

# Perspectives on the Use of Outpatient Parenteral Antibiotic Therapy for People who Inject Drugs: Results From an Online Survey of Infectious Diseases Clinicians

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Injection-related infections require prolonged antibiotic therapy. Outpatient parenteral antimicrobial therapy (OPAT) has been shown to be feasible for people who inject drugs (PWID) in some settings. We report a national survey on practice patterns and attitudes of infectious diseases clinicians in the United States regarding use of OPAT for PWID.

**Keywords.** OPAT; PWID; substance use disorder.

Injection drug use (IDU) is a major risk factor for serious bacterial infections that require prolonged courses of antibiotics including bacteremia, endocarditis, bone and joint infections, and epidural abscesses [1–3]. Parenteral antibiotics are often indicated for such complex infections. Outpatient parenteral antimicrobial therapy (OPAT) allows for continuation of parenteral antibiotic therapy after discharge from the hospital and has been shown to significantly reduce length of stay, decrease health care costs, and increase patient satisfaction [4–6].

Historically, people who inject drugs (PWID) have been systematically excluded from participation in OPAT programs due to complex contextual factors including concerns regarding misuse of peripherally inserted central catheters (PICCs) [7, 8]. Without the option to participate in OPAT programs, PWID are often consigned to complete antibiotics in the hospital, which leads to low patient satisfaction, prolonged lengths of stay, and high rates of patient-directed discharges [9, 10].

Several studies have demonstrated the safety and feasibility of OPAT for PWID, especially when antibiotic treatment is linked to treatment of the underlying substance use disorder (SUD) [11, 12]. The American Heart Association's recently published guidelines on management of endocarditis among PWID acknowledge that OPAT has been shown to be safe and feasible in some patients and offer inclusion considerations [13]. However, citing low-quality evidence, the most recent Infectious Diseases Society of America (IDSA) OPAT guidelines offer no recommendation for the inclusion of PWID in OPAT, leaving clinicians to make decisions on a case-by-case basis [14].

We set out to determine the practice patterns and attitudes of infectious diseases (ID) clinicians in the United States regarding the use of OPAT for PWID.

## METHODS

We conducted an institutional review board (IRB)–exempt, anonymous, and voluntary survey using a Research Electronic Data Capture (REDCap) data collection tool of ID clinicians.

Survey questions were designed to elucidate the role that IDU plays in decisions to discharge patients on OPAT, identify barriers to discharging PWID on OPAT, and determine whether the availability of services such as access to addiction treatment and case management was correlated with OPAT eligibility. The survey was developed by the authors, who represent a group of ID clinicians currently in practice, and the questions were based on previously published peer-reviewed surveys on this topic [7, 15]. Questions were not mandatory. Branching logic was used to omit certain questions based on responses.

The survey was beta tested by the authors for usability, comprehension, and flow. The survey was then piloted with a larger group of ID clinicians at the authors' affiliate institutions to elicit themes that may have been missed in developing multiple choice responses. Beta testing continued until thematic saturation was achieved.

The survey was open for 8 weeks from January 11, 2022, through March 7, 2022. An invitation to participate in the survey was disseminated to members of the IDSA through the IDea Exchange listserv and was promoted on social media platforms. Participation was limited to clinicians practicing in the United States, confirmed by zip code. Reminders were posted on social media after 1 month. The survey was voluntary. No incentives were offered for participation.

A Pearson chi-square test was used to compare respondents who reported that PWID are eligible (PWID-E) with respondents who reported that PWID are ineligible (PWID-I) and

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to assess if there are significant differences in access to OPAT based on demographics, practice setting, local resources, or perceived barriers to inclusion.

The survey instrument is included in the [Supplementary Data](#).

## RESULTS

A total of 239 clinicians responded to the survey, with respondents from all 4 IDSA regions, reflecting broad geographic representation across the United States. The demographic data are summarized in [Table 1](#). One hundred ninety-one (80%) respondents were MDs, 187 (78.2%) respondents practice in an academic setting, and 179 (74.9%) work in an urban setting. The majority (76.9%) reported having access to inpatient addiction services; 86.2% reported having access to outpatient addiction services, but only 36.4% reported that outpatient access was “good” or “excellent.”

