Trust in Hospital Physicians Among Patients With Substance Use Disorder Referred to an Addiction Consult Service

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Trust in hospital physicians among patients with substance use disorder referred to an addiction consult service: a mixed-methods study

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**Keywords:** Addictive behavior, substance-related disorders, hospitalization, treatment adherence and compliance, surveys and questionnaires
Abstract

Background: Trust is essential in patient-physician relationships. Hospitalized patients with substance use disorders (SUD) often experience stigma and trauma in the hospital, which can impede trust. Little research has explored the role of hospital-based addictions care in creating trusting relationships with patients with SUDs. This study describes how trust in physicians changed among hospitalized people with substance use disorders who were seen by an interprofessional addiction medicine service.

Methods: We analyzed data from hospitalized patients with SUD seen by an addiction consult service from 2015 to 2018. Participants completed surveys at baseline and 30 to 90 days after hospital discharge. Follow-up assessments included open-ended questions exploring participant experiences with hospitalization and the addiction consult service. We measured provider trust using the Wake Forest Trust scale. We modeled trust trajectories using discrete mixture modeling, and sampled qualitative interviews from those trust trajectories.

Results: Of 328 participants with SUD who had prior hospitalizations but had not previously been seen by an addiction consult service, 196 (59.8%) had both baseline and follow-up trust scores. We identified three groups of patients: Persistent-Low Trust, Increasing Trust, and Persistent-High Trust and four qualitative themes around in-hospital trust: humanizing care, demonstrating addiction expertise, reliability, and granting agency.

Conclusions: Most participants retained or increased to high trust levels following hospitalization with an addiction consult service. Addiction consult services can create environments where healthcare providers build trust with, and humanize care for, hospitalized patients with SUD, and can also mitigate power struggles that hospitalized patients with SUD frequently experience.

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**Background**

Trust is essential in patient-physician relationships\(^1\) patient trust in physicians impacts both patient treatment adherence and patient engagement in care\(^2\). Trust between patients and physicians may be most challenging to build in in-patient settings, where patients experience an immediate vulnerability to suffering and lack of power\(^3\). Physicians and other members of care teams predominately hold the power in medical decision making in the hospital, with little consciousness of power dynamics\(^4, 5\).

Patients perceive these power dynamics and likewise recognize the lack of agency or control allotted to them in hospital settings\(^6\).

This dynamic may be particularly challenging for patients with substance use disorders (SUDs). People with substance use disorders commonly experience stigma and discrimination in healthcare settings, which can decrease trust in healthcare providers\(^7\). Hospitalization can also be traumatizing, and can exacerbate pre-existing trauma related symptoms, which commonly co-occur with SUDs\(^8, 9\). Particularly for patients with SUDs, hospitalization is a challenging time to establish trust in providers.

Little research has explored the role of hospital-based addictions care in creating trusting relationships with patients with SUDs. Hospital-based addiction care teams have emerged as a gold-standard for caring for patients with substance use disorders in the hospital, both improving patient engagement\(^10\) and lowering substance use\(^11\) during and post-hospitalization. Understanding trust in physicians among patients referred to hospital-based addiction care teams may provide insight into how hospital environments more broadly can facilitate trusting relationships. This study describes trajectories of trust among hospitalized people with substance use disorders who were referred to an interprofessional addiction medicine service.
Methods

The Improving Addiction Care Team (IMPACT) is a hospital-based addiction medicine consult service at an academic medical center in Portland, Oregon. IMPACT includes care from addiction medicine physicians, advance practice providers (APPs), social workers, and peers with lived experience. IMPACT provides comprehensive SUD care, including pharmacotherapy (e.g. methadone, buprenorphine-naloxone) and behavioral support (e.g. brief intervention). IMPACT supports rapid-access pathways to treatment after hospital discharge, and embraces principles of harm reduction and trauma-informed care. Any hospital provider, including social workers, can refer patients with known or suspected substance use disorders to IMPACT, other than tobacco use disorder alone. Earlier publications describe the IMPACT model, outcomes, and peer roles. Previous research suggests that one benefit of addiction consult services is the broader culture shift within hospitals, among providers from different fields, to better care for people with addiction. IMPACT seeks to not only care for individuals with addiction in the hospital, but also to ensure patients receive equitable care from all treating care teams. Thus, IMPACT works both through directly connecting with patients, and through engaging other providers to help improve care systems for patients with addiction.

