



Outcomes for Physicians With Opioid Dependence Treated Without Agonist Pharmacotherapy in Physician Health Programs



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ABSTRACT

Aims: To compare treatment outcome among substance dependent physicians enrolled in a physician health program (PHP) who have a history of alcohol use only, any opioid use, or non-opioid drug use, in order to determine whether the distinctive PHP system of care management is as effective for individuals with opioid use disorders as for those with alcohol or other drug use disorders.

Methods: A 5-year, retrospective chart review, intent-to-treat analysis was conducted for all physicians admitted to 16 physician health programs (N = 702; 85.5% male; age range = 24–75). Analyses compared treatment outcomes for participants based upon their substance(s) of abuse [i.e., 1) "Alcohol Only" (n = 204), 2) "Any Opioid" with or without alcohol use (n = 339), and 3) "Non-Opioid" drug use with or without alcohol use (n = 159)].

Results: In this sample, 75–80% of physicians across the three groups never tested positive for alcohol or drugs during their extended care management period with random drug testing. This included physicians with opioid dependence who did not receive opioid substitution therapy (OST). Of the 22.1% of physicians who had a positive test, two thirds (i.e., 14.5% of the total sample) had just one positive test, and only one third (i.e., 7.6% of the total sample) had more than one positive test. These results were similar in all three groups.

Conclusions: These results indicate that individuals with opioid use disorders who are managed by PHPs can achieve long-term abstinence from opioids, alcohol, and other drugs without OST through participation in abstinence-based psychosocial treatment with extended, intensive care management following discharge.

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1. Introduction

The goal of abstinence-based psychosocial treatment (ABPT) is lifetime abstinence from all addictive substances. Participation in intensive (i.e., 30–90 days) ABPT typically consists of residential or partial-hospitalization level treatment involving individual and group psychotherapy (frequently based in cognitive-behavioral theory), process groups, family therapy, recreational therapy, educational programming, and introduction to the 12-step program and philosophy. It is considered efficacious in promoting early abstinence among individuals with substance use disorders (Condelli & Hubbard, 1994; Darke et al., 2005; Moos, Pettit, & Gruber, 1995). After completing ABPT, patients are encouraged to actively participate in 12-step (e.g., Alcoholics Anonymous or Narcotics Anonymous) meetings or other community-based

recovery support for the long-term. However, patients with opioid dependence are often cautioned against ABPT, due to studies demonstrating worse outcomes for those participating in ABPT compared to opioid substitution therapy (OST) with methadone or buprenorphine. For example, World Health Organization guidelines for treatment of opioid dependence note that OST increases treatment retention, reduces heroin use, and produces lower mortality rates than ABPT alone (World Health Organization, 2009). A separate review of 11 studies concluded that OST reduces heroin use better than treatments that do not include OST. However, authors noted that heroin users frequently withdrew from trial studies when assigned to a drug-free program, resulting in a lack of adequate comparison (Mattick, Breen, Kimber, & Davoli, 2009).

Methadone maintenance treatment is considered efficacious when administered at adequate dosing (D'Annunzio & Pollack, 2002; D'Annunzio & Vaughn, 1992; Pollack & D'Annunzio, 2008; Strain, Bigelow, Liebson, & Stitzer, 1999) in outpatient clinics with counseling, and subject to contingency management through random drug testing (Calsyn & Saxon, 1987; McLellan, Arndt, Metzger, Woody, & O'Brien, 1993). Though benefits often do not persist when methadone is discontinued, methadone is generally regarded as the most effective treatment for opioid dependence (Van Den Brink & Haasen, 2006; Zador, 2007)

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because of documented reductions in opioid use, improvements in retention, and decreased drug-related risk behaviors (Ball & Ross, 1991; Sees et al., 2000). Buprenorphine demonstrates similar benefits, with reduced opioid use and improved treatment retention (Fudala et al., 2003; Mattick, Breen, Kimber, & Davoli, 2014), including for prescription opioid dependence (Weiss et al., 2011). Like methadone, response during buprenorphine treatment depends upon adequate dosing (Fareed, Vayalapalli, Casarella, & Drexler, 2012; Mattick et al., 2014), though it may be less effective than methadone as a maintenance treatment (Mattick et al., 2014). One significant benefit to buprenorphine is that it is commonly administered as a buprenorphine/naloxone compound to discourage abuse or overdose. Buprenorphine is associated with low risk of fatality or other negative outcomes during treatment (Apelt, Scherbaum, Gözl, Backmund, & Soyka, 2013). Indeed, the data clearly demonstrate that OST reduces fatal overdoses among individuals who are actively participating in OST programs (Connerly, 2015).