Of the 239 clinician respondents, 172 (71.9%) reported that PWID are eligible for OPAT (PWID-E) and 67 (27.9%) reported that PWID are ineligible (PWID-I). Of the PWID-E group, 98 (57%) report 0–5 PWID on OPAT per month, 37 (21.5%) report 5–10, 22 (12.8%) report 10–20, and 15 (8.7%) report >20. Of the PWID-E group, only 48 (27.9%) have an institutional policy for determining eligibility.

Comparison of practice settings, access to addiction resources, and perceived barriers to inclusion between PWID-E and PWID-I are summarized in [Table 2](#). There was no significant

difference in practice setting between PWID-E and PWID-I. Eighty percent of PWID-E and 73.5% of PWID-I practice in an academic setting ( $P = .265$ ); 74.3% of PWID-E and 77.6% of PWID-I work in an urban setting ( $P = .72$ ). There was also no significant difference in access to inpatient addiction services.

There was a significant difference in access to outpatient addiction services; 40.9% of PWID-E reported “good” or “excellent” access compared with 26.5% of PWID-I ( $P = .04$ ).

Access to both inpatient and outpatient social work/case management was also significantly higher for PWID-E; 95.3% of PWID-E reported access to inpatient social work/case management compared with 85.3% of PWID-I ( $P = .03$ ); 42.6% of PWID-E reported access to outpatient social work/case management compared with 21.2% of PWID-I ( $P = .009$ ).

Clinicians reporting PWID-I were more likely to cite risk of tampering with PICCs (76.5% vs 62.6%;  $P = .04$ ) and medical-legal risk (47.1% vs 19.3%;  $P < .001$ ) as barriers to OPAT.

## DISCUSSION

This is the first survey to specifically assess clinician attitudes and behavior toward offering OPAT for PWID across the United States.

The majority of clinician respondents in our study reported that they do offer OPAT to PWID. Practice patterns were consistent across practice settings (urban vs suburban vs rural) and practice types (academic vs nonacademic), suggesting that the use of OPAT among PWID is not limited to a single type of clinician or practice environment. This result is in contrast to a prior national survey of ID physicians from 2017, which found that 70% of respondents never or rarely offered OPAT to PWID even if they were stable on medication for opioid use disorder [15]. While the difference may be due to a different survey sample, it may also reflect a growing awareness among ID clinicians that OPAT is safe, feasible, effective, and cost-saving among PWID [16]. This shift is encouraging, especially given that participants represent diverse geographies, practice settings, and types of clinicians.

Notably, among respondents who reported that PWID are eligible for OPAT, fewer than one-third reported having an institutional policy for determining eligibility. Several groups have developed models to standardize the approach to OPAT for PWID, including implementation of a risk assessment tool and development of formal eligibility criteria [12, 17]. These approaches were developed at the local level and have not been implemented or studied across multiple institutions or practice settings, so most clinicians make case-by-case decisions without formal guidance.

In our survey, respondents who reported that PWID are not eligible for OPAT were more likely to cite risk of tampering with a PICC as a barrier to inclusion of PWID. This finding highlights an educational gap as there is no consistent evidence

**Table 1. Respondent Demographics**

n = 239	No. (%)
Geographic region (IDSA region)	
Northeast	60 (25.1)
West	62 (25.9)
Midwest	39 (16.3)
South	65 (27.2)
Other	13 (5.4)
Clinician type	
Medical doctor (MD)	191 (79.9)
Doctor of osteopathic medicine (DO)	14 (5.9)
Nurse practitioner (NP)	12 (5.0)
Physician assistant (PA)	5 (2.1)
Doctor of pharmacology (PharmD)	17 (7.1)
Years in practice	
0–5	91 (38.1)
6–10	54 (22.6)
11–15	39 (16.3)
16–20	19 (7.9)
>21	36 (15.1)
Practice type (select all that apply)	
University/medical school	187 (78.2)
Private practice	18 (7.5)
Hospital/clinic	80 (33.5)
Federal government	17 (7.1)

Abbreviation: IDSA, Infectious Diseases Society of America.

