AUGUST 30, 2019

FINAL EVALUATION REPORT FOR PROJECT POINT

An Initiative to Improve Continuity of Care among People Seen in the Eskenazi Emergency Department for Opioid Overdose

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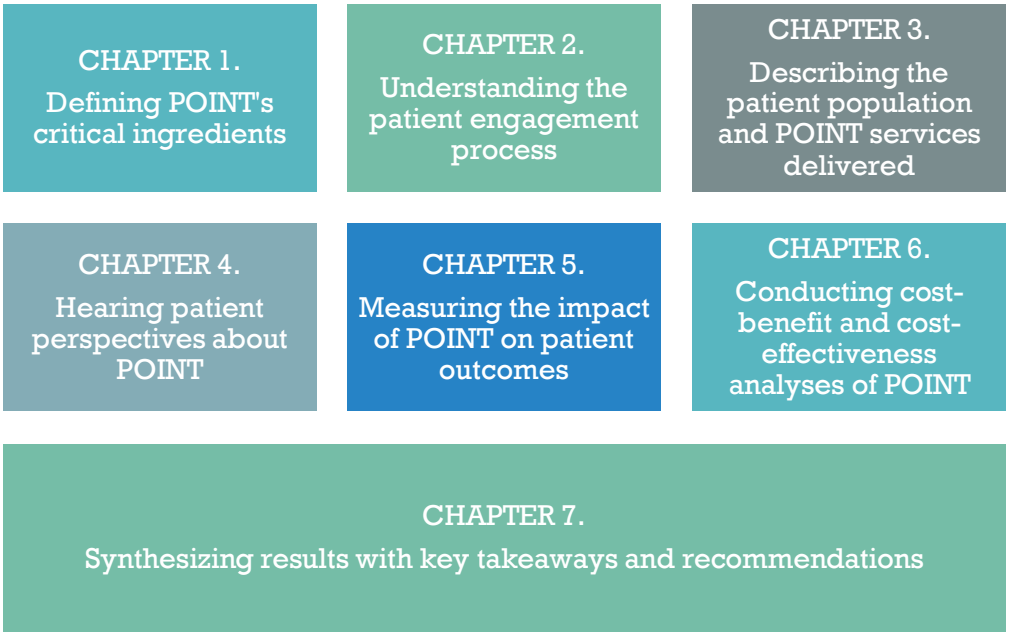
Introduction

Project POINT (Planned Outreach, Intervention, Naloxone, and Treatment (hereafter referred to simply as POINT) is a quality improvement initiative of Eskenazi Hospital's emergency department (ED) and Indianapolis Emergency Medical Services (IEMS) that was developed in 2015 as a response to the city's opioid epidemic. POINT started with two simple goals: (1) provide patients revived from a non-fatal overdose with access to the opioid overdose reversing drug naloxone (also known by the brand name Narcan®), and (2) connect those same patients with long-term substance use disorder treatment—with the ideal being evidence-based medication for addiction treatment (MAT; also referred to as medication assisted treatment). In January of 2017, the Richard M. Fairbanks Foundation funded POINT to expand services and evaluate results. Most notable to this expansion was the addition of two peer recovery coaches (PRCs), who are individuals with lived experience of recovery who provide support for individuals living with substance use disorder (SUD). This report provides evaluation results related to this foundation-supported expansion.

The collective evaluation integrates several components to view different dimensions of POINT's results. Each component of the evaluation is presented as a chapter, per Figure 1. Each chapter follows a consistent structure, first identifying the specific aims/questions about POINT that this evaluation component addresses, then describing the methods utilized, sharing the results, and drawing conclusions that connect with the driving aims. The final chapter of the evaluation synthesizes findings across components to summarize key takeaways and recommendations.

Medication for Addiction Treatment/Medication Assisted Treatment (MAT) is pharmacological treatment opioids. The three medications approved for the treatment of opioid use disorder in the U.S. include methadone (an *opioid agonist*), buprenorphine/Suboxone® (a *partial agonist*), and naltrexone/Vivitrol® (an *opioid antagonist*). Methadone and buprenorphine are long-acting opioid medications that prevent withdrawal and decrease opioid cravings, drug seeking, and drug use. Naltrexone is a non-opioid medication that completely blocks the effect of opioids in the body. **In this evaluation, MAT largely refers to buprenorphine/ Suboxone®**, as we were unable to obtain valid and reliable data on methadone and naltrexone/Vivotrol® treatment.