However, there remain several concerns regarding the efficacy of OST. Among them, patients being treated often continue illicit opioid use and other illicit drug and/or alcohol use (Fiellin et al., 2011) and treatment drop-out is common (Clausen, Anchersen, & Waal, 2008; Fiellin et al., 2011; Stein, Cloe, & Friedmann, 2005). In addition, treatment with OST is often recommended for life due to the inherent risks of attempting to taper to zero dose (Calsyn, Malcy, & Saxon, 2006); whereas, the idea of lifelong OST is undesirable for many patients, and may be incompatible with maintaining their employment in certain safety-sensitive careers (e.g., healthcare professional, airline pilot, law enforcement officer) due to licensure restrictions or other regulations.

A few studies have demonstrated the potential for positive outcome among individuals with opioid dependence who do not receive OST. For example, a study of individuals entering treatment for heroin dependence showed substantial reductions in heroin and other drug use at 1-year follow-up across three distinct treatment conditions. Sixty-five percent (65%) of patients in methadone/buprenorphine maintenance therapy, 52% in detoxification, and 63% in abstinence-based residential rehabilitation were heroin-free. Only 25% of a small sample of heroin users not seeking treatment was heroin-free after 1 year (Teesson et al., 2006). Further, in 2014, a series of studies assessing treatment outcome for emerging adults (aged 18–24) with opioid dependence (including both heroin and prescription opioids) demonstrated similar outcomes for patients treated in a 28-day abstinence-based residential program [42.5% abstinent at 6-month follow-up (Schuman-Olivier, Weiss, Hoepfner, Borodovsky, & Albanese, 2014)] compared to those treated with buprenorphine plus intensive outpatient addiction treatment [38% treatment retention (Schuman-Olivier et al., 2014)].

Thus, more research is needed regarding the relative efficacy of ABPT for patients with opioid dependence, particularly within populations that may be unable to benefit from OST. With this goal in mind, the present study examined treatment outcome within a cohort of physicians with substance dependence who underwent a specialized form of ABPT plus monitoring by their state physician health program (PHP). The features of this treatment approach are more fully described elsewhere (DuPont, McLellan, Carr, Gendel, & Skipper, 2009). Because each PHP is independent, the process can vary between states. This makes for a less than optimal independent variable for conducting research; however, the general concepts applied by all state PHPs are consistent and include: 1) thorough evaluation for each participant to establish diagnosis(es); 2) individualized primary treatment to address all the individual's most acute problems; and, 3) referral back to the PHP to sign a long-term monitoring contract that includes standard and customized recommendations for ongoing treatment and monitoring.

Though many opioid-dependent physicians use agonist therapy during detoxification, most who are reported to their licensing board or referred to a PHP due to substance-related impairment may not return to work while using OST. The PHPs typically have informal policies disallowing OST for practicing physicians due to the safety-sensitive

nature of physicians' work and lack of data demonstrating whether long-term use of opioid medication may impact their performance. In some cases, physicians are allowed to work while using OST, but typically not in positions where precision and accuracy are paramount (e.g., a practicing surgeon is unlikely to be approved for OST).

As a result, there is strong motivation to pursue a goal of total abstinence among this population. Physicians enrolled in a PHP typically undergo relatively brief (i.e., 30–90 days) formal ABPT with concurrent treatment for comorbid mental health disorders. This is typically followed by 5 years of mandatory monitoring for drugs and alcohol with random urine, oral fluid, and/or hair testing (Teesson et al., 2006). Monitoring for physicians with comorbid psychiatric conditions may include the PHP receiving regular reports from the treating psychiatrist and/or psychotherapist regarding the physician's current mental health. In addition, many states require attendance at regular "monitoring meetings" (i.e., weekly, monthly, or quarterly) for PHP participants, which are generally facilitated by a mental health professional, but are focused less on psychotherapeutic intervention and more on education and ensuring compliance with PHP contract components. During this extended period, any evidence of substance use or other non-compliance usually stops medical practice for re-evaluation, further treatment, and/or subsequent increased frequency of testing. Compliance with the PHP contract is typically required by state licensing boards for continued licensure. However, it is important to note that PHPs do not directly provide treatment; instead, they manage physician care through referral, overseeing participation in high-quality treatment, and monitoring. PHP participation has demonstrated efficacy (DuPont, McLellan, White, Merlo, & Gold, 2009; McLellan, Skipper, Campbell, & DuPont, 2008), but little is known about its relative efficacy among the subpopulation of physicians with opioid use disorders. In the current study, treatment outcome was compared among physicians diagnosed with substance dependence who had a history of alcohol use only, any opioid use, or non-opioid drug use, in order to determine whether ABPT with long-term care management without OST can be as effective for individuals with opioid use disorders (OUDs) as for those with alcohol or other drug use disorders.

