

NATIONAL TREATMENT CENTER STUDY

Barriers to the Adoption of Pharmacotherapies in Publicly Funded Substance Abuse Treatment: Policy Barriers and Access to Physicians

**PROJECT REPORT
March 2011**

This research was supported by the Robert Wood Johnson Foundation's Substance Abuse Policy Research Program (Grant 65111). The contents of this report are solely the responsibility of the project staff and do not reflect the official views of the funding agency. Please do not reproduce the contents of this report without permission.

**University of Kentucky
Department of Behavioral Science
Lexington, KY**

**University of Georgia
Institute for Behavioral Research
Athens, GA**

TABLE OF CONTENTS

Research Team.....	2
Executive Summary.....	3
Section 1: Introduction to the Study.....	5
Section 2: Medical Personnel in Publicly Funded SUD Treatment Programs.....	8
Section 3: Medication Adoption in Publicly Funded SUD Treatment Programs.....	13
Section 4: Barriers to the Adoption of Medications	19
Section 5: Conclusions	22
References	23
Appendix A: Study Methodology	25

RESEARCH TEAM

Principal Investigator

Hannah K. Knudsen, Ph.D.
University of Kentucky

Co-Principal Investigators

Amanda J. Abraham, Ph.D.
University of Georgia

Carrie B. Oser, Ph.D.
University of Kentucky

Management of Data Collection

Jennifer Shaikun
Matt Brewster
Amanda Hammond
University of Georgia

Project Report Authors

Hannah K. Knudsen, Ph.D.
Amanda J. Abraham, Ph.D.

Project Offices

University of Kentucky
Department of Behavioral Science
109 Medical Behavioral Science Building
Lexington, KY 40536-0086
Phone: 859-323-3947
Email: hannah.knudsen@uky.edu

University of Georgia
Institute for Behavioral Research
101 Barrow Hall
Athens, GA 30602-2401
Phone: 706-542-6090
Email: NTCS@uga.edu

EXECUTIVE SUMMARY

The purpose of this research project was to measure the adoption of medications for the treatment of substance use disorders (SUDs) by publicly funded treatment programs and to identify barriers to medication-assisted treatment (MAT) as reported by these programs. In addition, we sought to understand treatment programs' access to medical personnel, which is crucial to facilitating the implementation of MAT. Data were collected from 250 treatment programs via telephone interviews and mailed surveys between August 2009 and June 2010. These programs were drawn from an existing national sample that was established between 2004 and 2006. The response rate for the current study was 85.9%.

Key findings include the following:

- About 38% of publicly funded treatment programs have adopted at least one SUD treatment medication.
- Significantly more treatment programs offered buprenorphine, acamprosate, tablet naltrexone, and disulfiram in 2009-2010 than in 2004-2006.
- Programs that had adopted at least one SUD medication had significantly greater access to physicians and nurses.
- Limited access to medical personnel is a substantial barrier to medication adoption for many programs. Only 30% of programs had at least one physician on staff.
- The majority of programs cited financial limitations and the lack of available medical professionals in the community, particularly physicians and nurses with expertise in treating patients with SUDs, as barriers to the hiring of medical staff.
- Among the subset of programs that had not adopted any SUD medications, the most strongly endorsed reasons for non-adoption were: regulations prohibited the use of medication since the program lacked medical staff; the program lacked access to medical professionals with expertise in implementing MAT; and the program's primary source of funding would not reimburse for the costs of implementing MAT.
- Although the majority of programs perceived that their single state agency (SSA) was supportive of MAT, only about one-third of programs reported that the SSA had adequately disseminated information about implementing MAT and had offered sufficient training about MAT.
- Many programs were unaware of whether any SUD medications were on their state's Medicaid formulary or whether SUD medications could be purchased using funding from state contracts.

- While half of the sample indicated that funding from state contracts could be used to pay for physicians or nurses, less than 30% reported that funding from state contracts could be used to purchase SUD medications.

Taken together, these findings suggest that adoption of SUD treatment medications in the publicly funded treatment sector remains modest. Many programs face challenges in gaining access to medical professionals, particularly those with experience in treating individuals with SUDs. Inadequate funding as well as policies that restrict how funding can be used may prevent programs from building the linkages with medical professionals that are necessary to increase the adoption of SUD medications. Single state agencies (SSAs) may be able to support greater adoption of medications by expanding training opportunities and disseminating information about how state funding can be used to support the implementation of MAT.

We would like to take this opportunity to express our gratitude to the 250 program administrators who spent their valuable time providing us with this important information about US treatment programs. This project's success was only possible with your support. Thank you for taking the time to participate in our research.

SECTION 1

Introduction to the Study

The adoption and implementation of evidence-based treatment practices (EBPs) for the treatment of substance use disorders (SUDs) has increasingly been the focus of federal and state agencies as well as private foundations. Examples of efforts to increase the adoption of EBPs include the National Institute on Drug Abuse's Clinical Trials Network, the Addiction Technology Transfer Centers within the Substance Abuse and Mental Health Services Administration, and the Robert Wood Johnson Foundation's Advancing Recovery initiative.¹⁻³

Medications for the treatment of substance use disorders (SUDs) may improve clinical outcomes when they are combined with psychosocial interventions.⁴ Recent years have seen an expansion in the number of medications available to treat SUDs. In the past 10 years, three medications have gained Food and Drug Administration (FDA) approval: buprenorphine (Suboxone®) for opioid dependence, acamprosate (Campral®) for alcohol dependence, and an extended-release injectable formulation of naltrexone (Vivitrol®) for preventing relapse in patients with opioid dependence or treating alcohol dependence. These medications, plus disulfiram (Antabuse®) for alcohol dependence, tablet naltrexone (ReVia®) for alcohol or opioid dependence, and methadone for opioid dependence, are the medications currently approved by the FDA for treating SUDs.

