through alternative public or private means, most frequently the Oregon Health Plan (33.3% SSI vs. 51.1% other sources). The sites with the highest rates of uninsured were Chicago (46.9%) and Stockton (45.0%), the two sites with the lowest rates of SSI requalification.

The percentage of persons who lost SSI but were able to obtain alternative coverage varied across sites, ranging from 35% to 76.7%. The three sites with the highest rates of insurance replacement were Portland (76.7%), Seattle (64.3%), and Detroit (56.7%). Stockton (35%), Chicago (37.4%), and Los Angeles (41.9%) had the lowest levels.

Measures of utilization and access

Table 1 shows trends in service utilization and barriers to care for each of the four dependent variables over time. For each variable we report utilization at baseline, utilization at the 24-month follow-up, and average utilization over all five waves. We discuss trends below.

Outpatient visits

Overall, 75.9% of respondents reported an outpatient visit for physical health care during the six-month baseline period. Reports ranged from 67.6% to 79.0%, with San Jose and Stockton consistently having the lowest percentages. In terms of follow-up, for all sites except Oakland the percentage reporting any outpatient visits tended to decline over time. At 24 months the rate was 65.3%, a decline of 10.6% from baseline. In most sites the largest component of the drop in utilization occurred over the first year after the policy change. More specifically, in five of the nine sites (Chicago, Portland, San Jose, Los Angeles, and San Francisco) the largest

TABLE 1
Utilization and access variables, all sites (weighted data)

	Any Outpatient Medical Care (% yes)			Any Mental Health Care (% yes)			Any Difficulty Obtaining Care (% yes)			Any Emergency Visits (% yes)		
	baseline	24-month	average (all waves)	baseline	24-month	average (all waves)	baseline	24-month	average (all waves)	baseline	24-month	average (all waves)
Chicago	76.5	59.0	69.7	25.4	12.9	17.7	33.7	27.8	29.0	43.2	29.2	35.8
Portland	78.6	72.4	73.8	39.0	29.7	35.0	27.7	18.3	22.4	49.1	26.8	36.4
Detroit	76.0	60.3	68.0	31.5	17.7	21.3	30.4	20.9	25.2	35.8	32.2	30.0
Seattle	77.2	66.1	70.4	43.2	31.0	35.3	25.4	25.5	22.5	45.8	34.6	37.4
San Jose	68.2	57.9	62.6	35.4	24.5	27.7	11.7	13.8	14.6	28.8	32.3	29.2
Los Angeles	79.0	65.7	72.8	44.5	28.9	38.7	31.0	26.0	30.5	38.1	25.3	28.8
Stockton	67.6	59.4	60.1	29.6	21.2	22.8	27.1	14.1	19.1	33.6	27.5	30.2
Oakland	73.8	69.3	73.6	33.4	36.1	32.0	15.3	21.9	18.9	30.2	32.4	33.6
San Francisco	76.5	74.9	74.8	50.7	35.1	40.5	22.4	19.9	15.2	34.7	31.8	34.4
All Sites	75.9	65.3	70.2	37.4	26.4	30.5	26.9	22.2	23.5	39.4	30.1	33.3

declines occurred between the six-month and 12-month follow-ups.

Mental health care   As with medical outpatient care, the percentage of persons who reported obtaining any mental health services tended to decline over time in all sites except Oakland (see Table 1). The overall percentage reporting any mental health care in a preceding six-month period was 37.4% at baseline and 26.4% at the 24-month follow-up, a decline of 11.0%. Respondents in Chicago and Detroit generally reported the lowest levels of mental health care, an average over all waves of 17.7% and 21.3%, respectively, compared with an average rate over all sites of 30.5%. San Francisco typically had the highest percentages of persons reporting receipt of any mental health services—40% on average over all five study waves. As in the case of outpatient physical health care, in most sites the largest drops occurred during the first year after the policy change.

Barriers to care   As indicated in Table 1, the average percentage reporting being unable to obtain needed care at baseline was 26.9%, ranging from 11.7% to 33.7%. Sites with the highest percentage of difficulty obtaining care were Chicago (33.7%), Detroit (30.4%), and Los Angeles (31%). San Jose (11.7%) and Oakland (15.3%) had the lowest reported levels. Over time, the percentage tended to decline somewhat in all sites except San Jose and Oakland. The average over all sites at 24 months was 22.2%, compared with 26.9% at baseline.