2. Method

2.1. Procedure

The study employed a minimum 5-year, retrospective chart review, intent-to-treat analysis of all physician participants admitted to 16 PHPs participating in a national survey evaluation. Under their PHP contracts, physicians were required to maintain complete abstinence from addictive substances, including alcohol and other prescription or over-the-counter mood-altering medications [e.g., diphenhydramine (Benadryl), cough syrups, sleep aids]. Exceptions were made for prescription medications that were approved by the PHP based on adequate documentation of medical necessity. In most cases, however, opioid agonist medication was not allowed due to PHP policy. Physicians were monitored through frequent random testing with a panel of about 20 drugs, including alcohol biomarkers (most often ethyl glucuronide and ethyl sulfate). Those physicians consecutively admitted to the PHPs from September 1, 1995 through September 1, 2001 were followed through inspection of laboratory results, review of PHP charts (including evaluations, progress reports from treating providers, and feedback from workplace monitors), and examination of their employment records (e.g., status of medical license, status of medical practice (full-time, part-time, licensed but not in practice, etc.), restriction of DEA license, etc.) for the ensuing 5 years or longer. [For more details on the participating PHPs, data collection procedure, demographics of the full physician sample and outcome results see DuPont et al., 2009; McLellan et al., 2008; DuPont et al., 2009; Skipper, Campbell, & DuPont, 2009; White, DuPont, & Skipper, 2007; Skipper & DuPont, 2011.]

2.2. Sample

All physicians followed in this study were diagnosed with DSM-IV substance dependence following a comprehensive evaluation by a specialist (e.g., physician board certified in psychiatry or addiction medicine or licensed psychologist) with significant experience in assessment of impaired physicians. In some states, these evaluators are the medical directors of the PHP. In other states, the evaluators are independent clinicians who are approved by the PHP. The policies describing necessary qualifications for evaluators can be found at http://www.fsphp.org/2005FSPPH_Guidelines.pdf. Each physician then completed ABPT at a specialty addiction program after being provided a list of approved treatment facilities by the PHP. Policies describing necessary qualifications of treatment centers are also available at http://www.fsphp.org/2005FSPPH_Guidelines.pdf. In general, approved treatment centers must meet minimum requirements for services offered and should provide specialized treatment of healthcare professionals that includes a “peer professional patient population.” As described in the aforementioned policy statements, specific policies are in place to minimize the potential for actual or perceived conflicts of interest between independent evaluators, independent treatment facilities, and the PHPs. Treatment for study participants was typically followed by 5 years of monitoring under a PHP contract that included participation in AA/NA or other 12-step programs – with the requirement that signature cards be signed documenting attendance at meetings (98%) – and facilitated aftercare monitoring groups with other participants in the PHP (92%). Ongoing mental healthcare was required for some individuals, and others obtained care despite not being required per the parameters of their PHP contract. Specifically, after completing the ABPT program, 18% of the sample participated in individual or group psychotherapy without medication management, 8% received psychiatric medication management without psychotherapy, and 29% obtained both psychotherapy and psychiatric medication. Some physicians (34%) also had workplace monitors who sent periodic reports to the PHP. The 702 physicians (85.5% male) ranged in age from 24 to 75 ($M = 44.3$, $SD = 8.6$). The sample included 20 residents and represented a number of medical specialties (see Table 1).

2.3. Data Analysis

This study compared PHP participants with contracts for substance dependence based upon their substance(s) of abuse for this episode of PHP care and whether their case records indicated a history of intravenous (IV) drug use. Participants were categorized initially into four groups: alcohol use only ($n = 204$), opioid use without other drug use ($n = 196$), opioid use with other drug use ($n = 143$), and non-opioid drug use without opioid use ($n = 159$). Many physicians in the three drug use groups also used alcohol. There were no significant differences between the two opioid use groups on demographic variables (e.g., gender, age, marital status, medical specialty), history of intravenous (IV) drug use, or study outcome variables (e.g., positive drug tests during monitoring, contract completion, or current license status), so the decision was made to combine the two opioid use groups for primary study analyses. This resulted in three groups for comparison: 1) “Alcohol Only” ($n = 204$), 2) “Any Opioid” with or without alcohol use ($n = 339$), and 3) “Non-Opioid” drug use with or without alcohol use ($n = 159$).

Primary analyses were based on intent-to-treat principles, with all physicians for whom records were available being included in the study. Secondary analyses examined differences between opioid drug users with and without a history of IV drug use. Chi-square analyses were utilized to examine group differences for categorical variables. One-way ANOVA or independent samples t-tests were used to examine differences for continuous variables.

