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Agency-level financial incentives and electronic reminders to improve continuity of care after discharge from residential treatment and detoxification

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ABSTRACT

Background: Despite the importance of continuity of care after detoxification and residential treatment, many clients do not receive further treatment services after discharged. This study examined whether offering financial incentives and providing client-specific electronic reminders to treatment agencies lead to improved continuity of care after detoxification or residential treatment.

Methods: Residential (N = 33) and detoxification agencies (N = 12) receiving public funding in Washington State were randomized into receiving one, both, or none (control group) of the interventions. Agencies assigned to incentives arms could earn financial rewards based on their continuity of care rates relative to a benchmark or based on improvement. Agencies assigned to electronic reminders arms received weekly information on recently discharged clients who had not yet received follow-up treatment. Difference-in-difference regressions controlling for client and agency characteristics tested the effectiveness of these interventions on continuity of care.

Results: During the intervention period, 24,347 clients received detoxification services and 20,685 received residential treatment. Overall, neither financial incentives nor electronic reminders had an effect on the likelihood of continuity of care. The interventions did have an effect among residential treatment agencies which had higher continuity of care rates at baseline.

Conclusions: Implementation of agency-level financial incentives and electronic reminders did not result in improvements in continuity of care, except among higher performing agencies. Alternative strategies at the facility and systems levels should be explored to identify ways to increase continuity of care rates in specialty settings, especially for low performing agencies.

1. Introduction

Continuity of care after a client leaves detoxification (detox) or residential treatment is important to recovery from a substance use disorder (SUD), and disruptions in the continuum increase the risk of relapse (Blodgett et al., 2014; McKay and Hiller-Sturmhofel, 2011). Yet, many clients do not receive treatment services after being discharged from these two levels of care. In this study, we tested two interventions at the agency level, aimed at improving continuity of care: financial incentives and electronic reminders.

1.1. Importance of continuity of care

Timely transition to residential or outpatient treatment after detox is a key step for recovery, since detox by itself does little to address social and behavioral problems that are associated with SUDs (Blodgett et al., 2014; McLellan et al., 2005), which explains why detox is commonly recognized as preparation for treatment rather than treatment itself. SUD treatment within a short window after detox discharge has been associated with better outcomes. Clients that had "continuity of care", defined as follow-up care within 14 or 30 days after leaving detox were less likely to have a detox readmission, (Lee et al., 2014; Mark et al., 2006) as well as reduced criminal justice involvement and

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improved employment and housing status (Ford and Zarate, 2010; Lee et al., 2014; McCusker et al., 1995; McKay, 2009; Sannibale et al., 2003). Continuity of care after residential treatment is also important for recovery (Blodgett et al., 2014) and is related to higher abstinence rates at one year follow-up (DeMarce et al., 2008) and lower risk of death in the two post-discharge years (Harris et al., 2015).

Although representing different modalities of substance abuse care, detox and residential treatment share the problem that large proportions of their clients do not receive further treatment services after discharge. Many clients have multiple detox episodes without receiving any follow-up treatment. Multiple studies point to less than half of clients in their samples achieving continuity of care (Campbell et al., 2009; Carrier et al., 2011; Haley et al., 2011; Lee et al., 2014; Mark et al., 2006; Specka et al., 2011). Similarly, continuity of care after residential treatment is low. In five states' public-sector systems, continuity rates ranged from 15% to 60% (Garnick et al., 2009). In a study with veterans, only 32% of patients had two or more continuing care visits during the month after discharge (Schaefer et al., 2005).

1.2. Interventions targeting performance improvement

Providing financial incentives and timely electronic reminders with client information to treatment agencies are two potentially effective strategies for improving treatment quality. To the best of our knowledge, no prior studies have addressed the influence of these strategies on continuity of care after discharge from residential treatment or detox. Studies focusing on incentives and electronic reminders in other areas provide useful evidence of the potential of these interventions for improving performance. In 1992, Maine implemented performance-based contracting (PBC) by including specific performance measures in their contracts with substance abuse treatment providers (Commons et al., 1997) and then updated their PBC in 2007 (Brucker and Stewart, 2011). The original implementation resulted in a reduction in substance use and improved social functioning among clients, as well as improved delivery of contracted amount of services to clients (Commons et al., 1997). However, preliminary findings of Maine's revised PBC resulted in no significant effect on waiting time or treatment retention (Reif et al., 2014). PBC implementation in Delaware in 2001 was associated with increased capacity utilization, higher client participation, a reduction in wait time for treatment, and increased length of stay (McLellan et al., 2008; Stewart et al., 2013).