Emergency room utilization   Over all sites, 39.4% reported an emergency room visit at baseline, with a range from 28.8% in San Jose to 49.1% in Portland (see Table 1). As with other services, use of emergency services declined somewhat over time everywhere but in San Jose and Oakland. At the 24-month interview, the percentage reporting any emergency room visit in the prior six-month period was 30.1%, a decline of 9.3%.

Relationships between SSI/ insurance and health care utilization and access

The above findings reflect regional variation and time trends in SSI requalification, insurance replacement, health and mental health care utilization, and barriers to care. Variability in all respects seems to be the most common pattern.

We now turn to the results of our five-step model analyses of the relationship between SSI/insurance and each of the service utilization variables, controlling for covariates at each step of the model.

Outpatient utilization

Lack of insurance was a significant negative predictor of medical outpatient care in six of the nine sites: Chicago, Detroit, Seattle, Los Angeles, Stockton, and Oakland. In two sites, Portland and San Jose, the relationship approached significance but did not reach it (p < .08). Compared with those remaining on SSI, and controlling for time, demographics, and need, the uninsured were about one-third to one-half as likely to report any outpatient visits in the preceding six months. As shown in Table 2, the ORs for the uninsured ranged from .33 to .60. In addition, in Portland, Detroit, Seattle, and Stockton the uninsured were significantly less likely to have obtained outpatient care than those who had replaced insurance benefits with coverage from alternative sources (ORs = .36, .43, .61, and .45, respectively). Although the SSI/insurance variable was not statistically significant in San Francisco, the low OR relative to the SSI group in that site suggests, in line with the other sites, a lower likelihood that the uninsured received care.

There were far fewer differences in outpatient utilization between those who continued on SSI and those who replaced coverage through other means. Significant differences were present only in Seattle and Los Angeles, where those insured by other means were less likely than those who retained SSI to report any outpatient visits.

TABLE 2   **Logistic regression of outpatient health service utilization on SSI/insurance and covariates: odds ratios for SSI/insurance status**

Site	P Value of Reduction in Deviance Due to SSI/Insurance	Odds Ratio Lost SSI/ Uninsured	95% CI	Odds Ratio Lost SSI/ Insured	95% CI
Chicago	0.0095	0.53*	0.32, 0.87	0.72	0.42, 1.22
Portland	0.0014	0.52	0.25, 1.08	1.43	0.86, 2.38
Detroit	0.0005	0.38***	0.22, 0.63	0.87	0.43, 1.76
Seattle	<0.0001	0.40***	0.26, 0.60	0.65*	0.46, 0.94
San Jose	0.1554	0.46	0.19, 1.10	1.40	0.58, 3.35
Los Angeles	<0.0001	0.38***	0.25, 0.56	0.47**	0.29, 0.74
Stockton	<0.0001	0.33***	0.18, 0.59	0.73	0.40, 1.33
Oakland	0.0097	0.48*	0.27, 0.86	0.72	0.43, 1.21
San Francisco	0.0421	0.60	0.31, 1.18	0.67	0.34, 1.30

*** $p < = .0005$, ** $p < = .005$, * $p < = .05$.

Note: CI = confidence interval.

Mental health services utilization   We could analyze the relationship between SSI/insurance and utilization of mental health services in only eight of the nine study sites.[8] In six of the eight sites, lack of insurance was significantly and negatively associated with receipt of any recent mental health care services. Compared with those on SSI and controlling for the adjusters in the model, in these six sites (Chicago, Portland, Detroit, Seattle, Los Angeles, and San Francisco) the uninsured were one-quarter to one-half as likely to report mental health care in the previous six months. A similar relationship obtained in Stockton and Oakland, although the ORs did not quite reach significance (p < .07). As shown in Table 3, the ORs for the uninsured ranged from .21 in Detroit to .62 in Los Angeles. In four of the eight sites—Portland, Detroit, Seattle, and Oakland—the uninsured were also significantly less likely than those who replaced coverage to report mental health care (ORs = .55, .44, .32, and .43, respectively).