Table 1
Participant Characteristics at Program Intake.^a

Characteristic	Alcohol only (n = 204) ^c	Any opioids (n = 339) ^c	Non-opioid drugs (n = 159) ^c	For χ^2	p^b
Demographics					
Gender				6.58	.04
Male	165 (81)	293 (87)	142 (90)		
Female	39 (19)	44 (13)	16 (10)		
Marital status				38.89	<.001
Married	128 (63)	259 (77)	76 (50)		
Not married	74 (37)	75 (23)	77 (50)		
Age at enrollment				26.87	<.001
Mean \pm SD	48 \pm 10	43 \pm 8	42 \pm 8		
Range	25–75	27–72	24–61		
Medical specialty				43.42	<.001
Family practice	27 (13)	78 (23)	37 (23)		
Internal medicine	23 (11)	55 (16)	15 (9)		
Surgeon	48 (24)	47 (14)	30 (19)		
Anesthesiology	19 (9)	50 (15)	11 (7)		
Emergency medicine	11 (5)	26 (8)	10 (6)		
Psychiatry	12 (6)	17 (5)	20 (13)		
All others	64 (31)	66 (20)	36 (23)		
Physician status				8.95	.01
Practicing physician	201 (99)	332 (98)	149 (94)		
Resident	3 (1)	7 (2)	10 (6)		
Individual history					
History of treatment				3.88	.14
Yes	75 (37)	132 (39)	74 (46)		
No	129 (63)	207 (61)	159 (54)		
Prior contract with PHP				1.64	.44
Yes	46 (25)	63 (20)	36 (23)		
No	139 (75)	249 (80)	117 (77)		
History of arrests				8.53	.01
Yes	28 (15)	40 (13)	35 (23)		
No	162 (85)	276 (87)	117 (77)		
Prior convictions				4.55	.10
Yes	12 (6)	23 (7)	18 (12)		
No	175 (94)	292 (93)	127 (88)		
Drug use					
Number of substances				333.47	<.001
Single	204 (100)	90 (26)	32 (20)		
Multiple	0 (0)	249 (74)	127 (80)		

^a Values are number (percentage) unless otherwise indicated.

^b From one-way ANOVA or chi-square test of proportions as appropriate.

^c Limited missing data resulted in some inconsistency in sample size across variables included in this table.

3. Results

3.1. Demographics

The characteristics of physicians in the three substance use categories are summarized in Table 1. All groups were predominantly male. Physicians in the alcohol only group were older, on average, than those in the other groups. Half (50%) of the resident physicians in this sample were in the non-opioid drug group; whereas, only 22% of practicing physicians were in the non-opioid group. The majority of physicians in the non-opioid drug group were not married; most physicians in the alcohol only and any opioid groups were married. Within the any opioid group, additional analyses compared physicians with a history of IV drug use to those with no such history. A total of 318 physicians from the any opioid group (94%) had this information recorded. Physician characteristics for each sub-group are listed in Table 2.

3.2. Individual History

As shown in Tables 1 and 2, the majority of physicians in this sample did not have a history of addiction treatment prior to their current referral to the PHP. This finding was consistent across all 3 substance use groups. The only exception was that, among the any opioid users, those with a

Table 2
Characteristics of Opioid-Using Physicians With and Without History of IV Drug Use.^a

Characteristic	No IV drug use (n = 235) ^c	History of IV drug use (n = 83) ^c	t, or X ²	p ^b
Demographics				
Gender				
Male	201 (86)	74 (90)	1.01	.21
Female	33 (14)	8 (10)		
Marital status				
Married	181 (77)	62 (75)	3.69	.60
Not married	54 (23)	21 (25)		
Age at enrollment				
Mean ± SD	44 ± 7	41 ± 7	3.72	<.001
Range	29–72	27–67		
Medical specialty				
Family practice	60 (26)	16 (19)	49.39	<.001
Internal medicine	40 (17)	7 (8)		
Surgeon	34 (15)	11 (13)		
Anesthesiology	15 (6)	30 (36)		
Emergency medicine	18 (8)	8 (10)		
Psychiatry	14 (6)	1 (1)		
All others	54 (23)	10 (12)		
Physician status				
Practicing physician	234 (99.6)	79 (95)		
Resident	1 (0.4)	4 (5)		
Individual history				
History of treatment				
Yes	82 (35)	44 (53)	8.42	.004
No	153 (65)	39 (47)		
Prior contract with PHP				
Yes	42 (19)	19 (24)	0.99	.33
No	184 (81)	61 (76)		
Prior disciplinary action				
Yes	45 (19)	22 (27)	2.00	.16
No	190 (81)	61 (74)		
History of arrests				
Yes	32 (14)	8 (10)	0.85	.44
No	199 (86)	73 (90)		
Prior convictions				
Yes	18 (8)	5 (6)	0.21	.81
No	213 (92)	75 (94)		
Drug use				
Number of substances				
Single	64 (27)	19 (23)	0.60	.27
Multiple	171 (73)	64 (77)		

^a Values are number (percentage) unless otherwise indicated.
^b From t-test or chi-square test of proportions as appropriate.
^c Limited missing data resulted in some inconsistency in sample size across variables included in this table.

history of IV drug use were more likely to have received prior treatment (53.0% compared to 34.9%, $X^2 = 8.42, p = .004$).