Figure 1. Evaluation components and report organization



Acronyms used throughout this report:

- ED: Emergency Department
- EMR: Electronic medical record
- IEMS: Indianapolis Emergency Medical Services
- INPC: Indiana Network for Patient Care
- MAT: Medication for addiction treatment/Medication assisted treatment
- OUD: Opioid Use Disorder
- PEC: Patient Engagement Core
- POINT: Planned Outreach, Intervention, Naloxone, and Treatment
- PRC: Peer Recovery Coach
- SAMHSA: U.S. Substance Abuse and Mental Health Services Administration

Chapter 1 | Defining POINT's Critical Ingredients

Aim

We sought to clarify the model referred to as Project POINT by identifying the "critical" or "core" ingredients or elements, differentiating these critical ingredients from other aspects of the program. This task is important for identifying what ingredients should remain intact as POINT evolves or if it is replicated at other hospital locations, as well as which ingredients can be adapted to fit new contexts.

Methods and materials

Following best practice guidelines, we conducted a case study of POINT utilizing multiple sources of data—interviews with POINT creators, direct observation, and review of program materials—to elucidate the critical ingredients of the model and describe barriers and facilitators to its implementation.

POINT team members identified by the POINT medical director were invited to participate via e-mail. Additionally, one evaluator attended POINT team meetings and explained the study. All POINT team members chose to participate. One evaluator observed two POINT team meetings and one direct clinical interaction; the evaluator also conducted semi-structured interviews with all five team members. Interviews included questions regarding perceived critical ingredients of the model, challenges in successfully implementing POINT, and factors aiding in implementation. Data collection was iterative, in that following initial interviews or observations, the analysis team would conduct preliminary analyses and ask additional questions of participants to clarify points of confusion and/or confirm or disconfirm working hypotheses.

After observations and interviews were conducted, audio-recordings of interviews were then transcribed. Two study team members read transcripts and wrote memos regarding emergent themes pertinent to critical components of the POINT model. Following the initial wave of data collection, we constructed diagrams that included emergent ideas and the relationships between them. Through data analysis and triangulation, we identified preliminary codes and their relationships with one another. We then created a preliminary codebook and applied codes to transcripts and compared for consistency, revising as necessary, until the codebook was stable. All transcripts were then coded and quotes pertinent to each code were analyzed separately and in concert to reveal the descriptions detailed below.

Results

We identified thirteen ingredients as critical components of POINT. These ingredients are summarized in Table 1 and are explained in more detail in the sections that follow.

Table 1. Critical ingredients of POINT

Critical ingredients of POINT	Description at Eskenazi
Multi-method tracking/alert system	Staff monitor the ED tracking board, receive automatic alerts from emergency services (ambulance runs), and receive direct referrals from ED staff.
ED-based encounter	Staff meet with patients at the ED bedside.
Peer Recovery Coaches (PRCs)	Clinical contact is primarily initiated by certified PRCs.
Lived experience with opioids	Coaches have lived experience in SUD recovery.
Office space in ED	POINT has a physical presence in the ED so staff are familiar with the team and are more likely to refer patients.
Support for PRCs	Includes introducing lay workers to the ED environment and culture, proper clinical supervision, and encouraging PRCs to attend to their own recovery and wellness.
Transportation	POINT provides rides to appointments for treatment and related services.
Designated MAT provider	Formalized referral relationship with Midtown Mental Health that includes staff attending POINT meetings and providing specialized intake procedures for POINT patients.
Walk-in clinic/reduced barriers to MAT access	Midtown allows POINT patients to present for enrollment during three 2-hour blocks without an appointment.
Linkage with treatment providers	The team maintains information about a full range of community recovery services providers and their intake process.
Financial support	Grant funding covers non-billable expenses.
Patient choice	Although MAT is the preferred, evidence-based recovery option, patients' choice dictates referrals.
Naloxone distribution	Naloxone is provided to the patient before they leave the ED.

The Emergency Department

POINT begins in the ED, and several ingredients focus on this phase of the intervention. First, potential patients must be identified; as such, interview participants noted the importance of a multi-method tracking/alert system. POINT has three methods of obtaining referrals: (1) receiving automated system alerts through IEMS, (2) scanning the ED admissions tracking board, and (3) receiving direct referrals from ED providers. About half of the interviewees explicitly reported direct referrals from ED providers as critical. As an EMS social worker stated:

> Getting **the support of the physicians who are meeting with the patients** when they come in, to say… Yes. Like "this is a POINT patient and it's important that they speak to

someone." **That's where, really, the referrals come from**. I know we're watching the board to see who comes in but getting their support I think is huge.