The Oregon Health & Science University's Institutional Review Board approved this study (#00010846).

Participants

Between September 2015 and August 2018, researchers consented and enrolled interested participants in IMPACT research. All patients who were over 18 and who were referred to IMPACT were eligible to participate; most, but not all, were seen at least once by the IMPACT team during hospitalization. Patients were typically referred to IMPACT early during hospitalization. The IMPACT team typically saw patients before the clinical team. This study includes data from participants during their first IMPACT
admission, who reported having ever had a previous hospitalization, allowing comparison between trust in hospital providers before and after IMPACT hospitalization.

Data collection and measures
A research assistant who was not part of the clinical team administered a baseline survey during hospitalization and follow-up survey 30-90 days after hospital discharge. Participants were offered a $25 gift card to Fred Meyer or Starbucks for participating. Surveys focused on demographics, substance use, and patient experience, and took 15-20 minutes to complete. After completing close-ended follow-up surveys, researchers asked brief open-ended questions about participants’ experiences during hospitalization and care following discharge (Appendix 1). Qualitative interviews did not explicitly ask about trust. Survey data was kept in REDCap. Interviews were either transcribed directly during the interview or audio recorded and transcribed after interview completion. All transcripts were transferred to Atlas.ti for qualitative coding.

Measures
We used the Wake Forest Provider Trust Scale\(^{18}\) (referred to as ‘trust score’ in this paper), to assess participant trust in providers at baseline and follow-up, scaled from 10 (low trust) to 50 (high trust)\(^{18}\). The Wake Forest Provider Trust Scale has previously been used to assess trust among people with substance use disorders\(^{19}\), and separately, in general populations in inpatient settings.\(^{20}\) The items asked about trust in their hospital physicians in general, including IMPACT physicians. At baseline, the survey asked participants to think specifically of hospital-based doctor from past hospital visits (e.g. not outpatient doctors). At follow-up, the survey asked participants to think specifically of hospital-based doctors from the admission when the patient was referred to IMPACT (Appendix 1). We also used the Addiction Severity Index-Lite scores to capture substance use in the 30 days before hospitalization.\(^{21, 22}\)
Mixed methods analysis

This study is part of the larger IMPACT intervention project, which uses a multiphase mixed methods design.\textsuperscript{23} We started with qualitative and quantitative studies to inform the intervention\textsuperscript{13, 24}, and have conducted multiple, iterative qualitative\textsuperscript{15, 25}, quantitative\textsuperscript{10, 26, 27}, and mixed-methods\textsuperscript{28} evaluations at different time-points. For this particular analysis, we use an embedded design. We collected quantitative and qualitative data concurrently from patients during and after the intervention, but we analyzed data sequentially, using quantitative data to select which qualitative data to include in this analysis, and using qualitative findings to further explain and contextualize the quantitative findings.

Quantitative

We identified participant trust trajectories using discrete mixture modeling to explore how trust changed among participants. We evaluated censored normal models with between two and six groups. We planned to select our best-fit candidate models by identifying the models with the lowest Bayesian Information Criterion (BIC) scores, and then choose our final model among lowest BIC models.\textsuperscript{29} We used the user-written Stata program Traj to analyze data.\textsuperscript{30, 31} Traj assumes that data missing is Missing at Random\textsuperscript{32}, and all patients (n=328) were assigned a trajectory.

Qualitative

We then used qualitative data to contextualize quantitative findings and to explore factors that may shape patient trust. We conducted a thematic analysis\textsuperscript{33} of responses to the open-ended questions from the follow-up assessments of selected participants. From the 328 participants included in the quantitative analysis, we randomly sampled respondents in batches from each trajectory group. We continued sampling and analysis until we reached theme saturation, with the final qualitative sample consisting of 80 participants. We analyzed data using an inductive approach at a semantic level\textsuperscript{33}.
After initial codebook generation, two authors (DC, AP) coded all transcripts and reconciled codes in regular coding meetings, revising the codebook iteratively. We then identified and finalized themes during multiple discussions with the full research team, prioritizing findings that were relevant to the research questions and had potential clinical implications.