3.3. Primary drug of abuse

The “primary” drug of abuse was recorded for most physicians in the sample, based on self-report contained in the records. All physicians in the alcohol only group had listed alcohol as their primary drug of abuse. Among the any opioid use group, 74.3% listed an opioid as their primary drug of abuse; others listed alcohol (18.3%), sedatives (2.7%), stimulants (1.8%), marijuana (1.5%), or “other” (1.5%). Within the group of opioid users (n = 318), those with a history of IV drug use were not significantly more likely ($X^2 = 8.41, p = .135$) to list opioids as their primary drug of abuse (83.1%) compared to those without a history of IV drug use (70.2%). Among the non-opioid drug use group, 48.7% listed alcohol as their primary drug of abuse; others listed stimulants (29.1%), marijuana (8.2%), sedatives (7.0%), and “other” (6.9%).

3.4. Substance Abuse Treatment

As shown in Table 3, treatment for opioid-using physicians did not differ from that of other physicians. Physicians in the two opioid

Table 3
Treatment Experiences.^a

	Alcohol only (n = 204) ^c	Any opioids (n = 339) ^c	Non-opioid (n = 159) ^c	F/X ²	p ^b
Treatment					
Residential/Day treatment					
Yes	133 (67)	245 (74)	102 (66)	4.80	.09
No	66 (33)	86 (26)	53 (34)		
Days of day treatment					
Mean ± SD	75.9 ± 55.8	72.2 ± 41.5	71.6 ± 39.1	0.34	.72
Range	3–389	1–393	1–177		
IOP, not allowed to work					
Yes	18 (10)	26 (9)	16 (11)	.053	.77
No	163 (90)	270 (91)	131 (89)		
Days of IOP/no work					
Mean ± SD	78.4 ± 87.5	230.9 ± 443.8	295.3 ± 545.9	1.02	.37
Range	11–366	7–1939	11–2132		
IOP, allowed to work					
Yes	33 (18)	55 (18)	36 (25)	3.04	.22
No	150 (82)	244 (82)	109 (75)		
Days of IOP and work					
Mean ± SD	595.7 ± 734.7	868.7 ± 858.7	864.8 ± 938.8	1.17	.31
Range	27–2192	6–3430	1–3431		
Other treatment					
Yes	13 (7)	29 (10)	12 (8)	1.10	.58
No	168 (93)	264 (90)	134 (92)		
Days of other treatment					
Mean ± SD	550.8 ± 773.8	1074.9 ± 1163.2	1888.2 ± 1684.9	2.72	.08
Range	1–2192	1–3766	792–5270		

^a Values are number (percentage) unless otherwise indicated.
^b From one-way ANOVA or chi-square test of proportions as appropriate.
^c Limited missing data resulted in some inconsistency in sample size across variables included in this table.

use groups were as likely as other PHP enrollees to participate in residential/day treatment (70.1% overall for all groups), in intensive outpatient (IOP) treatment with a restriction from practicing medicine (9.6% overall), in IOP treatment while working in medicine (19.8% overall), and in other forms of treatment (8.7% overall). The average amount of time that physicians spent in each treatment modality did not differ significantly among the groups.

3.5. Drug Testing

Examination of the physicians' drug testing and monitoring records revealed no significant differences among the three groups in the number of months they were tested, the average number of tests they underwent, the average number of positive tests, or the percentage of individuals who had at least one positive test while enrolled in the PHP (see Table 4). The average monitoring period was about 50 months and participants were tested about 90 times each during that period. All programs began with more frequent random testing (1–2 per week) and gradually reduced testing frequency (around 1–2 per month) over time. Physicians who completed their contract had an average of 85 tests over an average of 52 months of monitoring, contract extenders 144 tests over 70 months and those failed to complete had 55 tests over 25 months. Five of the physicians withdrew from PHP participation within 1 month of the start of drug testing, and were recorded as completing zero months of testing. Each is included in the “failed to complete” outcome group. In addition, a subset of physicians (3 in the alcohol only group, 8 in the any opioids group, and 6 in the non-opioid group) who were classified as completers or extenders was tested fewer than 10 times. In most cases, these physicians had transferred to a new state while in good standing with their PHP, for completion of their contract, but did not have data from their initial state included in the database, or they were in a voluntary extension period of their contract, having already completed 5 years of monitoring successfully. When excluding these physicians, the mean number of tests was 92 over 51 months.

Table 4
Drug and Alcohol Testing and Other Outcomes.^a

Outcome	Alcohol only (n = 204) ^c	Any opioids (n = 339) ^c	Non-opioid (n = 159) ^c	F/X ²	p ^b
Months in testing period				0.29	.749
Mean ± SD	49 ± 24	51 ± 23	50 ± 27		
Range	0–131	1–121	0–155		
Number of tests				0.57	.565
Mean ± SD	86 ± 78	93 ± 72	88 ± 72		
Range	2–662	1–468	1–400		
Number of positive tests				0.98	.376
Mean ± SD	0.35 ± 1.03	0.39 ± 1.04	0.51 ± 1.17		
Range	0–9	0–11	0–6		
Any positive drug test				1.37	.504
Yes	40 (20)	77 (23)	39 (25)		
No	162 (80)	259 (77)	118 (75)		
Ever reported to board				3.16	.21
Yes	33 (16)	75 (22)	35 (22)		
No	171 (84)	264 (78)	123 (78)		

^a Values are number (percentage) unless otherwise indicated.