After patients in the ED are identified, PRCs encounter the patient in the ED. PRCs were far-and-away the most supported element of POINT; all interviewees explicitly named it as critical. Additionally, numerous stakeholders spoke to the importance of supporting the PRCs by ensuring they were integrated and accepted within the ED and that the PRCs were maintaining good boundaries and actively engaged in their own recovery supports. As the program coordinator said:

> Because she's a **recovery coach** and has that personal experience, they build a rapport that myself and the clients don't build. […] I still build a rapport with them, it's just different. I've noticed an increase in the follow-up calls and the participation…the client's participation and staying engaged because they're like "yeah, she's one of us" kind of feeling.

In addition to PRCs, about half of interviewees indicated that it was critical that other POINT team members were physically based in the ED. Observations confirmed this, as the time between when a patient was admitted and when they were ready for an encounter with POINT staff was often lengthy and unpredictable. There was often a narrow window between when a patient might become lucid after an overdose and when they would leave the ED. A previous iteration of the program that used off-site social workers to respond to overdose patients was not perceived as effective, as this window of time was often missed.

Treatment planning and linkage

Another set of ingredients focused on establishing a treatment plan and ensuring the patient's safe and successful linkage with external MAT providers. The majority of respondents explicitly stated arranging for transportation was critical in facilitating the transfer from ED engagement to opioid use disorder (OUD) treatment. There were differing perspectives on what was sufficient, however. For instance, some simply pointed toward providing bus passes as a helpful solution, while others specifically said this was inadequate for some patients. The majority of POINT staff interviewed specifically indicated it was critical to have an MAT provider who had a special relationship with the ED-based team. For example, Midtown, a local community mental health clinic that maintains an MAT clinic with prescribers, addictions groups, and case-management services, held special walk-in hours for POINT patients, thus expediting referrals. As the program director stated:

> I think you either need a clinic that's already a mental health or addiction clinic that's already **ready to take walk in**…that already has that system built, because most—at least

> most that I know of—mental health clinics […] aren't really set up that way to just take a random ED referral in the middle of their day.

Because the POINT program focuses on patient choice, another element is knowledge and linkage with a range of recovery services. In particular, one interviewee commented that it is critical to be connected with "multiple treatment teams," both within and outside their system, who are able to provide MAT.

Other ingredients

The majority of respondents spoke to the necessity of some form of financial support. Some pointed toward the critical importance of grant funding for start-up, while others pointed to the necessity of insurance payments to support ongoing MAT. Finally, although only mentioned by one participant, naloxone distribution should also be considered a critical element if for no other reason than it is in the program title. But as the psychiatrist stated: "the **naloxone kits** [are critical] …dispensing naloxone, since that's the life-saving, harm reduction part of this project."

Conclusions

We utilized qualitative methods to identify what POINT team members viewed to be the most critical components of the POINT intervention. Identifying the critical ingredients of POINT is important, as it will assist those seeking to replicate the POINT model, as well as help Eskenazi to monitor its sustainability over time. While these ingredients enjoy broad support among staff who have substantial experience with this program, it is possible they could require modifications if the intervention is replicated in a different hospital context. Furthermore, while staff viewed these ingredients to be important, the single case study approach limits our ability to state with definite confidence that they are the "secret sauce" responsible for POINT's service- and patient-level outcomes. This would require more longitudinal study or the replication and study of POINT in other contexts.

Chapter 2 | Understanding the Patient Engagement Process

Aim

The aim of this evaluation component was to assist POINT staff in improving their post-ED follow-up contact with patients. The evaluation team contracted the services of the Indiana Clinical and Translational Sciences Institute's Patient Engagement Core (PEC) to gain insight into how patients currently misusing opioids or in recovery from OUD engage with healthcare and recovery systems and to develop recommendations for how POINT staff could best work with patients. The findings presented below are described in more detail in a report completed in June 2017, and they were shared with POINT staff at that time.

Methods and materials

The PEC is a group focused on improving patient engagement in research through human-centered design activities. Human-centered design research is distinct from conventional research methods because the tools used leverage the expertise and creativity of study participants (Sanematsu & Wiehe, 2014).