**Results**

**Quantitative results**

In our study, 479 patients consented to participate in the survey and completed at least one baseline survey question. Of those, 375 patients had been previously hospitalized at least once. 328 had complete baseline data and either all-complete or all-missing follow-up data. Of those, 196 (59.8%) participants had both baseline and follow-up scores. Mean (SD) trust scores were 31.8 (SD= 9.0) at baseline and 39.2 (SD=8.0) at follow-up. We report patient characteristics in Table 1.

Our final discrete mixture model had four trajectories (Figure 2). Two groups had high trust at baseline that stayed the same or increased, and we combined these groups into one. We sampled from three trajectories for qualitative analyses: Persistent-Low Trust (low baseline trust that stays the same); Increasing trust (low baseline trust that increases), and Persistent-High Trust (high baseline trust that stays the same or increases). Four qualitative themes emerged that explained quantitative trajectories, including the importance of: humanizing care, granting agency, reliability, and demonstrating expertise.

**Qualitative results**

**Humanizing Care**

Participant perceptions of humanizing care emerged consistently as an instrumental component of trust. Participants in the Persistent-High Trust and Increasing-Trust groups frequently illustrated this by
conveying IMPACT as having a non-judgmental, non-discriminatory, and compassionate approach. As one Increasing-Trust Group participant described, “whether it was a warm blanket or just holding my hand [while] getting my blood drawn,” IMPACT “walked me through the whole process.”

Participants in the higher trust groups commonly described feeling genuinely cared about, “like I was somebody to them.” As one Increasing-Trust Group participant stated, “it isn't just some phony thing, they really care, you can tell. And I respect that a lot.”

Similarly, participants in both groups often cited IMPACT as attentive for “taking the time” to listen and talk. Frequent check-ins were viewed as caring and helped maintain trust, especially in the face of hospital isolation and lengthy stays. As one Increasing-Trust group participant described,

“I would just be sitting in my room and they would show up and they would just help me. Like, every day. Every day I knew they would check on me and see me and visit. And just be there and listen and know that I wasn't alone.”

Many participants in the Increasing-Trust group suggested that talking with social workers and peer mentors was validating and a cornerstone for trust. Furthermore, participants in the Increasing-Trust group described the importance of feeling respected by doctors who “didn’t talk...to me like I [was] stupid” or “judge me for being an alcoholic.” Participants in this group often framed humanizing and authentic care as unique from past hospital experiences, where they felt providers had withheld treatment and didn’t “give a [crap] about you” if you were a “drug addict.” Another participant reflected, “I'd never had that much help in the hospital before with my addiction, and it made all the difference.”
In contrast to the higher trust groups, participants in Persistent-Low Trust group frequently described feeling treated as inferior and suspect due to their drug use. One participant described being “talked to like a little kid,” and many indicated that they felt treated “like an addict.” Frequently, Persistent-Low Trust participants described feeling as if general hospital staff distrusted them, as if “everything I said was treated as a lie.” Commonly, this was in the context of pain, as respondents felt providers “discount everything you say as being drug-seeking.” Many felt staff were automatically suspicious of active use:

“[They] made me feel like they always thought that I was using or gonna use or something. They made sure that I didn’t cheek my meds and shit like that. That wasn’t cool. I wish they would have trusted me more.”

While participants with Persistent-Low Trust frequently reported unfavorable treatment by general hospital providers and staff, they often made exceptions for IMPACT as the only non-discriminatory and compassionate providers. One participant, who expressed that “[IMPACT] treated me like I was a human being,” still felt discriminated against by a cardiac surgeon:

“I said ‘you wouldn’t have given me my heart valve if you knew I was on suboxone?’ He said ‘no I wouldn’t. 100% of you people relapse again, so no I wouldn’t have done it’[…] He didn’t know nothing about what I do on a daily basis to take care of myself…I felt like he was just discriminating and put everybody who had ever had a past drug experience in a pot.”