As with outpatient care, when those with alternative sources of insurance were compared with those on SSI, there were fewer differences in the likelihood of receiving care. Such

TABLE 3 **Logistic regression of mental health service utilization on SSI/insurance and covariates: odds ratios for SSI/insurance status**

Site	P Value of Reduction in Deviance Due to SSI/Insurance	Odds Ratio Lost SSI/ Uninsured	95% CI	Odds Ratio Lost SSI/ Insured	95% CI
Chicago	<0.0001	0.29***	0.16, 0.53	0.39*	0.20, 0.76
Portland	0.0010	0.29**	0.13, 0.64	0.53*	0.32, 0.89
Detroit	<0.0001	0.21***	0.09, 0.46	0.47*	0.25, 0.89
Seattle	<0.0001	0.26***	0.15, 0.45	0.83	0.56, 1.23
San Jose	—	—	—	—	—
Los Angeles	0.0011	0.62*	0.40, 0.95	0.70	0.42, 1.15
Stockton	0.0616	0.56	0.31, 1.03	0.98	0.47, 2.03
Oakland	0.0018	0.57	0.31, 1.04	1.33	0.71, 2.49
San Francisco	<0.0003	0.35**	0.17, 0.71	0.61	0.32, 1.15

*** $p < .0005$, ** $p < .005$, * $p < .05$.

Note: CI = confidence interval.

differences were significant only in Chicago, Portland, and Detroit, where those insured by alternate means were less likely to report mental health care.

Barriers to care   So far we've seen that lack of insurance was significantly associated in eight of the sites with either a lower likelihood of obtaining medical care (Oakland and Stockton), a lower likelihood of obtaining mental health services (Portland and San Francisco), or a lower likelihood of obtaining both medical and mental health services (Chicago, Detroit, Seattle, and Los Angeles). However, the relationship between SSI/insurance status and reports of being unable to see a doctor or nurse when necessary was less pervasive. As shown in Table 4, compared with those continued on SSI, and adjusting for covariates, the uninsured were significantly more likely to report difficulty obtaining care in four sites: Chicago (OR = 1.82), Seattle (OR = 2.13), Los Angeles (OR = 2.51), and Stockton (OR = 2.26). None of the ORs between these two categories was statistically significant in any other sites, although all ORs were greater than 1.46, suggesting a trend toward greater difficulty obtaining services. In Seattle, Los Angeles, and Stockton the uninsured were also significantly

TABLE 4   **Logistic regression of barriers to treatment on SSI/insurance and covariates: odds ratios for SSI/insurance status**

	P Value of Reduction in Deviance Due to SSI/Insurance	Odds Ratio Lost SSI/ Uninsured	95% CI	Odds Ratio Lost SSI/ Insured	95% CI
Site					
Chicago	0.0061	1.82*	1.08, 3.05	1.31	0.75, 2.29
Portland	0.1846	1.64	0.72, 3.75	1.56	0.93, 2.60
Detroit	0.1207	1.66	0.96, 2.87	0.95	0.54, 1.68
Seattle	<0.0001	2.13**	1.29, 3.53	1.48*	1.00, 2.19
San Jose	0.2066	1.94	0.63, 6.02	0.83	0.35, 1.97
Los Angeles	<0.0001	2.51***	1.71, 3.69	0.92	0.59, 1.45
Stockton	0.0137	2.26*	1.09, 4.67	1.17	0.50, 2.72
Oakland	0.1972	1.57	0.79, 3.10	1.07	0.52, 2.19
San Francisco	0.2880	1.47	0.78, 2.76	1.58	0.77, 3.24

*** p< = .0005, ** p< = .005, * p< = .05.

Note: CI = confidence interval.

more likely to report a barrier to care than those insured through alternative sources (ORs = 1.45, 2.70, and 1.92, respectively).

Among those who replaced lost insurance benefits, only those in Seattle were significantly more likely than those continued on SSI to report a barrier to care (OR = 1.48). There was no consistent trend in the other sites.