The PEC invited individuals who were either currently misusing opioids or in recovery from an OUD to participate in design activities. Six individuals agreed to participate and attended the PEC's 2-hour session; all participants were recruited through local prison re-entry and mental health advocacy organizations. The session began with providing lunch to participants as well as study information, including information regarding use of audio recordings. Participants in session activities were compensated with a $40 gift card.

Additionally, the PEC interviewed two individuals who served as Project POINT program managers to learn about how POINT staff interact with patients and ongoing efforts to improve in this area.

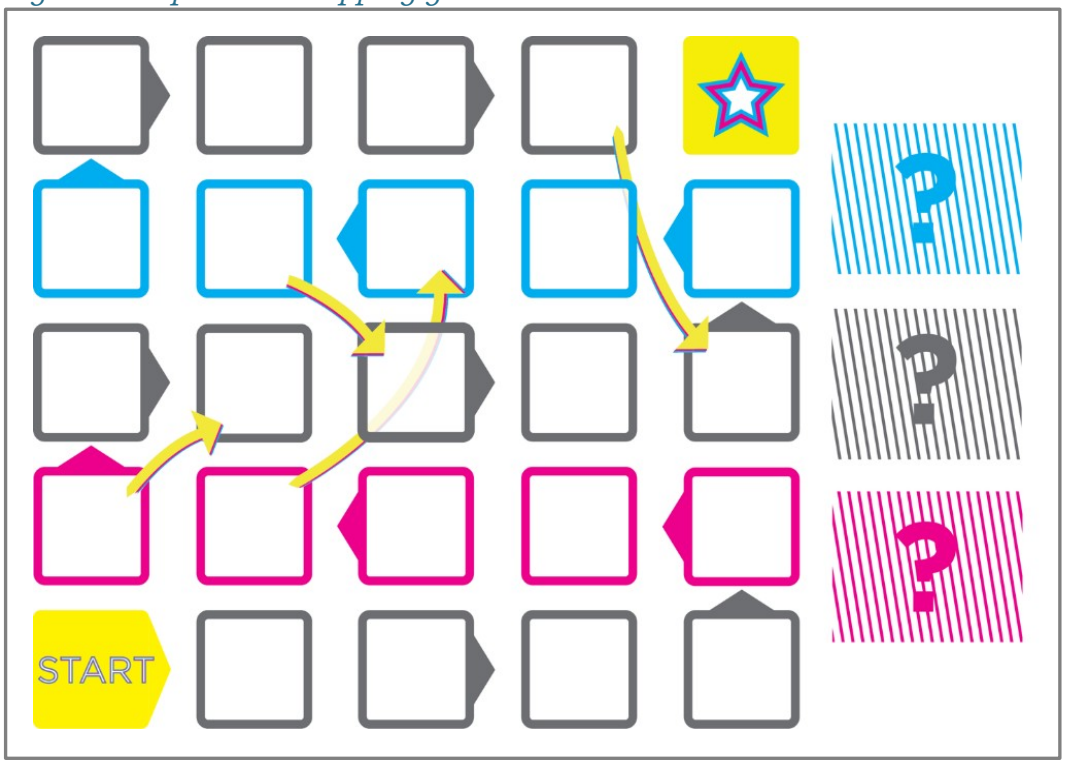
The data collection activity

For the engagement session, the PEC innovated upon a traditional human-centered design research activity known as experience mapping. The novel twist to the traditional experience mapping exercise was through gamification of the activity. Experience mapping is an exploratory activity in which participants are asked to draw out their movements and interactions during a particular experience (e.g., time spent at a substance use treatment facility) (Adaptive Path's Guide to Experience Mapping, 2013). An experience map can illuminate the holistic highs and lows people experience during a particular event. The gamified version was developed with

the intention of creating a familiar, engaging, and highly participatory atmosphere.

The game board the PEC developed was inspired by *Chutes and Ladders*, which was a format chosen both for its familiarity with participants of any age and most populations, and the ease in which you can map different experiences or concepts onto it. The board featured three different types of spaces: (1) overdose and ED visit, (2) treatment center visit, and (3) general spaces (see Figure 2). There were three corresponding sets of cards (25 total) available to be drawn, each with a question on a topic related to the type of space. When a card was drawn, the player read the question from the card for the remaining players to answer. The reader then selected a response and shared why that answer was chosen or suggested their own new answer to the question. There were also arrows on the board that when landed upon slid players forward and backward. Upon sliding on an arrow, the participant was asked to explain why they or their character slid off one type of space and onto another (e.g., "Please explain why you slid backward out of treatment"). Finally, a "star" space at the end was left undefined at the end of the map, prompting participants to define their own "win condition."