While the range of medication options has been expanding, recent studies suggest that adoption of these medications has been limited in treatment programs that primarily rely on funding from governmental sources, such as federal block grant funds or state contracts to provide services to criminal justice-involved clients.⁵⁻⁸ Given that the majority of clients receive treatment in these publicly funded programs,⁹⁻¹¹ expanding our understanding of the barriers to medication adoption in this sector of the SUD treatment system has high public health significance.

In our prior research, which was supported by the National Institute on Drug Abuse (NIDA), we recruited a sample of 318 publicly funded SUD treatment programs.¹² As we analyzed the data, we found that the adoption of medications continued to be relatively low and that lack of access to medical personnel was one impediment to medication adoption.¹³

At the end of this earlier study, we felt that our understanding of the barriers to the adoption of medications in publicly funded SUD treatment programs was incomplete. We wanted to better understand the issue of medical staffing in these SUD treatment

programs and to expand our measurement of barriers to adoption. Thus, we sought funding from the Robert Wood Johnson Foundation's Substance Abuse Policy Research Program (SAPRP) to conduct additional data collection from these 318 treatment programs that had participated in our earlier study.

The current study, which is described in this report, addressed three aims. First, we wanted to measure the availability of medical staff, the adoption of pharmacotherapies, and the relative importance of perceived policy and organizational barriers to medication adoption. This first aim is the primary focus of this report. Our other two aims revolved around estimating statistical models of medication adoption and the presence of medical staff that take into account both organizational characteristics and perceived state policy barriers. These latter two aims will be the topic of our future publications.

The current study was conducted between August 2009 and June 2010. During the course of data collection, we discovered that 27 of the original sample of 318 treatment programs had closed, which left 291 treatment programs eligible for the current study. Data were collected via mailed surveys or telephone interviews with 250 of these programs, resulting in an 86% response rate. Additional details about the study methodology are described in Appendix A.

On the following page, a table describing the organizational characteristics of these 250 treatment programs is presented (see Table 1). The majority of programs were not government-owned, despite their reliance on governmental sources of funding. Very few programs were located within health care settings, such as hospitals or community mental health centers. About half of the sample reported that the program was accredited by an external organization, such as the Joint Commission or the Commission on the Accreditation of Rehabilitation Facilities (CARF). Nearly one-half of programs only offered outpatient SUD treatment services, while about one-third delivered a combination of outpatient and 24-hour care (e.g., residential and/or inpatient treatment). Only one in five programs offered medically-supervised detoxification services.

The average program had about 12 counselors who were "on staff," meaning these counselors were employees on the center's payroll. There was some variability in the size of treatment programs based on the number of counselors. About 29% of programs had fewer than 5 counselors on staff, and 43% of programs had between 5 and 10 counselors. About 14% of programs had more than 20 counselors on staff.

Table 1: Organizational Characteristics of Publicly Funded SUD Treatment Programs

	% of Treatment Programs or Average (SD)
Ownership	
Government-owned	17%
Privately-owned	83%
Organizational affiliation	
Located in a hospital or community mental health center	18%
Freestanding organization	82%
Accreditation status	
Accredited by an external organization, such as the Joint Commission or Commission on the Accreditation of Rehabilitation Facilities (CARF)	51%
Not accredited	49%
Levels of Treatment Services	
Inpatient/residential-only care	18%
Mixture of outpatient and inpatient/residential care	36%
Outpatient-only care	46%
Availability of Medically Supervised Detoxification	
Offers detoxification	20%
Does not offer detoxification	80%
Number of Counselors on Staff	12.1 (19.2)
Number of Counselors on Contract	1.2 (2.4)

Note: SD = standard deviation.

In the following sections, we present our main findings with regard to the presence of medical personnel and adoption of medications within these SUD treatment programs. We describe the average number of medical staff working in these programs as well as the extent to which program administrators report facing substantial barriers to hiring medical professionals. Then we turn our attention to our findings about the availability of medications for the treatment of SUDs and the relative importance of different types of barriers in explaining why some programs do not prescribe medications to treat SUDs.

SECTION 2

Medical Personnel in Publicly Funded SUD Treatment Programs

Our previous research has consistently identified access to medical personnel, such as physicians and nurses, as a critical facilitator of the adoption of medications for the treatment of substance use disorders (SUDs).^{6-8, 13-16} In the current study, we sought to measure the presence of medical personnel in publicly funded treatment programs and to gain a deeper understanding of the barriers to employing medical personnel.

Presence of Medical Personnel

Only 30% of programs employed at least one physician on staff, and the maximum reported by programs was 4 staff physicians. The average number of physicians on staff was less than one (average = 0.4; standard deviation, SD = 0.8). Contractual relationships with physicians were more common. The average number of physicians on contract approached one (average = 0.9 physicians on contract; SD = 1.2), and about 54% of programs indicated they had at least one physician on contract. Approximately 29% of programs had no access to physicians (i.e., none on contract or on staff).

Access to nursing staff—broadly defined to include registered nurses, nurse practitioners, and licensed practical nurses—was highly variable. The average program had 1.6 nurses on staff (SD = 3.8) and 0.5 nurses on contract (SD = 2.6). Only 38% of programs had at least one nurse on staff, and 20% had at least one nurse on contract. About half of programs (53%) had no access to nursing personnel (i.e., none on contract or staff).

Medical Personnel by Organizational Characteristics

We considered whether the number of medical personnel was associated with organizational characteristics, such as government ownership, location in a medical facility, accreditation, and available levels of care. Prior to these analyses, we added the number of physicians on staff to the number of contract physicians to create a measure of “total physicians.” Similarly, we summed the numbers of nurses on staff and on contract to generate a measure of “total nurses.” We then compared the average number of total physicians and total nurses using t-tests and one-way analysis of variance (ANOVA) depending on the number of groups within each organizational characteristic.