Granting Agency
Respondents in all three groups described agency as an important element contributing to trust. Frequently, participants in the Persistent-High Trust and Increasing-Trust groups described feeling autonomy, and that IMPACT providers honored their preferences without “push[ing] any agenda.” Participants described feeling listened to. As one participant with increasing trust stated, “they didn't try to shy away from any of the things I suggested. The treatment plan, the overall agenda, it fit my wants and my needs 100%.”

Many participants in these groups described feeling self-determination in hospital care was novel. As one participant said, “you don’t always have a voice, especially with addiction.” Participants also valued the freedom to choose whether or not to quit using, citing the IMPACT peer who “put the ball in my court.”

While most participants in the Increasing-Trust group valued autonomy in treatment and recovery, some acknowledged the importance of being held accountable for addiction-driven behaviors and interpreted this accountability as an act of care. One participant recalled asking a night-shift nurse for opioid pain medication to “help with sleep”:

“She saw right through everything and she knew I was just trying to get something to knock me out cause that’s what I was used to...at first I was kinda pissed off, but that was more my addiction. That was one of the things that kicked off the respect I had for the hospital. They actually cared about me, they weren’t just gonna give me something to shut me up.”

Conversely, participants in the Persistent-Low Trust group often expressed frustration when describing the lack of agency in their treatment plan. Some respondents felt their care options were
restricted. One patient describes their preference for outpatient IV antibiotics was “immediately taken off the table because of my IV drug use history.” Other participants reported feeling more pressured, or “bombarded” by providers and “pushed” into methadone or buprenorphine treatment. One participant described: “I don't like to be told what to do... that can be detrimental to my health.”

**Reliability**

Reliability was an important aspect of trust across all three groups. Participants in the Persistent-High Trust and Increasing-Trust groups commonly described IMPACT as dependable, true to their word, and subsequently trustworthy.

Increasing-Trust participants were particularly likely to frame these experiences as unusual and surprising when contrasted with their past hospital experiences. As one participant reported, “Everything was exactly as [IMPACT] said it was gonna be. I was worried that it wasn’t. ‘Cause that had never been the case before. Until I dealt with the IMPACT team.”

Experiences of IMPACT’s reliability among Persistent-High Trust and Increasing-Trust participants were especially salient relating to discharge plans, where the team made “double sure” to coordinate effectively. As one Increasing-Trust participant recalled,

“Even after I left the hospital, I figured, in my mind, you know, they said they were gonna continue, but I figured they might not be as attuned. But no, they’re on me. If I miss an appointment they’re on me, checking on me. Which is awesome.”
In contrast, respondents in the Persistent-Low Trust group were more likely to express disappointment or frustration when their expectations did not match their experiences of IMPACT. In such instances, participants perceived IMPACT to be unreliable and, resultantly, untrustworthy. For example, one participant stated, “I was told I wouldn’t have to go through withdrawal, and I did.” Some respondents in this group described discrepant expectations as damaging:

“[IMPACT physician would] say oh, I’m gonna see you here and then she would get a call and the other doctors would say oh, I’m sorry she’s not coming... and it just made me feel like I wasn’t important enough.”

Frequently, it was after hospital discharge where participants felt this mismatch. Respondents with Persistent-Low Trust commonly expected greater contact with IMPACT after discharge, leaving some participants to feel abandoned or let down. Additionally, even within the High Trust groups, respondents commonly desired greater follow-up after discharge, with one Increasing-Trust participant feeling “flung right back out there” with limited support.

**Demonstrating Expertise**

Respondents in each group frequently framed providers’ approach to SUD symptom management as an important factor in their appraisal of provider trustworthiness, specifically as it pertained to withdrawal management, medication treatment, and pain management.

Participants in the Persistent-High Trust group described IMPACT as “quick and thorough and accurate” when treating withdrawal or offering medication for alcohol and opioid use disorder. As one participant flatly put it, “they gave me medicine and it worked.”

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While Increasing-Trust participants also identified IMPACT’s SUD expertise as critical to their positive care experience, they were more likely to frame this as exceptional compared with past hospital experiences. This was particularly true when it came to withdrawal management and medication. As one participant expressed, “it’s the best care I’ve ever received regarding my addiction… the medication to help me stay off heroin, so I don’t get sick anymore.” Participants in this cohort described IMPACT’s SUD expertise as alleviating and effective, perceived by some as an extraordinary act of care.