Figure 2. Experience-mapping gameboard



Note: Pink squares represent time spent at the hospital for an opioid overdose. Blue squares represent time spent at a treatment facility. Gray squares represent time not spent at the hospital or treatment facility. The dashed rectangles represent sets of cards.

Before starting the game, participants were placed into two groups of three people. The groups were in separate rooms and each had its own game supplies. Also, in each room were one PEC facilitator and one or two observers from the evaluation team. To begin, participants created their

game pawns (Figure 3). This was an opportunity to warm up and get to know others in the group by sharing the limited art supplies with one another and then presenting the pawn they had created. Participants then placed their pawns on the "Start" space and used a spinner, each in turn, to move their pawn around a game board.

Figure 3. Game pawns

Data analysis

For this project, the audio recordings from the engagement sessions were recorded and then transcribed. These transcriptions were analyzed by the PEC to identify themes and items of significance. The themes and items were further assessed and sorted into categories and hierarchies, which were then used to build information models and develop recommendations.

Results

Research participants shared substantive, valuable information in the two-hour engagement session, revealing a depth of feelings, needs, desires, and experiences. Participant feedback on the session was positive. Following is a selection of the most relevant and significant findings from the engagement and analysis as they relate to POINT staff members' struggles engaging and staying in communication with patients.

Two characteristic profiles of an overdose survivor in the ED. Two profiles of an opioid user who has recently overdosed emerged from the design activity. One profile is of a person who grasps the significance of what occurred, realizes they need help with their substance use issues, and is

interested in treatment; if they are not entirely ready to enter the treatment phase, they are open to learning more about the concept. The second profile is of someone who has no interest in treatment and is only interested in using again, often as soon as possible. For example, one participant shared:

> From what I've seen, the majority of the people that I've talked to, especially if it's the first or second time they've overdosed, all they can think about is going out and getting high again. I was talking to someone today who was telling me about their friend whose wife overdosed and almost died and as soon as she came out—she was on life support and as soon as they took her off life support she was asking people to bring her dope to the hospital.

Time is of the essence. The power of opioid use and withdrawal is stronger than many people's willpower to resist using. After deciding to quit or enter treatment, all opioid users will be confronted with the effects of withdrawal. If they are on their own at this stage, it can be more appealing and easier to find opioids to relieve the pain rather than to suffer through it. Using again may close the window of openness to treatment a few inches or even shut it completely. If the window shuts it may be a while before it opens again. As one participant described:

> There might be a five-minute window, a three-day window where you can't get drugs and if I call you today and say, "Please let me in a treatment facility" don't tell me to get a referral and wait a month because a month from now who knows where I'll be. If I want to go today, get me in there. Do whatever you have to do to put the insurance through, get it for me, put me in a holding room for 24 hours so you can get me insurance. Because if someone calls me before you call me back, I won't answer. I'll be gone.

***Internalized feelings of judgment and shame affect communication*.** Research participants discussed their dislike for speaking with people about their opioid use because they feel they are being judged or talked down to and because they feel many people do not understand what it is like to experience OUD. They also talked about having bad attitudes. These feelings often lead to difficult conversations with no outcomes other than frustration or disappointment. For example, one participant reported:

> We've been told things like "You're a deadbeat dad! You're a piece of shit!" All these things our entire addiction. It's not really all that powerful anymore because we hear it all the time. If you can say things to us to make us come to those conclusions ourselves, that's worth its weight in gold. If you can ask the right questions to make us come to the realization ourselves, like we had the idea, that's pretty powerful. Showing us our way of living is not aligned with

> our beliefs and our values. I think that's super powerful. At least that's what it was for me.

Staying in contact with users of opioids is difficult. According to participants, opioid use is frequently a lifestyle of isolation, for various reasons. Often, the only people someone with OUD is interested in talking to are those who have or can connect them with opioids. However, if someone has something else they need – money, transportation, food, love, needles – they will remain in touch with that person, but often only on their own terms. One participant described concerns about getting the money needed to purchase drugs:

> Money is a big worry when you're a drug addict. Because you have to have money to supply your habit because, if not, you'll be sick and you're not going to be functioning. […] And outside of that, when you're strung out you really don't focus on many other things but getting high.