As seen in Table 2, there were some differences in the average number of physicians

between different types of treatment organizations. Programs embedded within health care organizations had significantly more physicians. There were also differences based on the levels of care available in the treatment program. Programs that offered a mixture of outpatient and inpatient/residential services had significantly more physicians than programs that were either outpatient-only or those that exclusively offered inpatient/residential services. Finally, programs offering medically supervised detoxification had more physicians than programs without detoxification services.

Table 2: Total Number of Physicians by Organizational Characteristics

	Average Number of Physicians (SD)	p-value
Ownership		
Government-owned	1.7 (1.2)	NS
Privately-owned	1.2 (1.5)	
Organizational affiliation		
Located in a hospital/community mental health center	2.1 (2.0)	p<.001
Freestanding organization	1.1 (1.3)	
Accreditation status		
Accredited by an external organization, such as the Joint Commission or Commission on the Accreditation of Rehabilitation Facilities (CARF)	1.5 (1.6)	p=.05
Not accredited	1.1 (1.3)	
Levels of Treatment Services		
Inpatient/residential-only care	1.0 (1.1)	p<.01
Mixture of outpatient and inpatient/residential care	1.7 (1.8)	
Outpatient-only care	1.1 (1.3)	
Availability of Medically Supervised Detoxification		
Offers detoxification	2.4 (2.2)	p<.001
Does not offer detoxification	1.0 (1.1)	

Notes: The total number of physicians is the sum of physicians on staff and on contract. We compared programs using t-tests when there were two groups (e.g., ownership, affiliation, accreditation, and detoxification services) and one-way analysis of variance (ANOVA) for the levels of treatment services. SD = standard deviation. NS = not significant. The p-values represent the significance level of the t-test or the F-test for the ANOVA.

Similar comparisons were made for the total number of nurses, as seen in Table 3 on the next page. Differences in the number of nurses were statistically significant for all five organizational characteristics. Government-owned programs had significantly more nurses than privately owned facilities. Programs in health care settings and accredited programs had significantly more nurses. The difference between programs offering detoxification and those not offering detoxification was particularly large. Finally, outpatient-only facilities had significantly fewer nurses than either inpatient/residential-only programs or those offering a mixture of levels of care.

Table 3: Total Number of Nurses by Organizational Characteristics

	Average Number of Nurses (SD)	p-value
Ownership		
Government-owned	3.6 (5.4)	p<.05
Privately-owned	1.7 (5.5)	
Organizational affiliation		
Located in a hospital/community mental health center	5.0 (11.3)	p<.001
Freestanding organization	1.4 (2.9)	
Accreditation status		
Accredited by an external organization, such as the Joint Commission or Commission on the Accreditation of Rehabilitation Facilities (CARF)	2.8 (7.3)	p<.05
Not accredited	1.3 (2.7)	
Levels of Treatment Services		
Inpatient/residential-only care	3.1 (5.1)	p<.01
Mixture of outpatient and inpatient/residential care	3.2 (8.1)	
Outpatient-only care	0.8 (1.6)	
Availability of Medically Supervised Detoxification		
Offers detoxification	6.6 (10.7)	p<.001
Does not offer detoxification	0.9 (1.8)	

Notes: The total number of nurses is the sum of nurses on staff and on contract. We compared programs using t-tests when there were two groups (e.g., ownership, affiliation, accreditation, and detoxification services) and one-way analysis of variance (ANOVA) for the levels of treatment services. SD = standard deviation. The p-values represent the significance level of the t-test or the F-test for the ANOVA.

While these analyses help to identify the types of organizations that had greater numbers of medical personnel, they do not address barriers to having access to physicians and nurses. In the next section, we describe program administrators’ perceptions about the barriers to hiring medical staff with a focus on financial barriers and the limited availability of medical personnel in local communities.

Barriers to Hiring Medical Personnel

Program administrators were asked about two types of potential barriers to hiring medical staff: financial barriers to hiring medical staff and limited availability of medical personnel in the community’s labor market. As seen in Table 4 on the next page, financial reasons were highly salient barriers. The majority of programs indicated that they simply did not have enough financial resources to afford medical personnel—employing nurses or physicians either on staff or via contracts would exceed their available financial resources. At the same time, the majority of treatment programs also

reported that their primary funder would not provide adequate reimbursement for the costs associated with nurses and physicians.

Table 4: Financial Barriers to Having Access to Medical Personnel

	Average (SD)	% Choosing “Agree” or “Strongly Agree”
The costs of having a physician on staff would exceed our available financial resources.	2.7 (1.4)	61%
The costs of contracting with physicians would exceed our available financial resources.	2.4 (1.4)	50%
Our primary source of funding will not adequately reimburse the costs associated with physician time.	2.9 (1.3)	69%
The costs of having a nurse on staff would exceed our available financial resources.	2.4 (1.4)	53%
The costs of contracting with nurses would exceed our available financial resources.	2.4 (1.4)	52%
Our primary source of funding will not adequately reimburse the costs associated with nursing time.	2.7 (1.3)	63%

Notes: Response options ranged from 0 (strongly disagree) to 4 (strongly agree). SD = standard deviation.

Responses to these questions about financial barriers were associated with the number of physicians and nurses working in treatment programs. We created a mean scale of the three items about financial barriers to having physicians and another scale for the three items about nurses; higher values represented greater agreement with these financial barriers. As might be expected, programs that had more physicians on staff less strongly endorsed the scale about financial barriers (Pearson’s $r = -.38, p < .001$). A similar relationship was found between the scale measuring financial barriers to nursing staff and the number of nurses on staff (Pearson’s $r = -.25, p < .001$). Put another way, programs with fewer nurses on staff more strongly endorsed the scale of financial barriers to having nursing staff.