For Increasing-Trust respondents, efficient withdrawal management was often a crucial first step in demonstrating expertise and trustworthiness. In contrast, participants in the Persistent-Low Trust group frequently felt that their pain was undertreated. As one participant reported, “they didn’t want to give me anything for my pain. They didn’t give me enough medication to cut the teeth on a baby, it was really ridiculous. They wouldn’t go up on the dose or anything.” Similarly, another Persistent-Low Trust participant felt that they were “just ripped me right off the oxycodone and started given’ me suboxone and whatever else. I’m gonna tell you right now suboxone and all that other crap doesn’t work…” If participants felt their pain was untreated this eroded trust, this led to disagreements and power struggles between participants and providers around pain medication, as outlined above (Granting Agency).

Discussion

In this study, among participants with Persistent-Low Trust, Increasing-Trust, and Persistent-High Trust, we identified four qualitative themes central to participants’ trust in hospital physicians: providing humanizing care, granting agency, reliability, and demonstrating addiction expertise. While these
themes emerged across all three groups, participant experiences, and the relationships of these themes, differed by group.

Numeric trust scores in our study are similar to previous studies of participants with SUDs, but lower than the population norm. Our sample’s average baseline trust score was 31.8 and follow-up score was 39.2. A national sample of trust in physicians by participants in primary care clinics found an average Wake Forest Scale trust scale of 40.8. In a study of trust in physicians among women in an urban, community-based SUD in the United States, participants’ average trust score was 32.7, more similar to our baseline score than that of the national sample.

Using trajectories allowed us to capture differences in sub-populations in our sample, which included two groups with lower-than-average trust scores at baseline. Following discharge, the Increasing-Trust group’s trust score rose to levels similar to those with high trust at baseline. When read in the context of qualitative findings, this suggests that addiction consult services may play a role in improving trust to near-normal levels among participants with low trust at baseline. Importantly, our quantitative questions prompted specifically about trust in physicians, but our qualitative questions asked about patients’ experience with hospital addictions care more broadly. It is possible that trust in other care team members, other than physicians alone, improved over the course of hospitalization, but additional research is needed to explore this. Notably, our earlier research showed that peers, working as part of our ACS, facilitate trust-building between patients and care team members, including physicians. It is likely that trust in physicians improved not only because of the work of physicians in building trusting relationships, but because of the efforts of multiple members of the ACS. This has important implications for future work: first, all care team members may play important roles in building trusting relationships with patients with substance use disorders; second, additional research should explore if
and how trust in other care providers changes over the course of hospitalization in the context of referral to an ACS.

Our qualitative findings build on existing literature about trust and patient-experience among hospitalized adults with SUD. Previous research at our institution – before IMPACT - identified that patients with SUD valued providers who understood addiction, wanted treatment choices, and wanted medication treatment in the hospital.\textsuperscript{24} Our results map onto these ideas of trusting physicians who grant agency, and seeing addiction expertise demonstrated by those physicians. Our work builds on earlier work describing the mutual mistrust and power struggles between patients and hospital providers around pain medication\textsuperscript{35}, and fears that people who use drugs often hold about being mistreated or discriminated against in hospitals.\textsuperscript{35-37} Our findings highlight how an addiction consult service can address these gaps for some, but not all, patients. Humanizing care and demonstrating addiction expertise are important pillars of improving trust, but pain management remains a challenging topic with patients, and may particularly be challenging to engage in discussions with those with low trust at baseline.