Similarly, another participant shared how they were in touch primarily with others who had access to drugs:

> The people I would talk to every day are the people who had pills. Meanwhile my family would be like, "What are you doing with yourself these days? I haven't seen you. I haven't talked to you." But the people who had pills I'd talk to all the time, every day, all day.

Conclusions

Research participants shared substantive and valuable information in the two-hour engagement session, revealing a depth of feelings, needs, desires, and experiences. Participant feedback about the session was also positive. Both demonstrate the activity was a successful research tool. It is hard to identify a magic bullet that will allow the POINT team to stay in touch with patients. However, the PEC provided a summary of general suggestions to guide communication, which are shown in Table 2.

Table 2. Guide to POINT patient communication

Successful communication with opioid users	
Is:	**Is not:**
Understanding the patient and accepting them as they are (warts and all)	Moral judgments of the patient's substance use and negative behavior
Making the patient feel comfortable and free to talk about what is important to them	Dismissive of the patients' needs and words, or worse, argumentative
Letting the patient do most of the talking and listening to them	Dominating the conversation or not genuinely trying to understand the patient and their needs
Asking the right questions to help the patient find answers	Telling the patient what they need to do
Being supportive and encouraging of positive behavior	Shaming, admonishing, and using negative words, emotions, or tone

Additionally, the PEC's interview with the POINT program manager revealed that POINT seems to be doing many things well and are trying new approaches in this area, such as texting patients rather than calling them. These findings, along with others, were provided to POINT to help them reflect on and refine their communication approaches.

References, Chapter 2

Adaptive Path's Guide to Experience Mapping. First ed. San Francisco and Austin: Adaptive Path (2013). Accessed January 15, 2016 from http://mappingexperiences.com/.

Sanematsu, H., & Wiehe, S. (2014) Learning to look: Design in health services research. *Touchpoint*. 2014, July: TP06-02P82.

Chapter 3 | Describing the Patient Population and POINT Services Delivered

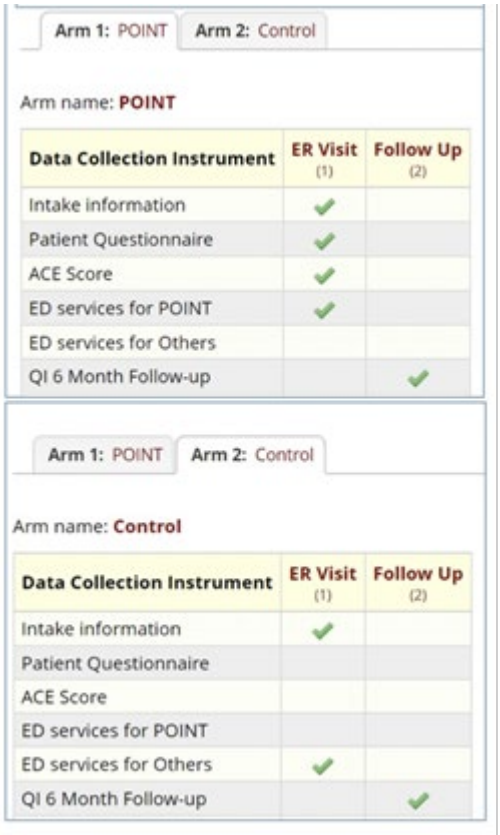
Aims

This component of the evaluation analyzed program data to: (1) describe the scope of POINT during the one-year evaluation period in terms of patients engaged (and not engaged) and services delivered and (2) improve understanding of the POINT patient population.

Methods and materials

The one-year enrollment period for this evaluation of POINT was November 6, 2017 through November 5, 2018. The start date of November 6, 2017 was selected because this is when the second PRC began working with the program. The evaluation also included a 6-month follow-up period from the time of each patient's ED visit; this 6-month follow-up period concluded on May 5, 2019.

Figure 4. Data forms by arm



All patients seen in the Eskenazi Emergency Department (ED) for opioid overdose during the one-year enrollment period were recorded in the POINT REDcap database. Patients presenting to the ED during POINT hours were entered in the POINT arm, while those presenting to the ED during off hours were entered in the control arm. Whether or not a specific patient received the POINT intervention, however, varied based upon their medical state, willingness to participate, and occasional referrals into the program following original arrival during non-POINT hours. We utilized a variable called "POINT status" to differentiate the different groups of patients who did/did not receive POINT services.