We also compared responses to these two scales by organizational characteristics. Non-accredited programs rated financial barriers to having physicians (average = 2.9, SD = 1.2) as significantly greater than accredited programs (average = 2.5, SD = 1.2; $p < .01$). We found a similar difference for the financial barriers to nurses (accredited average = 2.3, SD = 1.2; non-accredited average = 2.8, SD = 1.2; $p < .001$). Those programs offering detoxification rated the financial barriers to physicians (average = 2.0, SD = 1.1) lower than programs without detoxification services (average = 2.8, SD = 1.1; $p < .001$). We

found a similar difference for the financial barriers to nurses (detoxification average = 2.0, SD = 1.2; no detoxification average = 2.7, SD = 1.2; $p < .001$).

In addition to financial barriers, the majority of publicly funded treatment programs in this sample indicated that it was difficult to find physicians and nurses in the local community's labor market, particularly individuals with experience in treating clients with SUDs. Nearly three-quarters of programs indicated that it was difficult to find physicians who were experienced in treating clients with SUDs (Table 5).

Table 5: Availability of Physicians and Nurses in the Community's Labor Market

<i>Thinking about your community, how difficult is it...</i>	Average (SD)	% Choosing "Somewhat Difficult" or "Very Difficult"
To find physicians who are willing to contract with substance abuse treatment agencies to provide primary care services to clients?	2.6 (1.2)	61%
To find physicians or psychiatrists who are willing to contract with substance abuse treatment agencies to provide mental health care to clients?	2.6 (1.2)	62%
To find physicians with experience treating clients with substance abuse disorders?	2.8 (1.1)	73%
To find nurses who are willing to contract with substance abuse treatment agencies to provide primary care services to clients?	2.5 (1.0)	50%
To find nurses who are willing to contract with substance abuse treatment agencies to provide mental health care to clients?	2.6 (1.0)	51%
To find nurses with experience treating clients with substance abuse disorders?	2.7 (1.1)	58%

Note: Response options ranged from 0 (very easy) to 4 (very difficult). SD = standard deviation.

A final issue that we considered was whether there were strong relationships between the limited availability of medical personnel in the local labor market and the financial barriers to having medical staff. Put another way, we wanted to determine whether programs that strongly endorsed the financial barriers also reported a high degree of difficulty in finding medical staff in the local labor market. We found that these two types of barriers were significantly associated with each other. However, the sizes of the relationships were not exceptionally large, with most correlations being less than .20. (A perfect association would be indicated by a correlation of 1.00.)

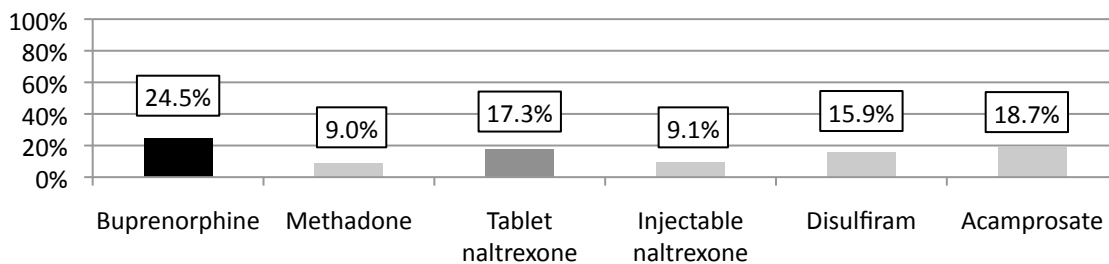
SECTION 3

Medication Adoption in Publicly Funded SUD Treatment Programs

A key area of interest in the current study was the adoption of medications within this sample of 250 publicly funded substance use disorder (SUD) treatment programs. We defined adoption as “any use” of the medication, with the caveat that the medication was being prescribed within the program. That is to say, a program was not considered an adopter if their patients received medications from physicians in the community who were not affiliated with the treatment program.

Figure 1 presents the rates of adoption of the six FDA-approved medications for the treatment of SUDs. The most widely adopted medication in 2009-2010 was buprenorphine for the treatment of opioid dependence, which had been adopted by about one-quarter of treatment programs. All other medications were adopted by fewer than 20% of programs.

Figure 1:
Adoption of Substance Abuse Medications (2009-2010)



For comparison purposes, we also measured the adoption of two types of medications for psychiatric conditions—selective serotonin reuptake inhibitors (SSRIs; e.g., Prozac®, Paxil®, Zoloft®) and stimulant medications for the treatment of attention deficit/hyperactivity disorder (ADHD; e.g., Concerta®, Adderall®). We found that 39.8% of programs prescribed SSRIs and 26.0% prescribed stimulant medications to treat ADHD.

We also categorized programs based on their prescribing practices into those that only prescribed medications for psychiatric conditions, only prescribed medications for SUDs, prescribed medications for both SUDs and psychiatric conditions, and did not prescribe medications for either condition. About half of programs (51.2%) did not prescribe medications for either condition, but 32.5% prescribed medications for both SUDs and psychiatric conditions. A minority of programs only prescribed psychiatric medications (11.4%), and even fewer only prescribed medications for SUDs (4.9%).

Medication Adoption over Time

Since this sample of publicly funded SUD treatment programs had participated in our earlier study, we were able to measure whether there were changes in rates of medication adoption over time. [Because injectable naltrexone received FDA approval after the prior NTCS study, we could not measure change over time for Vivitrol®.] Table 6 presents data from treatment programs that provided information about medication adoption in 2004-2006 and 2009-2010.

Table 6: Comparing Rates of Medication Adoption over Time

	2004-2006 % of programs that use...	2009-2010 % of programs that use...	p-value
Buprenorphine	13.5%	24.2%	$p < .001$
Methadone	7.4%	9.5%	NS
Tablet naltrexone	10.3%	16.9%	$< .01$
Disulfiram	10.7%	16.0%	$p < .05$
Acamprosate	7.9%	18.8%	$p < .001$

Note: Differences are statistically significant if $p < .05$. NS = not significant.