^b From one-way ANOVA or chi-square test of proportions as appropriate.

^c Limited missing data resulted in some inconsistency in sample size across variables included in this table.

The modal number of positive tests for each group was zero, with 75–80% of physicians across the three groups never testing positive for alcohol or drugs on a single test during their monitoring period. Of the 22.1% of physicians who tested positive during the monitoring period, two thirds (i.e., 14.5% of the total sample) had just one positive test, and only one third (i.e., 7.6% of the total sample) had more than one positive test. These results were similar in all three groups. When comparing individuals in the any opioid group with or without a history of IV drug use, there were no differences; 23.5% of the IV drug users and 23.1% of the IV drug non-users had a positive drug test during the monitoring period ($X^2 = 0.005$, *ns*).

The three groups were also similar ($X^2 = 3.16$, *ns*) in the percentage of physicians who were reported to their licensing boards during the monitoring period (20.4% overall) due to relapse, non-cooperation with the program, or other issues (see Table 4). Among the any opioid group, 26.5% of physicians with a history of IV drug use were reported to their state licensing board, compared to only 19.1% of those without a history of IV drug use, though these rates were not significantly different ($X^2 = 2.00$, *ns*).

3.6. Program Status at 5 Years

After 5 years, the majority of each group had successfully completed PHP participation. As shown in Table 5, there were no significant differences among groups in the percentage who successfully completed their PHP contracts (62.7% overall), failed to complete (20.1% overall), or extended their contracts and were still monitored (17.2% overall). Among the any opioid group of physicians (n = 318), there was no significant difference in outcome ($X^2 = 4.19$, *ns*) between those with a history of IV drug use (57.8% completed, 18.1% failed to complete, 24.1% extended contract) and those with no history of IV drug use (67.2% completed, 18.3% failed to complete, 14.5% extended contract).

3.7. Occupational Status at Follow-up

Approximately three-quarters (72.4%) of the physicians in each of the three substance use groups were licensed and practicing medicine at follow-up (see Table 5). Small percentages in each group were licensed but working in non-clinical positions (5.3% overall), had retired or left practice voluntarily (4.1% overall), or had died (4.3% overall). Only 11.0% had their license revoked or were not licensed for another unspecified reason. There were no significant differences in occupational status ($X^2 = 2.32$, *ns*) between the opioid-using physicians (n = 318) with or without a history of IV drug use (73.5% vs. 74.9% licensed

Table 5
Status at Follow-up.^a

Status	Alcohol only (n = 204) ^c	Any opioids (n = 339) ^c	Non-opioid (n = 159) ^c	X ²	p ^b
Program status				4.70	.32
Completer	119 (58.3%)	220 (64.9%)	101 (63.5%)		
Extender	34 (16.7%)	57 (16.8%)	30 (18.9%)		
Failed to complete	51 (25.0%)	62 (18.3%)	28 (17.6%)		
Reported to board				3.16	.21
Yes	33 (16.2%)	75 (22.1%)	35 (22.2%)		
No	171 (83.8%)	264 (77.9%)	123 (77.8%)		
Occupational status				47.18	<.001
Licensed/Practicing medicine	143 (70.1%)	252 (74.3%)	113 (71.1%)		
Licensed/Working (not clinical)	13 (6.4%)	19 (5.6%)	5 (3.1%)		
Retired or left practice voluntarily	15 (7.4%)	12 (3.5%)	2 (1.3%)		
License revoked	14 (6.9%)	43 (12.7%)	20 (12.6%)		
Died	16 (7.8%)	9 (2.7%)	5 (3.1%)		
Unknown	3 (1.5%)	4 (1.2%)	14 (8.8%)		

^a Values are number (percentage).

^b From chi-square test of proportions.

^c Limited missing data resulted in some inconsistency in sample size across variables included in this table.

and practicing, 12.0% vs. 13.2% not licensed/revoked, 3.6% vs. 1.3% died, respectively).

3.8. Pharmacotherapy for Relapse Prevention

Use of pharmacotherapy was extremely limited. Opioid antagonist medication (naltrexone) was utilized for a total of 40 physicians (i.e., 5.7% of the total sample). The demographics of the naltrexone-treated population were similar to other physicians in this study. Two of these physicians were in the alcohol only group (i.e., 1.0% of alcohol only group), 35 were in the any opioid group (i.e., 10.3% of any opioid group; 19 with history of IV use, 16 with no history of IV drug use), and 3 were in the non-opioid group (i.e., 1.9% of non-opioid group). With regard to treatment outcome, 35.0% of these physicians had positive tests (including for opioids) during their monitoring, which was higher than the rate of 21.5% for the other physicians in this study ($X^2 = 3.46$, $p = .05$). However, it was unclear whether naltrexone was added to the treatment plan prior to or in response to the positive tests.