Our study has several important limitations. First, our study population lacks racial and ethnic diversity. Historically these populations have more negative experiences in healthcare. While our findings may apply, additional work is needed understand and mitigate mistrust in these groups. Second, this study uses data from a single academic medical center with an addiction consult service; additional work is needed to understand patient-physician trust in broader settings. Third, it is possible that the Wake Forest Provider Trust Scale, which was originally validated for use in primary care settings, does not accurately capture trust among hospitalized patients with substance use disorders, though previous research has used the scale for hospitalized patients, and separately, patients with substance use disorders.\textsuperscript{19, 20} Future research should evaluate validation for the score for hospitalized
patients with substance use disorders. Fourth, we had originally hoped to evaluate associations between covariates and trust trajectories using regression modeling. However, our sample size was insufficient for analyses. Additional research work should also evaluate potential associations with trajectory membership in larger cohorts. Finally, as previously mentioned, our research focused specifically on physicians, but many healthcare team members may have opportunities to contribute to building trusting relationships with patients with SUDs. Future research should explore dynamics of trusting relationships among other healthcare team members.

Our study has important implications for physicians and health systems. The four themes (providing humanizing care, granting agency, reliability, and demonstrating addiction expertise) are ways that all hospital providers can build and maintain trust with hospitalized adults with SUD. These findings may be particularly important for hospitalists, who are in a unique position to positively impact the care of participants hospitalized with SUDs. In this study, we did not isolate components of ACS care delivery that improved trust (e.g. initiation of MOUD), and it is possible that hospitalists and other hospital-based care team members are able to help build trusting relationships with patients without an ACS. Our institution leads an interstate interprofessional ECHO, which supports healthcare systems and care team members to strengthen addiction care at clinical sites across Oregon. This ECHO has helped support providers to integrate trauma-informed care principles into care systems, and consider harm reduction approaches where possible, which may help build trust with patients. It is our experience that while hospital-based care team members can work to individually improve care for patients with addiction, ACS can help mobilize resources to achieve change, and shift culture quickly, to improve inpatient care. Future research should explore which components of care delivered by ACS most contribute to building trusting relationships, and to what degree hospital-based care team members can enact these interventions in the absence of an ACS.
Our findings suggest that beyond initiating SUD treatment, addiction consult services may increase the trustworthiness of hospital-based physicians by reducing stigma, serving as a catalyst for broader culture change38, and supporting more trusting patient-provider relationships. This matters because trust-building in the hospital may have important implications for health outcomes including completing recommended medical therapies and engaging in follow up care, though these associations have yet to be rigorously evaluated in the literature.40-42

This research is an important first step in understanding elements and experiences of trust in hospital physicians among patients with SUD. Future research should explore how changes in trust affects patient outcomes. Further research is also needed to understand how to best create trusting relationships with patients who have Persistent-Low Trust, regardless of addiction consult service intervention.

Conclusions

Trust is critically important in patient-physician relationships, and can improve patient engagement in care and care continuity. Addiction consult services may help support both patients and non-addiction consult providers in improving trusting relationships.

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Roles

CK, DC, CN, and HE conceptualized the study idea. CK curated and analyzed quantitative data; DC and AP curated and analyzed qualitative data. All authors participated in qualitative analysis meetings. CN and HE provided qualitative method support; CK designed quantitative methods. HE oversaw project administration and supervision. CK, DC, and AP wrote the original draft. All authors reviewed, edited and approved of the manuscript.

Conflict of Interest

The authors have no conflicts of interest.

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Table 1. Participant demographics, grouped by trust trajectory