For four of the five SUD medications, there was evidence of increased adoption over time. Significantly more treatment programs offered buprenorphine, tablet naltrexone, acamprosate, and disulfiram in 2009-2010 than in 2004-2006. The availability of methadone did not change over time.

Comparing Programs on Medication Adoption

To consider whether medication adoption was related to organizational characteristics, we created two groups of programs—those that prescribed any medications for the treatment of SUDs (i.e., “adopters”) versus those that did not prescribe any SUD treatment medications (i.e., “non-adopters”). We then compared these two groups by their organizational characteristics, as seen in Table 7 on the next page.

Programs that had adopted at least one SUD medication were different than non-adopting programs on these five characteristics. Medication adopters were more likely than non-adopters to be owned by a local or state government. Programs that had adopted SUD medication(s) were also more likely to be located within healthcare settings and to be accredited by an external organization. The two groups also differed in their delivery of treatment services. Medication adopters were more likely to offer detoxification services than non-adopting programs. The majority of non-adopting programs were outpatient-only facilities, while programs that offered medications were more likely to offer a mixture of outpatient and inpatient/residential levels of care.

Table 7: Comparing Medication Adopters and Non-Adopters by Organizational Characteristics

	Adopters of Any SUD Medications	Non-Adopters of Any SUD Medications
<i>Ownership**</i>		
Government-owned	27%	12%
Not government-owned	73%	88%
<i>Organizational affiliation***</i>		
Located in a hospital/community mental health center	31%	10%
Freestanding organization	69%	90%
<i>Accreditation***</i>		
Accredited by external organization	67%	42%
Not accredited	33%	58%
<i>Detoxification services***</i>		
Offers medically-supervised detoxification	45%	5%
Does not offer detoxification	55%	95%
<i>Levels of care**</i>		
Outpatient-only care	35%	53%
Inpatient/residential-only care	17%	19%
Mixture of outpatient and inpatient/residential care	48%	28%

*Note: Adopting programs are those that use any medications to treat substance use disorders. Chi-square tests were used to compare adopters and non-adopters, and Fisher's exact test was used to determine statistical significance. *p<.05, **p<.01, ***p<.001 (two-tailed tests)*

These two groups of programs were also significantly different in terms of staffing patterns (Table 8). Programs that had adopted at least one SUD medication were larger in terms of the numbers of counselors on staff, physicians on staff, physicians on contract, nurses on staff, and nurses on contract.

Table 8: Comparing Medication Adopters and Non-Adopters by Staffing

	Adopters of Any SUD Medications Average (SD)	Non-Adopters of Any SUD Medications Average (SD)
Number of counselors on staff***	17.8 (28.5)	8.7 (9.5)
Number of counselors on contract	1.4 (2.6)	1.1 (2.3)
Number of physicians on staff***	0.9 (1.1)	0.2 (0.5)
Number of physicians on contract***	1.4 (1.6)	0.6 (0.8)
Number of nurses on staff***	3.7 (5.4)	0.3 (1.2)
Number of nurses on contract*	1.0 (4.2)	0.2 (0.8)

*Notes: Adopting and non-adopting programs were compared using t-tests. SD = standard deviation. *p<.05, **p<.01, ***p<.001 (two-tailed tests)*

We also examined whether adopting and non-adopting programs differed in their responses regarding financial barriers to hiring medical personnel and availability of

medical personnel in the local labor market. [The items in these scales were presented in Tables 4 and 5.] Non-adopting programs reported greater financial barriers to hiring physicians (average = 3.0, SD = 1.1) than programs that had adopted at least one SUD medication (average = 2.1, SD = 1.1; $p < .001$). We found a similar difference for financial barriers to nurses (non-adopters average = 2.9, SD = 1.2; adopters average = 1.9, SD = 1.1; $p < .001$). However, there were no differences on the scales about the availability of physicians or nurses in the local labor market.

To summarize, about 37% of programs offered at least one SUD treatment medication, and buprenorphine was the most commonly adopted medication. Programs that had adopted at least one SUD medication were considerably different from non-adopting programs in terms of organizational characteristics and medical staffing patterns.

State Support for Medication Adoption

Program administrators were asked about the extent to which they perceived that the single state agency (SSA) in their state was supportive of medications for the treatment of SUDs. More than two-thirds (69%) of programs agreed (or strongly agreed) that the SSA was supportive of medications. However, fewer programs agreed with statements that their SSA had adequately disseminated information about medications (39%) or offered sufficient training about using medications (33%). As seen in Table 9, programs that had adopted at least one SUD medication perceived their SSA to be more supportive, to have disseminated more information, and to have offered sufficient training about medications than non-adopting programs.

Table 9: Perceived State Support for SUD Medications

	Adopters of Any SUD Medications Average (SD)	Non-Adopters of SUD Medications Average (SD)
The Single State Agency in our state is supportive of the use of medications for treating substance abuse.***	3.2 (0.9)	2.7 (1.0)
The Single State Agency in our state has adequately disseminated information about how to implement medication-assisted treatment.**	2.4 (1.2)	1.9 (1.1)
The Single State Agency has offered sufficient training opportunities about using medications to treat substance abuse.*	2.1 (1.3)	1.8 (1.2)

Response options were 0 = strongly disagree, 1 = disagree, 2 = neither, 3 = agree, or 4 = strongly agree.

In addition to these measures about the role of the SSA, treatment program administrators were asked about whether their state's Medicaid formulary included

medications to treat SUDs and whether state funding policies were supportive of implementing medications. Figures describing administrators' responses appear below. More than half of the sample did not know if their state's Medicaid formulary included any SUD treatment medications and 42% did not know if funding from state contracts could be used to purchase medications. Fewer programs (34%) were unsure about whether state contract funds could be used to pay for physician or nurse time. These findings suggest that additional dissemination about state policies is needed.