In contrast, there was virtually no evidence of physicians using OST with either methadone or buprenorphine. Indeed, according to chart review, only one physician received methadone (for treatment of chronic pain) and none were treated with buprenorphine. The physician treated with methadone had multiple medical conditions with primary hydrocodone dependence. This physician completed the PHP contract and was licensed in practice at follow-up.

4. Discussion

This study compared outcomes for physicians who underwent PHP-directed ABPT for substance dependence, followed by 5 years of monitoring with random drug tests, in-person meetings, workplace monitoring, AA/NA attendance, and in some cases, reports from treating mental health providers in a system of care management delivered by a PHP. Physicians with opioid use disorders (OUDs) were generally not treated with OST; yet, regardless of the substance(s) they previously used, more than three-quarters of the physicians remained abstinent throughout their monitoring period. Among the minority of physicians who had a positive test, about two thirds never had a second or subsequent positive test. Physicians with OUDs were just as likely to successfully complete their monitoring contract and return to work in medicine as their peers with alcohol or other drug use disorders. In addition, they were no more likely to have a positive urine drug test

or be reported to the state licensing board. It is noteworthy that 10% of the physicians in the any opioid group and 1% of physicians in the alcohol only and non-opioid groups were treated with naltrexone, an opioid antagonist medication. Previous research (Merlo, Greene, & Pomm, 2011; Washton, Gold, & Pottash, 1984) has demonstrated the efficacy of this adjunctive pharmacotherapy among physicians with substance use disorders, and more work is needed to clarify the importance of its use among physicians with opioid use disorder in particular.

The outcomes for individuals with OUDs in this study drastically differ from those of most patients receiving OST (Sheehan, Oppenheimer, & Taylor, 1993). The goal of traditional OST is to decrease or eliminate illicit opioid use by providing a safer “substitute” medication to prevent/alleviate cravings and withdrawal symptoms, allowing the patient to minimize participation in risky behaviors and return to a productive lifestyle. Unfortunately, continued abuse of opioids and other substances is common among OST participants. Adjunctive psychosocial treatment, which is required in OST but varies greatly in quality and intensity across OST programs, is similar to ABPT in that its goal is to address underlying factors that promote substance abuse, and help patients “substitute” healthier coping methods, communication strategies, stress relievers, and ways of functioning in place of the substance use (Merlo, 2012). However, many patients have difficulty maintaining their abstinence after leaving the support and vigilant monitoring provided during OST or formal ABPT programs. In contrast, monitoring programs such as PHPs provide a distinctive option by substantially extending the period of accountability for abstinence. PHP participants transition back home, return to work, and practice utilizing the skills they learned in treatment, all while undergoing monitoring with random drug tests, in-person meetings, and/or workplace monitors. The potential for immediate serious consequences for any detection of substance use (including the risk of losing their licenses to practice medicine) provides an important incentive to remain abstinent. Under such supervision, the vast majority of physicians in this study were able to remain abstinent from alcohol and other drugs, for 5 years or more.

Although physicians are a unique population, the lessons from this study are useful for other groups in treatment. The findings support the view that both the treatment and aftercare environment play significant roles in outcomes (DuPont, 1999). The PHP care management model is dramatically different from typical ABPT for opioid and other drug use disorders, which may explain why ABPT worked for the vast majority of participants in this study; whereas, other ABPT programs often do not. Random monitoring and strict participant accountability for any substance use are key elements that distinguish this model of care management. This conclusion is supported by positive results seen across contingency management studies. PHP care management features intensive treatment at the outset, with continued 12-step participation multiple times per week, and in-person and/or at-work monitoring throughout the PHP experience. In these ways, the model is strikingly different from typical ABPT.

These findings could be seen as irrelevant to populations who lack the resources typically seen among physicians; however, similar outcomes for extremely different populations of drug users, including opioid users, are found among programs that also provide intensive management. Like the PHPs, these programs involve close monitoring with immediate consequences for substance use. For example, Hawaii’s Opportunity Probation with Enforcement (HOPE) manages high-risk drug-using offenders in the community under the supervision of the criminal justice system (Institute for Behavior & Health, 2015). HOPE participants are convicted felons with low levels of education and employment, many of whom are addicted to smoked methamphetamine. HOPE uses frequent random drug testing, and any detection of drug use or other noncompliance is met with immediate, brief incarceration. A randomized controlled study of HOPE probation vs. standard probation showed that HOPE probationers were 72% less likely to use drugs, 55% less likely to be arrested for new crimes, 61% less likely to miss

appointments with probation officers, 53% less likely to have their probation revoked, and spent 48% fewer days incarcerated (Hawken & Kleiman, 2009).