**Table 2. Comparison Between PWID-E and PWID-I**

Practice Setting and Available Resources				
	Total Respondents (n = 239), No. (%)	PWID Eligible (n = 171), No. (%)	PWID Ineligible (n = 68), No. (%)	P Value
Practice setting				.720
Urban	179 (74.9)	127 (74.3)	52 (77.6)	
Suburban	43 (18.0)	33 (19.3)	10 (14.9)	
Rural	16 (6.7)	11 (6.4)	5 (7.5)	
Access to inpatient addiction services				.198
Yes	183 (76.6)	135 (79.4)	48 (70.6)	
No	45 (18.8)	30 (17.6)	15 (22.1)	
Not sure	10 (4.2)	5 (2.9)	5 (7.4)	
Access to addiction outpatient support				.129
No access	4 (1.7)	2 (1.2)	2 (2.9)	
Not sure	27 (11.3)	18 (10.7)	9 (13.2)	
Yes, but limited	119 (49.8)	80 (47.3)	39 (57.4)	
Yes, good access	70 (29.3)	53 (31.4)	17 (25.0)	
Yes, excellent access	17 (7.1)	16 (9.5)	1 (1.5)	
Is inpatient peer support available for PWID				.644
Yes	76 (31.8)	56 (32.9)	20 (29.4)	
No	87 (36.4)	59 (34.7)	28 (41.2)	
Not sure	75 (31.4)	55 (32.4)	20 (29.4)	
Is peer support available for outpatient PWID on OPAT				.132
Yes	43 (18.0)	36 (21.4)	7 (10.6)	
No	85 (35.6)	59 (35.1)	26 (43.9)	
Not sure	103 (43.1)	73 (43.5)	30 (45.5)	
Is social work/case management available for inpatient PWID				.030
Yes	220 (92.1)	162 (95.3)	58 (85.3)	
No	5 (2.1)	2 (1.2)	3 (4.4)	
Not sure	13 (5.4)	6 (3.5)	7 (10.3)	
Is social work/case management available for outpatient PWID on OPAT				.009
Yes	86 (36.0)	72 (42.6)	14 (21.2)	
No	74 (31.0)	49 (29.0)	25 (37.9)	
Not sure	75 (31.4)	48 (28.4)	27 (40.9)	
Perceived barriers to inclusion				
Risk of patients tampering with PICC line	159 (66.5)	107 (62.6)	52 (76.5)	.040
PICC may be trigger for relapse to drug use	103 (43.1)	70 (40.9)	33 (48.5)	.282
Housing insecurity	189 (79.1)	141 (82.5)	48 (70.6)	.042
Inadequate access to inpatient addiction treatment during hospitalization	87 (36.4)	62 (36.3)	25 (36.8)	.941
Inadequate access to outpatient addiction treatment after hospitalization	131 (54.8)	96 (56.5)	35 (51.5)	.484
Medical-legal risk too high	65 (27.2)	33 (19.3)	32 (47.1)	<.001
Colleagues not all aligned—no consensus in my ID practice whether OPAT is appropriate for PWID	100 (41.8)	68 (39.8)	32 (47.1)	.302
Primary hospital teams (medicine, surgery) would not be supportive with OPAT for this population	60 (25.1)	41 (24.0)	19 (27.9)	.524
Patient would not be accepted by visiting/home health nurse services or pharmacy/infusion company	157 (65.7)	115 (67.3)	42 (61.8)	.420
Payor/insurance issues	88 (36.8)	66 (38.6)	22 (32.4)	.367
Other	26 (10.9)	20 (11.7)	6 (8.8)	.520
No barriers	1 (0.4)	1 (0.6)	0 (0.0)	.527

Abbreviations: ID, infectious diseases; OPAT, outpatient parenteral antimicrobial therapy; PICC, peripherally inserted central catheter; PWID, people who inject drugs; PWID-E, respondents who reported that PWID are eligible; PWID-I, respondents who reported that PWID are ineligible.

that having a PICC adds risk in this population. A systematic review of OPAT outcomes among PWID showed no difference in PICC complications among PWID when compared with non-PWID [10].