Slightly more than one-third of programs (37%) reported that the Medicaid formulary included at least one SUD medication. Fewer programs (29%) reported that funding from state contracts could be used to purchase medications. Considerably more programs (50%) indicated that state contract funding could be used to pay for physician or nurse time.

Figure 2: Does your state's Medicaid program include any SUD treatment medications?

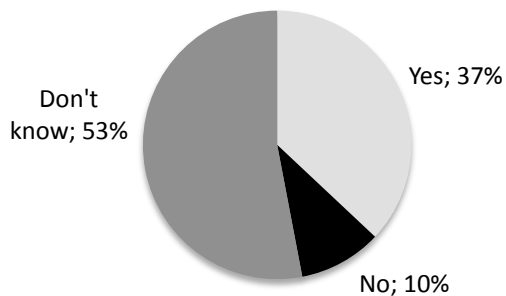


Figure 3: Can state contract funds be used to purchase medications?

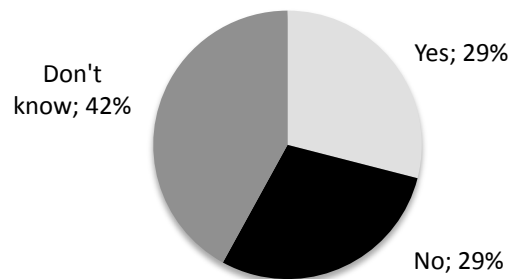
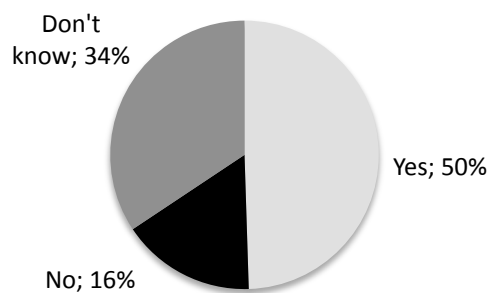


Figure 4: Can state contract funds be used to pay for physicians or nurse time?



We also compared medication adopters and non-adopters on their responses to these questions. Adopters were more likely to indicate that the Medicaid formulary included

at least one medication (62%) than non-adopters (22%). Similarly, adopting programs were more likely to report that state contract funds could be used to purchase medications (50%) than non-adopting programs (17%). They were also more likely to indicate that state contract funds could be used to pay for physician or nurse time (66%) than programs that had not adopted any SUD medications (40%).

SECTION 4

Barriers to the Adoption of Medications

In addition to learning more about the presence of medical personnel and rates of medication adoption, we sought to better understand the barriers to the use of medications for the treatment of SUDs. We asked administrators of programs that did not use any SUD medications an additional set of questions about the relative importance of eighteen barriers to medication adoption. These barriers included state policy, resource, cultural, and patient-related barriers. Administrators were asked to rate whether each barrier was not at all important, somewhat important, important, or very important in explaining why the program did not use SUD medications.

Table 10 presents responses to three items about regulatory barriers to medication adoption. The first item about state regulations prohibiting the use of medications due to the program’s lack of medical staff was strongly endorsed. It is important note, however, that programs that did offer psychiatric medications (but not SUD medications) were not asked this first question. Very few programs reported that their state completely prohibited the use of medications to treat SUDs.

Table 10: Regulatory Barriers to Adoption of SUD Treatment Medications

	% Programs Reporting Barrier is “Important” or “Very Important”
State regulations prohibit prescribing medications because program lacks medical staff. ^a	79%
State regulations prohibit prescribing medications because of the levels of care offered.	48%
State regulations prohibit the use of medications to treat substance abuse in this state.	11%

^a*Programs that offered psychiatric medications were not asked this question.*

We asked about two types of resource barriers: lack of access to medical personnel with expertise in medication-assisted treatment and funding policies that do not reimburse the costs associated with implementing medications. As seen in Table 11 on the next page, the majority of programs reported that these barriers were important reasons for why the program did not currently use SUD treatment medications.

Table 11: Resource Barriers to Adoption of SUD Treatment Medications

	% Programs Reporting Barrier is “Important” or “Very Important”
Program lacks access to physicians with expertise in prescribing medications to treat substance abuse.	60%
Program lacks nurses or other medical staff with expertise in implementing medications to treat substance abuse.	58%
Primary sources of funding will not reimburse the physician time needed to implement medications.	62%
Primary sources of funding will not pay for the laboratory tests needed to implement medications.	60%
Primary sources of funding will not pay for the costs of purchasing medications.	71%

Administrators were asked about six cultural barriers to medication adoption, as seen in Table 12. Specifically, they were asked about whether medications were inconsistent with the program’s treatment philosophy or were not supported by the counseling staff. Such cultural barriers were not widely endorsed by program administrators. Only between 20-30% of programs cited these cultural barriers as important reasons for non-adoption of medications, with one exception—about 38% of administrators reported that the superiority of alternative treatments to medications was an important reason for non-adoption.

Table 12: Cultural Barriers to Adoption of SUD Treatment Medications

	% Programs Reporting Barrier is “Important” or “Very Important”
Medications for treating substance abuse are inconsistent with program’s philosophy.	30%
Not enough of evidence that substance abuse treatment medications are clinically effective.	23%
There are better alternatives to using medications as part of substance abuse treatment.	38%
Program has not received adequate information about how to implement substance abuse treatment medications.	30%
Using medications to treat addiction is substituting one drug for another.	22%
Program’s counselors do not support the use of medication-assisted treatment.	20%

The final set of barriers consisted of patient-related barriers to medication adoption (Table 13). About two-thirds of programs identified the inability of patients to pay for medications as an important reason for why the program did not use medications. Fewer programs indicated that patients lacked interest in medications or had co-occurring conditions that made medications clinically inappropriate.