Similarly, successful outcome data have been demonstrated by South Dakota’s 24/7 Sobriety Project for Recidivist Driving Under the Influence offenders. Enforcing total abstinence from alcohol or other drug use is linked to immediate brief incarceration for any violation, including failure to appear for required testing. Using a combination of twice-daily alcohol breath tests or alcohol monitoring bracelets and random urinalysis drug tests or drug patches, participants have high pass rates. Fifty-five percent (55%) of participants never fail a test, 17% fail only once, 13% fail twice and 17% fail three or more times (Mabry, n.d.). Data from these programs suggest that the impressive long-term findings from PHPs may be applicable to other populations (DuPont & Humphreys, 2011). Together these programs providing intensive care management with long-term monitoring comprise what has been termed a new paradigm for recovery (DuPont, 2014), a concept that would benefit from empirical investigation. Although these programs encourage ABPT, what distinguishes them from other approaches to managing individuals with substance use problems is use of long-term random monitoring with swift consequences for substance use and meaningful leverage to enforce abstinence and continued participation.

Results of the present study challenge three troubling features of current health policy regarding treatment of addictions, especially opioid dependence: 1) Addiction is treated as an acute illness with no long-term monitoring; whereas, the data suggest that addiction is a chronic disease; 2) Most research on the treatment of addiction has focused on the goal of finding a pharmacologic therapy or vaccine, and not on the data supporting contingency management linked to long-term intensive and random monitoring; and 3) The focus on “harm reduction” as the best option for treatment, especially for opioid dependence, discourages exploration of abstinence as an attainable primary goal for addiction treatment.

Some important study limitations should be noted. First, the sample was restricted to physicians participating in a PHP. There may be psychosocial factors unique to this population predisposing them to better outcome. In addition, individual PHP policies or licensing board requirements may have prevented some of the participants from using OST, even if they would have wanted to do so. Other physicians desiring OST may have been treated outside of PHP monitoring (though this may have left them ineligible for continued licensure in their state). Second, self-selection bias may have influenced the study results, as not all PHPs opted to participate in the study. The conclusions that can be drawn from these data are tempered by this limitation. Third, although a randomized controlled trial would have been preferable, the data in this study were collected from a naturalistic chart review, and limited information was missing for some individuals. This limits the ability to draw causal inferences with respect to the present data. Fourth, there was significant variability in the number of random urine tests recorded for each participant. In some cases, limited testing (including decreased frequency of testing over time) may have resulted in occasional drug or alcohol use remaining undetected by the PHP, resulting in outcomes that appeared more positive. Fifth, although the post-treatment monitoring period was much longer than most addiction treatment outcome studies, no data were available to assess the potential for relapse after the 5 years of monitoring had been completed. It is possible that some physicians returned to drug and/or alcohol use after completing their PHP monitoring contracts. Sixth, studies assessing OST have not reported 5-year outcomes with urine testing, resulting in a lack of directly comparable data. Despite the limitations, the present study suggests that abstinence-based long-term recovery from OUDs is possible given appropriate treatment and long-term care management with close monitoring. The high rate of success observed among this sample challenges the perceived necessity of including OST as an essential component of treatment for all patients with OUDs. It also encourages study of other groups of individuals with OUDs who receive intensive

monitoring with swift and certain consequences (e.g., criminal justice system programs such as HOPE Probation and 24/7 Sobriety).

4.1. Conclusions and Future Directions

Opioid substitution therapy has significant utility in the treatment of opioid use disorders and has been life-saving for many individuals. It tends to be significantly less expensive in the short-term than ABPT with long-term monitoring, and should remain an option for patients who choose it and are likely to benefit from it. However, the results of this study suggest that it is possible for opioid-dependent individuals to achieve long-term abstinence in an intensive care management model, similar to patients with other substance use disorders. It is unclear whether this may result in cost-savings over the long-term, which should be evaluated in future studies. This model fits with the current move in healthcare to shift the paradigm of care for serious chronic disorders (of which OUDs are a prime example) from brief and disconnected episodes of care to long-term monitoring and care management (DuPont, Compton, & McLellan, 2015). The results of this study may provide additional hope for patients with opioid use disorders who opt against OST due to personal preferences or who are not permitted to use OST due to constraining factors (e.g., job requirements or licensure restrictions). Future research should examine the cost-benefit ratio of allowing individuals in safety-sensitive careers to utilize OST if recommended by their care provider. Data examining ability to practice with skill and safety while maintained on a therapeutic dose of methadone or buprenorphine are lacking and may expand treatment options for these individuals if current safety concerns are found to be unwarranted. Finally, because the effort of multiple research groups to obtain federal funding for the study of addiction among physicians has been met with a lack of interest, more work is needed to document the importance of this topic in order to promote funding of future efforts.

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