Per Figure 4, the REDCap project was set up with several data capture forms, completed online by the POINT project staff. A limited set of common information was captured for all patients, including controls: *intake information, ED services*, and *6-month follow-up*. Additional data were captured regarding patients enrolled in the POINT arm primarily through the *patient questionnaire.* This form captured details about the patient's life circumstances, social support, current overdose, history of substance use and substance use disorder treatment, readiness for treatment, and harm reduction strategies being utilized. These answers were

completed to the degree possible based upon the POINT staff person's interview with the patient in the ED. The Adverse Childhood Experiences (ACE) instrument was intended for use with POINT patients; however, this did not prove to be feasible to implement in the ED setting given the sensitivity of the questions and the length of the preceding patient questionnaire. POINT staff made an effort to fully complete the 6-month follow-up on POINT patients; difficulties with this are discussed below along with results.

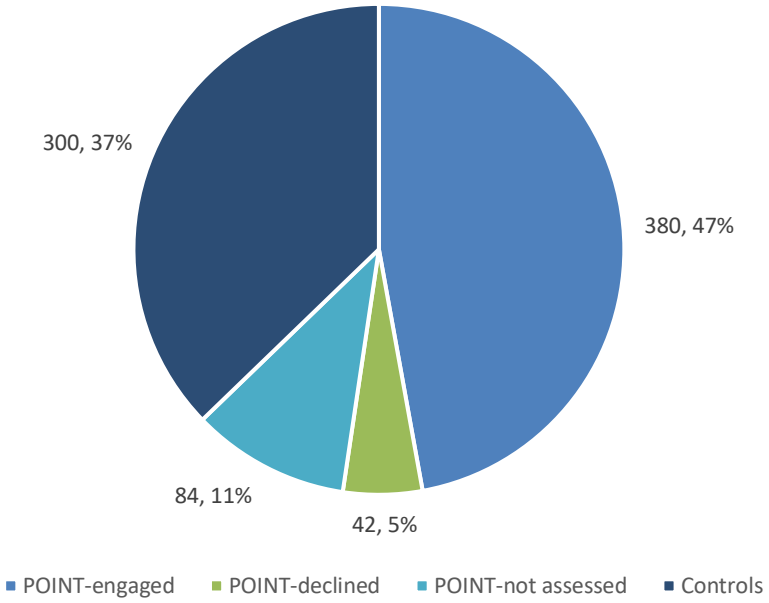
All program data were exported from REDCap into IBM SPSS Statistics 25 for analysis. The evaluation team reviewed and cleaned the data, correcting erroneous dates and resolving duplicate records. POINT staff were consulted for corrections and clarifications about ambiguous responses (e.g., "not answered"). Evaluators also recoded data to account for missing values and to create new response groupings where needed. For all variables in the data set, evaluators analyzed univariate statistics and cross-tabulations by patient group. The differences in group proportions and means between the POINT-engaged and control groups were tested using independent samples t-tests or Chi-square analyses.

Results

How many patients did POINT assist?

During the one-year enrollment period (November 6, 2017-November 5, 2018), the POINT team recorded a total of 806 patients who visited the Eskenazi ED for opioid overdose. Of these, 380 patients engaged with the POINT team, 42 patients were approached but declined to participate in POINT, and 84 patients were not assessed, most often due to the patient's medical state. The POINT-engaged group of 380 represents 47.1% of all patients seen in the Eskenazi ED for opioid overdose during the one-year period. The 300 patients (37.2%) designated as "controls" in this evaluation presented to the ED during hours not covered by the POINT staff and were not engaged in POINT.