Emergency room episodes   As shown in Table 5, lack of insurance was a significant predictor of emergency room use only in Stockton, and there the direction of the relationship was contrary to what we expected. Compared with both those on SSI and those insured by other means, and controlling for covariates in the model, the uninsured were one-half as likely to report an emergency room episode (OR = .40). There was no consistent trend across the other sites. In Oakland, those who lost SSI but were consistently insured were significantly more likely to report an emergency room episode than those continued on SSI (OR = 1.82).

Covariates   The three major covariates in the model (time, demographics, and severity) were all significant predictors of utilization.

TABLE 5 **Logistic regression of emergency room utilization on SSI/insurance and covariates: odds ratios for SSI/insurance status**

Site	P Value of Reduction in Deviance Due to SSI/Insurance	Odds Ratio Lost SSI/ Uninsured	95% CI	Odds Ratio Lost SSI/ Insured	95% CI
Chicago	0.0757	0.74	0.46, 1.18	0.67	0.39, 1.13
Portland	0.5504	0.73	0.40, 1.35	0.85	0.53, 1.36
Detroit	0.1243	0.98	0.55, 1.77	0.70	0.41, 1.19
Seattle	0.6496	0.85	0.53, 1.35	1.00	0.70, 1.43
San Jose	0.8571	1.03	0.35, 3.07	1.12	0.46, 2.73
Los Angeles	0.0356	0.67	0.45, 1.01	1.08	0.73, 1.60
Stockton	0.0003	0.40*	0.22, 0.71	0.68	0.38, 1.21
Oakland	0.0357	1.46	0.84, 2.53	1.82*	1.04, 3.17
San Francisco	0.5889	1.09	0.59, 2.01	1.40	0.78, 2.52

* p< = .05.

Note: CI = confidence interval.

Time was a significant predictor of utilization and access in a majority of sites with respect to all four dependent variables. This reflects the declining rates of service utilization over the repeated measures of the study in many of the sites.

Entered as a block, the demographic covariates and their interactions were significant predictors of medical and mental health utilization in all sites and significant predictors of barriers to care and emergency room use in the vast majority of sites. However, the direction of their effect was not consistent across locales.

As expected, the severity indicators were significant predictors of utilization in all models across all sites. Generally, compared with those with medium and high medical severity, and controlling for time and demographics, those with low medical severity were significantly less likely to report medical outpatient care and less likely to report use of emergency services. Similarly, psychiatric severity was a significant predictor of any mental health care utilization. In all sites, compared with those with medium levels of psychiatric severity, and controlling for time and demographic factors, those with

low psychiatric severity scores were significantly less likely to receive mental health services, and those with high psychiatric severity scores were more likely to receive services. In regard to substance abuse severity, in three sites, Seattle, Stockton, and San Francisco, those with lower drug severity scores were more likely than those with high scores to report any mental health care.

Discussion

Consistent with the national literature on regional variation in health insurance coverage, our results indicate considerable variability across sites in the percentages of respondents who were uninsured after the DA&A policy change. This is partly a function of rates of SSI requalification and partly a function of local availability of alternative sources of insurance for those who lost SSI. These include insurance tied to other income maintenance programs (e.g., TANF, General Assistance, and disability benefits other than SSI), insurance obtained through employment or private sources, or health program participation linked to certain individual statuses— for example, the Veterans Health Administration in the case of veterans with an honorable discharge, and the Indian Health Service for Native Americans. Among the nine sites in the study, Portland and Seattle had the highest percentage of covered respondents.

In general, the data indicate that the percentage of persons reporting the use of any physical and mental health services declined over time, and that in most sites the largest declines occurred over the first 12 months following termination of the DA&A program. These declines may be in part the result of inflated health-services use at baseline as individuals sought to document health or mental health problems in connection with the redetermination of their SSI eligibility. Believing this possible bias might have affected the findings of our multivariate analyses, we tested an alternative model

that included baseline utilization as a covariate, but we found no substantial differences in the pattern of results (results not shown).[9]

Our descriptive analysis indicates that only 37.4% of respondents reported receipt of any mental health care at baseline and that this percentage decreased over time. The low rates of mental health care are surprising, given that substance abuse and mental illness are frequently co-morbid conditions (Kessler, 1996). Moreover, the low percentage of persons reporting mental health care at baseline suggests that screening for possible psychiatric disability was not comprehensive. More aggressive use of mental health services for screening might have increased rates of SSI requalification, especially in sites such as Chicago, where rates of psychological symptoms were high (Swartz et al., 2000), rates of SSI requalification were low, and relatively few respondents reported receipt of mental health care. Our analyses also indicate that in Seattle, Stockton, and San Francisco, after controlling for time, demographics, and medical and psychiatric severity, persons with higher levels of substance abuse were less likely to report mental health care compared with those with low substance abuse severity. These counterintuitive results draw attention to the need among this population not only for mental health services in general, but also for services specifically tailored to the dually diagnosed.