Research on electronic reminders for quality improvement in general medical settings shows effectiveness in improving provider behaviors related to preventative services such as screening, identification of at-risk-behaviors (Dexheimer et al., 2008; Feldstein et al., 2006; Garg et al., 2005) and adherence to prescribing guidelines (Bryan and Boren, 2008; Schedlbauer et al., 2009). Graphical feedback regarding performance has also been shown to improve clinician protocol adherence (Andrzejewski et al., 2001). A recent review of controlled trials found that electronic reminders and feedback can be effective in improving provider performance, though the effects have generally been small to moderate (Ivers et al., 2012).

1.3. Overview of the study and goals

We examined the impacts of two agency-level interventions, incentives and electronic reminders (referred to as "alerts" in our study) on a performance measure for continuity into treatment after residential treatment or after detox. We randomized treatment agencies in Washington State into four groups, which received one, both,[1] or neither intervention (control group). Specifically, the goals of this study were to:

- Examine if offering incentives only or providing client-specific alerts only leads to improved continuity of care after discharge from detox or residential care.
- Examine if client-specific alerts in combination with incentives leads to additional improvement in continuity of care beyond that of incentives only or alerts only.

2. Methods

This study was approved by the Brandeis University and Washington State Institutional Review Boards.

2.1. Description of interventions

2.1.1. Incentives

Guided by a review of design features of incentive payment systems (Eijkenaar, 2012; Eijkenaar, 2013; Horgan, 2012; Rosenthal and Dudley, 2007), the amount of incentives that agencies were eligible to receive each quarter was based on earned points and built on the methods initially developed by researchers in the Brandeis/Harvard NIDA Center (Tompkins et al., 2009) and implemented by the Centers for Medicare and Medicaid Services (CMS) to reward for performance on a set of specified measures and improvement relative to their baseline (CMS, 2007; James, 2012). Agencies in the Incentives arms could earn points based on quarterly performance rates in two ways:

2.1.1.1. Achievement points. Agencies could earn up to 10 points for meritorious performance above a minimum achievement threshold. Similar to CMS's approach, the achievement threshold was the 50th percentile of agencies' continuity of care rates. Points were based on how far above this threshold the agency's performance was relative to a realistic benchmark, which should reflect a high, but obtainable level of excellence. The benchmark was the 90th percentile of agency continuity rates. Ten points were awarded if an agency's rate was at or above the benchmark. Using baseline data, the achievement threshold and benchmark for detox were 29% and 37%, respectively. For residential agencies, the achievement threshold and benchmark were 40% and 56%, respectively.

2.1.1.2. Improvement points. Treatment agencies could earn up to 10 points for raising their continuity of care rate, regardless of where their rate was relative to the achievement threshold. Improvement points were based on how far above each agency's own baseline the agency's performance was, relative to the overall benchmark.

Each quarter, an agency was awarded the maximum of its achievement and improvement points. When agencies had less than 20 discharges in a quarter, data from subsequent quarters were combined until reaching 20 discharges. We held webinars and presentations for agency staff to learn about the point system. Twice a quarter, agencies received information on their baseline and the estimated and final calculation of points earned.

Incentive payments to agencies were based on both the total number of discharges and points earned. We determined the amount based on: 1) predictions using scenarios with a variety of assumptions about how many agencies would improve, how much they would improve, and how stable the improvement would be; and 2) the maximum amount of funds the state could spend on incentives across the treatment system ($1.5 million USD). The payment table to agencies for any combination of size and points can be found on the project website (Washington State DSHS, 2017). Table 1 shows examples of how points and corresponding incentives were calculated.

2.1.2. Alerts

The alerts were in the form of an Excel workbook, sent weekly through secure email by Washington State's Behavioral Health Administration (BHA) to treatment agency staff, with information to

[1] Because Washington State had only 12 detoxification agencies, these agencies were randomized into three arms: each intervention alone and a control group.