Table 13: Patient-Related Barriers to Adoption of SUD Treatment Medications

	% Programs Reporting Barrier is “Important” or “Very Important”
Patients are not interested in using medications as part of their substance abuse treatment plans.	24%
Patients cannot afford to pay for substance abuse treatment medications.	66%
Too many patients have medical conditions that would make these medications clinically inappropriate for them.	30%
Too many patients have psychological conditions that would make these medications clinically inappropriate for them.	31%

SECTION 5

Conclusions

The purpose of this study was to measure the availability of medications in publicly funded SUD treatment programs and to identify key barriers to medication adoption. Our findings suggest that this sector of the US treatment system continues to evolve, as seen in the expanding number of treatment programs that are offering SUD treatment medications. We also found that the most salient barriers to adoption are limited access to medical professionals and funding policies that do not reimburse the costs associated with implementing medications.

These barriers point to the importance of “system changes” in how treatment services are funded and new strategies for building linkages between treatment programs and medical professionals. Such system changes may require changes in state policies, particularly in terms of whether state funding and Medicaid funding can be used to purchase medications or be used to pay for medical professionals, such as physicians and nurses. States may need to engage in additional dissemination of information about key policies if they want to ensure that programs are aware of the resources available to support the implementation of medications. Treatment program administrators in this study indicated that funding challenges were a barrier to having access to medical professionals and that it was difficult to find medical staff with expertise in treating individuals with SUDs. Building linkages with medical professionals will require both funding as well as efforts to identify physicians who have experience in treating individuals with SUDs.

There are some signals that the policy environment is changing in some states,^{17, 18} which may result in additional expansion of medications to treat SUDs in the future. Furthermore, the impact of policy changes at the federal level, including the Wellstone-Domenici Parity Act and the Affordable Care Act, are not yet known. We hope to continue to study the US treatment system so that we can better understand the impact of these changes.

REFERENCES

1. Hanson, GR, Leshner, AI, Tai, B. Putting drug abuse research to use in real-life settings. *Journal of Substance Abuse Treatment* 2002; 23:69-70.
2. McCarty, D, Edmondson, EA, Hartnett, T. Charting a path between research and practice in alcoholism treatment. *Alcohol Research & Health* 2006; 29:5-10.
3. Capoccia, V, Gustafson, D, O'Brien, J, Chalk, M. Letter to the editor. *Journal of Substance Abuse Treatment* 2007; 33:219-220.
4. Power, EJ, Nishimi, RY, Kizer, KW. Evidence-based Treatment Practices for Substance Use Disorders. Washington, DC: National Quality Forum, 2005.
5. Ducharme, LJ, Knudsen, HK, Roman, PM. Trends in the adoption of medications for alcohol dependence. *Journal of Clinical Pharmacology* 2006; 26 Suppl 1:S13-9.
6. Knudsen, HK, Ducharme, LJ, Roman, PM. The adoption of medications in substance abuse treatment: Associations with organizational characteristics and technology clusters. *Drug and Alcohol Dependence* 2007; 87:164-74.
7. Knudsen, HK, Ducharme, LJ, Roman, PM. The use of antidepressant medications in substance abuse treatment: The public-private distinction, organizational compatibility, and the environment. *Journal of Health and Social Behavior* 2007; 48:195-210.
8. Knudsen, HK, Ducharme, LJ, Roman, PM. Early adoption of buprenorphine in substance abuse treatment centers: data from the private and public sectors. *Journal of Substance Abuse Treatment* 2006; 30:363-73.
9. Chriqui, JF, Terry-McElrath, Y, McBride, DC, Eidson, SS. State policies matter: the case of outpatient drug treatment program practices. *Journal of Substance Abuse Treatment* 2008; 35:13-21.
10. Cartwright, WS, Solano, PL. The economics of public health: Financing drug abuse treatment services. *Health Policy* 2003; 66:247-60.
11. Heinrich, CJ, Fournier, E. Dimensions of publicness and performance in substance abuse treatment organizations. *Journal of Policy Analysis and Management* 2004; 23:49-70.
12. Knudsen, HK, Roman, PM. Racial and ethnic composition as a correlate of medication availability within addiction treatment organizations. *Sociological Focus* 2009; 42:133-151.
13. Knudsen, HK, Roman, PM, Oser, CB. Facilitating factors and barriers to the use of medications in publicly funded addiction treatment organizations. *Journal of Addiction Medicine* 2010; 4:99-107.
14. Knudsen, HK, Abraham, AJ, Johnson, JA, Roman, PM. Buprenorphine adoption in the National Drug Abuse Treatment Clinical Trials Network. *Journal of Substance Abuse Treatment* 2009; 37:307-12.

15. Abraham, AJ, Roman, PM. Early adoption of injectable naltrexone for alcohol-use disorders: Findings in the private-treatment sector. *Journal of Studies on Alcohol and Drugs* 2010; 71:460-466.
16. Abraham, AJ, Knudsen, HK, Rothrauff, TC, Roman, PM. The adoption of alcohol pharmacotherapies in the Clinical Trials Network: The influence of research network participation. *Journal of Substance Abuse Treatment* 2010; 38:275-83.
17. Roman, PM, McCarty, D. Assessment of project development in cohort one of *Advancing Recovery: A multi-method approach*, Vol. 2011, 2009.
18. McCarty, D, Gustafson, D, Capoccia, VA, Cotter, F. Improving care for the treatment of alcohol and drug disorders. *Journal of Behavioral Health Services & Research* 2009; 36:52-60.