For some PWID, the use of OPAT may actually be a form of harm reduction by decreasing the rate of patient-directed discharge without antibiotics and in-hospital drug use-related morbidity. A national database study of drug use-associated

endocarditis from 2010 to 2015 showed that the rate of patient-directed discharges was 14.2% and rising, representing a high risk for incomplete treatment of infection [9]. Eligibility for a home discharge with OPAT may help to retain patients in care through the completion of antibiotic courses. Moreover, while ongoing drug use is common among PWID with serious infections, the risk is not necessarily mitigated by keeping patients hospitalized. One study showed that rates of in-hospital drug use may be as high as 40% [18], and another showed that the rate of recurrent bloodstream infections was *higher* for patients who remain hospitalized than for patients who are discharged with a PICC [19]. Our data reinforce the importance of both clinician education and the need for guidance regarding OPAT eligibility criteria and patient selection.

Our study also illustrates the importance of key resources to support the use of OPAT for PWID. In our survey, respondents who offered OPAT to PWID were more likely to have access to both inpatient and outpatient social work and case management and were more likely to report “good” or “excellent” outpatient addiction care access. These results illustrate clinicians’ understanding that management of infectious complications of IDU requires not only optimizing antimicrobial management but also treatment of underlying SUD and linkage to care after discharge. Several studies have shown that pairing courses of OPAT with addiction treatment can lead to favorable outcomes, and there is an ongoing prospective randomized clinical trial assessing the efficacy of pairing OPAT with buprenorphine [11, 12, 20]. A structured multidisciplinary approach to discharge decision-making that includes case management and linkage to outpatient addiction care has been shown to be effective in creating individualized care plans [21].

Our study has several limitations. First, our sample of respondents may be skewed by recruitment methods that relied heavily on technology-based platforms including the IDSA list-serv and social media. The majority of respondents were from academic medical centers, so results may be difficult to generalize to different practice settings. Second, we did not control for multiple respondents from the same medical center, so attitudes and practices from select medical centers may be over-represented. Third, clinicians who already offer OPAT for PWID or who have strongly held opinions about the care of PWID may have been more likely to take our voluntary survey, and therefore the results may overestimate the actual proportion of ID clinicians who offer OPAT for PWID. Taken together, these limitations may account for the high proportion of respondents with access to key resources such as addiction services. Our study highlights that even among a sample that may overestimate OPAT eligibility, there are limited local and national recommendations to guide practice. Finally, this study must be interpreted in the context of a landscape that is shifting toward more use of oral antibiotics and long-acting lipoglycopeptides [22, 23]. OPAT may be only one option for treatment

of certain severe infections, and as we accrue more data on the use of different treatment strategies for PWID, we may continue to see shifts in practice patterns.

## CONCLUSIONS

A high proportion of respondents to this national survey offer OPAT for PWID, but only a minority have an institutional policy for eligibility. As the state of the evidence has evolved since the last OPAT guidelines in 2018, updated evidence-based guidelines are needed to outline a framework for inclusion of PWID in OPAT, to educate clinicians, to direct investment toward key resources such as addiction consultation, case management, and social work, and to facilitate standardized care across settings. This rapidly changing field calls for a responsive treatment guideline.

## Supplementary Data

**Supplementary materials** are available at *Open Forum Infectious Diseases* online. Consisting of data provided by the authors to benefit the reader, the posted materials are not copyedited and are the sole responsibility of the authors, so questions or comments should be addressed to the corresponding author.

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**Patient consent.** This study does not include factors necessitating patient consent.

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