As expected, after controlling for severity and other adjusters in the model, those who lost SSI and were uninsured were significantly less likely than those who requalified for SSI to receive medical care, mental health care, or both. This disparity confirms the frequent finding of lower access to care for uninsured groups and, for this population, appears to be an adverse impact associated with the policy change.

The disparity in service utilization was less pronounced between those who requalified for SSI and those who lost it but replaced insurance coverage through other means. Except

in Seattle and Los Angeles, where those who replaced SSI-
linked insurance were significantly less likely to receive care
than those remaining on SSI, there were no significant differ-
ences between the two groups with respect to receipt of out-
patient medical care. There were more widespread differences
with respect to receipt of mental health care. In Detroit, Port-
land, and Chicago those who replaced lost health insurance
were significantly less likely than those who continued on
SSI to report receiving mental health services. There was a
trend toward lower likelihood of mental health care by those
who replaced lost coverage in all other sites except Oakland.
These findings suggest that local health benefits differed in
their ability to mitigate disparities in the use of care associ-
ated with the loss of SSI DA&A benefits. This may be a
result of differences in the coverage extended under local and
state insurance mechanisms. In Portland and Detroit there
were significant differences in utilization of mental health
services among all three levels of the SSI/insurance variable.
Those who continued on SSI were most likely to receive such
services, those who replaced lost coverage were in the mid-
dle, and those who did not replace coverage were less likely
to receive care than either of the other two groups. We
observed a similar step pattern with respect to outpatient
physical health care in Seattle.

The lower rates of outpatient and/or mental health service uti-
lization among the uninsured are associated with increased
barriers to care in four of the nine sites, but they did not
translate into higher rates of emergency room use. In
Chicago, Los Angeles, Seattle, and Stockton, where the like-
lihood of both medical and mental health service utilization
was significantly lower for the uninsured,[10] those without
insurance were more likely to report a barrier to care than
those who continued on SSI.

We cannot explicitly identify why the uninsured were more
likely than those who continued on SSI to encounter barriers
to care in some sites, but the disparity likely reflects differ-

ences among the states and counties in the extensiveness of health services for the indigent. Sites vary, for example, in the availability of uncompensated charitable care, or in the provision of state and local financial support for providers of health care to the uninsured. Baxter and Feldman (1999) note that such mechanisms may include disproportionate-share payments to hospitals that provide high levels of uncompensated care, health care pools for the indigent, and dedicated tax assessments for health services. They also note that differences in access may reflect geographic mismatches between the location of health care safety-net providers and concentrations of the uninsured. Moreover, they suggest that the degree of consolidation and competition among likely providers of uncompensated care could also contribute. Given the large number of potential variables and the small number of sites in our sample, it is difficult to disentangle these potentially confounding influences. Larger multiple-site studies are needed to determine optimal policies for the delivery of health services to the uninsured, particularly after abrupt changes affecting service system financing.

Overall, our findings identify some adverse effects on health service utilization and access among those who became uninsured upon losing SSI DA&A benefits. In most sites, persons who lost insurance were less likely to receive any medical or mental health care, and in four sites the uninsured were more likely to report being unable to obtain care when needed. However, the impacts were not as strong or pervasive as we had expected. At the same time, our analyses suffer from several limitations that may affect the magnitude of our results. In addition to general methodological limitations discussed in other papers in this issue, we should note that all measures used in our model are based on self-reported data, are categorical, and are relatively gross indicators of service use and access. For example, a more sensitive measure of emergency department utilization, had it been available, would have been avoidable emergency department use—that is, use for

conditions that might have been prevented by timely access to appropriate primary care. Also the variables relate only to service utilization and do not address the quality of care received by any group. Further, small sample sizes in some categories of the SSI/insurance variable in some sites may affect our findings, and the presence of multiple comparisons suggests that the findings should be interpreted cautiously. Finally, the model, while significant, offers only a partial explanation of patterns of utilization. The omission of key unknown or unmeasured predictor variables may have significantly affected model findings.