APPENDIX A

Study Methodology

This study of medication adoption in substance use disorder (SUD) treatment organizations was conducted with publicly funded treatment programs that had previously participated in the National Treatment Center Study (NTCS). The family of NTCS studies, led by Dr. Paul M. Roman at the University of Georgia through funding by the National Institute on Drug Abuse (NIDA) and the National Institute on Alcohol Abuse and Alcoholism (NIAAA), has focused on treatment service delivery in specialty SUD treatment organizations since 1994. The NTCS is ongoing and is housed at the Center for Research on Behavioral Health and Human Service Delivery in the Institute for Behavioral Research at the University of Georgia.

The current study was supported through a grant awarded to the University of Kentucky from the Robert Wood Johnson Foundation's Substance Abuse Policy Research Program (Grant No. 65111, Principal Investigator: Dr. Hannah K. Knudsen). The success of this project is the result of collaboration between investigators at the University of Kentucky and the University of Georgia as well as the willingness of program administrators to take the time to provide the data summarized in this report.

Construction of the Sample. The current study of publicly funded treatment programs drew upon a nationally representative sample of 318 programs that was originally constructed in 2004-2006 through research support from NIDA.^{12, 13} This cohort of 318 treatment programs consisted of 245 centers that had participated in face-to-face interviews in 2002-2004 and 73 centers that were randomly selected in 2004-2006 to maintain the size of the sample. Sample construction at both time-points occurred through a two-stage sampling design. First, US counties were randomly selected from 10 population-based strata. Then programs within those sampled counties were identified using the Substance Abuse and Mental Health Services Administration's national directory, directories provided by single state agencies, yellow pages listings, and EAP referral directories. Once all programs in the sampled counties were identified, programs were randomly sampled from the 10 strata so that the final sample would be representative of the US population. These randomly selected organizations were screened for eligibility by telephone. There were three criteria used to determine whether a treatment program met our definition of "publicly funded" treatment organizations. The three eligibility criteria were:

- 1) The program was open to the general public (e.g., not Veterans Health Administration or based in a correctional setting such as a jail or prison);

- 2) The program offered a minimum level of addiction treatment at least equivalent to structured outpatient programming (Mee-Lee et al. 1996), which excluded counselors in private practice, detoxification-only facilities, halfway houses and transitional living facilities, DUI and driver education programs, and facilities exclusively offering methadone maintenance services;
- 3) The program received at least half of their past-year revenues from governmental block grants/contracts or at least half of their patients' expected source of primary payment was from allocated public funds. Examples of governmental grant and contract funding include state-administered federal block grant funds, contracts with criminal justice agencies, and contracts with single state agencies to provide treatment services. It is important to note that Medicaid and Medicare were excluded from our definition of "public funding." Our rationale was that Medicaid and Medicare funding largely operate like managed care in reimbursing patient care.

Data were collected in this earlier study via face-to-face interviews with program administrators and/or clinical directors, and a response rate of 79.9% was achieved.

Eligibility for the Current Study. Our primary purpose for the current study was to collect follow-up data from this previously established cohort of publicly funded SUD treatment centers. Therefore, the eligibility criteria for the current study were that 1) programs were participants in the previous NTCS sample of publicly funded programs and 2) programs were still delivering SUD treatment services. We attempted to contact this cohort of 318 programs by telephone, which revealed that 27 treatment programs (8.5%) had closed. In some cases, the entire organization had ceased to exist, while others simply no longer offered SUD treatment services. Thus, 291 treatment programs from the original cohort were eligible for the current study.

Data Collection for the Current Study. Data were collected by trained staff at the University of Georgia in two stages from August 2009 to June 2010. First, the 291 open and eligible treatment programs were mailed a survey packet containing a letter describing the study, a paper survey, two informed consent forms, an honorarium payment form, and a postage-paid envelope. If a program did not respond within six weeks, a second survey packet was mailed. In the second stage of the study, programs that did not respond to the mailed survey were contacted by telephone for an interview. Verbal consent was obtained from administrators prior to the telephone interview. Given the importance of having a consistent dataset, these telephone interviews used the same questions as the mailed survey. Participating administrators received a \$50 donation to their program for completing either the mailed survey or the telephone interview. The research design was approved by the Institutional Review

Boards (IRBs) of the University of Georgia and the University of Kentucky.

Of the 291 treatment programs open and eligible at the time of the study, data were collected from 250 programs, which constitutes a response rate of 85.6%. Only 9 administrators directly refused to participate when contacted by telephone (2.8%). After many attempts at scheduling a telephone interview, we were unable to complete interviews with 33 additional administrators (10.4%).

Representativeness of the Current Sample. A key issue to consider when conducting a follow-up study with a previously established sample is whether participating programs are similar to those programs that did not participate. To consider whether participating programs ($n = 250$) were significantly different from those that had closed ($n = 27$) or refused to participate ($n = 42$), we drew upon data from the 2004-2006 study to make comparisons between these three groups. We conducted a series of bivariate multinomial logistic regression models that compared closed and refusing programs to participating programs. We examined a set of organizational characteristics collected in 2004-2006 that we had used in a previous analysis of medication adoption.¹³ Relative to participating programs, refusing and closed treatment centers were not significantly different in their adoption of medications, location in a hospital setting, accreditation status, available levels of treatment or detoxification services, primary treatment model, staffing, reliance on Medicaid or public funding. The only significant difference that we detected was between participating programs and closed programs on ownership. We found that that government-owned programs were more likely than non-governmental programs to have closed, relative to the odds of participating in the current study (relative risk ratio = 3.27, 95% confidence interval = 1.44 - 7.42, $p < .01$).

To summarize, participating programs did not significantly differ from those programs that refused to participate (either directly refusing when contacted by telephone or by being unable to be contacted after repeated attempts) on these key dimensions of organizational characteristics. There was only one difference between programs that had closed and those that participated, and that difference was on ownership. Based on this analysis, we concluded that the sample in the current study is generally representative of publicly funded treatment programs in the US.