<table>
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<tr>
<th></th>
<th>Total sample n=328</th>
<th>Persistent Low Trust n=21</th>
<th>Increasing Trust n=103</th>
<th>Persistent High Trust n=204</th>
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<tr>
<td>Age (years)</td>
<td>44.0 (12.5)</td>
<td>46.0 (11.4)</td>
<td>42.0 (11.8)</td>
<td>44.8 (12.9)</td>
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<td>Gender</td>
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<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Male</td>
<td>211 (64.3%)</td>
<td>15 (71.4%)</td>
<td>56 (54.4%)</td>
<td>140 (68.6%)</td>
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<tr>
<td>Transgender</td>
<td>3 (0.9%)</td>
<td>0</td>
<td>1 (1.0%)</td>
<td>2 (1.0%)</td>
<td></td>
</tr>
<tr>
<td>Race (Caucasian) (n=316)</td>
<td>253 (77.1%)</td>
<td>14 (66.7%)</td>
<td>79 (76.7%)</td>
<td>160 (78.4%)</td>
<td>0.97</td>
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<tr>
<td>Access to usual primary care (n=320)</td>
<td>218 (66.5%)</td>
<td>15 (71.4%)</td>
<td>67 (65.0%)</td>
<td>136 (66.7%)</td>
<td>0.69</td>
</tr>
<tr>
<td>Partner substance use (n=325)</td>
<td>86 (26.2%)</td>
<td>2 (9.5%)</td>
<td>30 (29.1%)</td>
<td>55 (27.0%)</td>
<td>0.06</td>
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<tr>
<td>High school education</td>
<td>268 (81.7%)</td>
<td>19 (90.5%)</td>
<td>87 (84.5%)</td>
<td>162 (79.4%)</td>
<td>0.36</td>
</tr>
<tr>
<td>Married</td>
<td>38 (11.6%)</td>
<td>3 (14.3%)</td>
<td>10 (9.7%)</td>
<td>25 (12.3%)</td>
<td>0.69</td>
</tr>
<tr>
<td>Length of stay (days) (n=325)</td>
<td>13.7 (14.4)</td>
<td>14.1 (13.6)</td>
<td>16.0 (17.7)</td>
<td>12.5 (12.5)</td>
<td>0.36</td>
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<tr>
<td>Number of days of use in 30 days prior to hospitalization</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
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<tr>
<td>Alcohol (n=311)</td>
<td>6.7 (10.8)</td>
<td>1.2 (2.2)</td>
<td>5.9 (2.2)</td>
<td>7.6 (11.4)</td>
<td>0.17</td>
</tr>
<tr>
<td>Heroin (n=241)</td>
<td>10.1 (12.6)</td>
<td>8.3 (11.6)</td>
<td>11.9 (13.1)</td>
<td>9.3 (12.5)</td>
<td>0.43</td>
</tr>
<tr>
<td>Other opiates (n=229)</td>
<td>5.9 (9.3)</td>
<td>7.7 (10.6)</td>
<td>6.8 (9.6)</td>
<td>5.2 (8.9)</td>
<td>0.11</td>
</tr>
<tr>
<td>Cocaine (n=253)</td>
<td>0.4 (1.9)</td>
<td>0.7 (2.4)</td>
<td>0.1 (0.5)</td>
<td>0.5 (2.3)</td>
<td>0.34</td>
</tr>
<tr>
<td>Amphetamine (n=256)</td>
<td>6.0 (9.6)</td>
<td>3.6 (7.7)</td>
<td>6.4 (9.3)</td>
<td>6.1 (10.0)</td>
<td>0.39</td>
</tr>
<tr>
<td>Cannabis (n=295)</td>
<td>7.3 (11.1)</td>
<td>6.7 (11.3)</td>
<td>7.6 (10.7)</td>
<td>7.2 (11.3)</td>
<td>0.78</td>
</tr>
</tbody>
</table>

Continuous variables are listed as average (SD). Categorical variables are listed as n (%).

Figure 1. CONSORT flowchart
Figure 2. Trajectories of Wake Forest trust scale scores among IMPACT participants, 2015-2018
Baseline Trust Score  

<table>
<thead>
<tr>
<th>Group 1 (11.4%)</th>
<th>Group 2 (26.2%)</th>
<th>Group 3 (50.1%)</th>
<th>Group 4 (12.3%)</th>
</tr>
</thead>
</table>

Follow-up Trust Score

- Group 1 (11.4%)
- Group 2 (26.2%)
- Group 3 (50.1%)
- Group 4 (12.3%)
Appendix 1. Qualitative questionnaire

<table>
<thead>
<tr>
<th>Question for participant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can you tell me a little bit about the addiction care you received while you were in the hospital at OHSU?</td>
</tr>
<tr>
<td>What did you find most helpful?</td>
</tr>
<tr>
<td>What did you wish we did differently?</td>
</tr>
<tr>
<td>Now I’d like you to think about the addiction care that you received after the hospital and how that went. What was most helpful?</td>
</tr>
<tr>
<td>What do you wish they did differently?</td>
</tr>
<tr>
<td>Is there anything else you want researchers to know?</td>
</tr>
</tbody>
</table>