We have focused on an uninsured group that may be one of the most troublesome for planners attempting to design adequate systems of coverage for medical and mental health care. Recent research suggests that as a largely unanticipated consequence of various federal, state, and local welfare-reform measures, the number of uninsured indigents is likely to increase. In a parallel area, Garrett and Holahan (2000), using data from the National Survey of America's Families, found that within one year after leaving TANF, 49% of women whose benefits were terminated also lost health insurance. To the extent that their loss of insurance results in outcomes similar to those found here, health care services for the indigent are likely to be more greatly stressed in many communities. While some sites are likely to absorb better than others this additional influx of the uninsured, in other sites it may further exacerbate problems of utilization and access. Given media reports (Rosenbaum, 2000) of a recent acceleration in the rise of health care costs after several years of only modest increase, health care for the poor will become an even more pressing concern.

Notes   1.   All samples were selected from SSI DA&A Referral and Monitoring Agencies' rosters or the Social Security Administration's SSI DA&A roll. In Portland, a 100% sample was used.

2.   Mental health care refers to treatment for an emotional or psychological problem and does not include treatment for substance abuse.

3. To be assigned a value on the SSI/insurance variable, a person had to have participated in the baseline interview and at least two follow-up interviews. Persons were classified as consistently insured if: (a) they participated in at least three of the four follow-up interviews and reported being insured in the majority of interviews (two of three or three of four) in which they participated or (b) they participated in two follow-up waves and reported being insured at both times. The remaining cases were classified as not consistently insured. Ninety-six cases were excluded because of insufficient data to determine a value for the SSI/insurance variable.

4. While there is a high degree of association between the source-of-income and SSI/insurance variables, the two are not as closely linked as might be expected. Examination of the bivariate relationships between the source-of-income and the health service utilization variables and between the SSI/insurance variable and health service utilization measures revealed that the SSI/insurance variable was more highly associated with health care utilization than was the source-of-income variable. However, both variables could not be included in the model because of their high degree of colinearity.

5. ASI composite scores are computed based on responses to a series of scale items. Scores range from 0 to 1, with 1 representing the highest level of severity. We adjusted the ASI composite score computation formulae to allow computation of scores for persons missing data on only one item in a given scale. If more than one composite scale item was missing, no score was computed. See Guydish et al. (this issue) for a more extensive discussion of ASI composite scores and their computation and coding in this study.

6. We collapsed our more numerous frequency-of-use categories to correspond to Phin's, and we based use on six-month self-reports rather than on Phin's 30 days. We chose a six-month drug use period because it corresponds to the same time frame as that covered by the service utilization and access questions at each interview. Phin's scale combines both alcohol and drug use in a single scale, with each substance weighted by its level of risk. The drug severity index is the mean of the products of the risk codes for each substance multiplied by its frequency of use.

7. To ensure adequate sample sizes, the three classes of ASI physical health were defined as no more than 0.2, greater than 0.2 but no larger than 0.5, and greater than 0.5. For ASI mental health, the three classes were no more than 0.3, greater than 0.3 but no larger than 0.8, and greater than 0.8. For drug-use severity the three classes were a score of 0, a score of no more than 4.0, and a score greater than 4.0. For each of the severity variables, approximately one-third of the sample falls within each of the three categories across all sites and across all waves.

8. Largely because of the small number of cases, the model for mental health care utilization for San Jose did not converge.

9. We also found that while utilization decreased for the uninsured, barriers also increased for this group, by trend in all sites and significantly in four. As there is no reason to expect underreporting of barriers at baseline, and because increased barriers were reported along with decreased utilization, the report of increasing barriers suggests that decreased utilization was not solely an artifact of heightened baseline utilization in response to the DA&A policy change.

10. In Stockton the lower ORs for barriers to care and outpatient care were significant; the lower OR for mental health care (p = .06) was not quite significant.

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