Figure 5. Patients by status in Project POINT

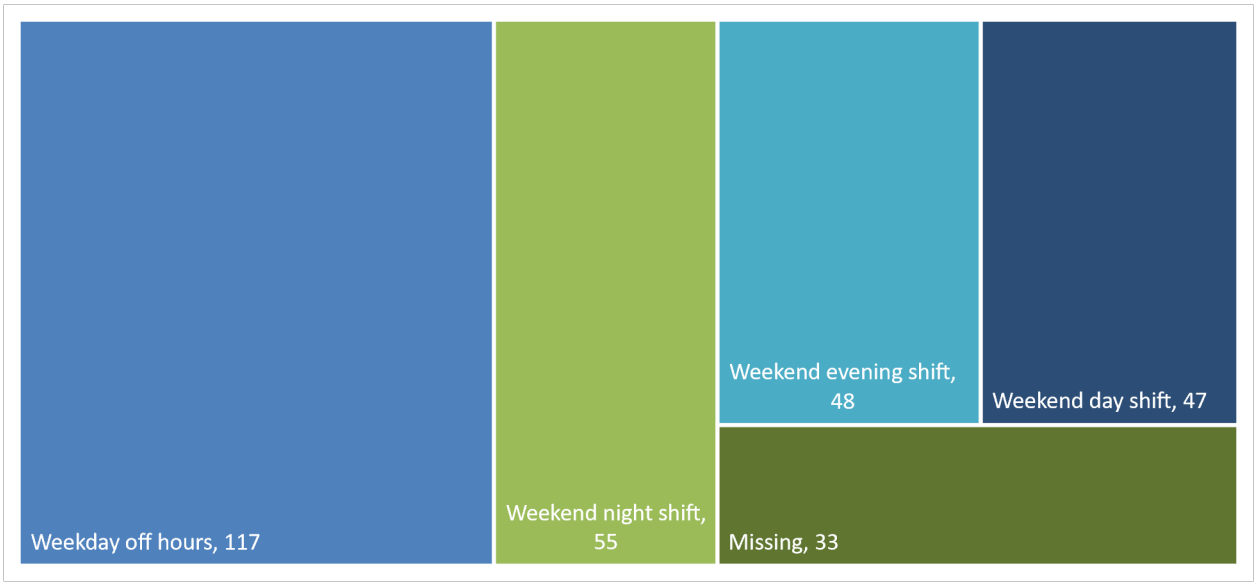


Notes: Sample includes 806 individuals who were assessed in EDs between November 6, 2017 and November 5, 2018

POINT reached 54 patients who had experienced opioid overdose in the first half of 2016, representing 21% of the 254 patients referred to POINT during those 6 months. It was an expressed goal of POINT to expand coverage and reach more of the patients presenting to the ED with opioid overdose. **These evaluation results demonstrate a substantial expansion of POINT reach, as the percentage served more than doubled (from 21% to 47%) and annualized POINT enrollment more than tripled (from 108 [54 *2] to 380).**

Prior to the program expansion, POINT staff were available only during usual weekday hours. One purpose of the funding request was to expand upon the hours during which POINT staff were available to engage patients. To meet this goal, POINT hired two new PRCs. From the time the second PRC was on board (November 6, 2017) through August 2018, POINT staff were available from 10:00 a.m. to 10:30 p.m. on weekdays; they were also available on occasional Saturdays, beginning at 2:00 p.m. and ending at varying times. Beginning in August 2018 and continuing through and beyond the May 2019 enrollment period, an additional 2 hours were added to the weekday hours, with POINT services available from 8:00 a.m. to 10:30 p.m. Of the 300 patients who presented off-hours, 39% (n=117) presented during weekday off hours, while 50% (n=150) presented on the weekend. Thus, the addition of occasional Saturday hours in November 2017 targeted documented need. See Figure 6 for more details on when off-hours patients arrived at the ED.

Figure 6. Count of patients who presented off-hours by time category



What services did POINT deliver?

Certain services were to be delivered in the ED as part of the POINT program, including: (1*) naloxone education and kit, (2) hepatitis C testing, (3) a brief motivational interview, (4*) services of a PRC, and (5*) referral to treatment. Those with an asterisk were also identified in the model-defining process as critical ingredients of the program, as discussed in Chapter 1. Referral to treatment involved a special arrangement with Midtown Mental Health to allow POINT patient walk-in hours during set times each week on Tuesday, Wednesday, and Thursday.

Certain services, primarily hepatitis C (HCV) testing and naloxone education/kits, may have been provided to patients not engaged with POINT as the standard of care. However, ED services for control patients were not routinely captured in REDCap, with only 31 of 300 patients (10.3%) having the ED Services data form completed. Table 3 reports the services delivered to POINT-engaged patients only.

Table 3. Key services provided to POINT-engaged patients at ED intake

Key services provided at ED	POINT-engaged		
	Number	Percent of patients N = 380	Missing
*Naloxone education/kit provided	243	63.9%	19
HCV testing completed	38	10.0%	19
Brief motivational interview completed	354	93.2%	3
*PRC services provided	336	88.4%	3
*Treatment referral made	134	35.3%	14
Assistance with insurance/medical expenses	38	10.0%	33

Highlights of service delivery:

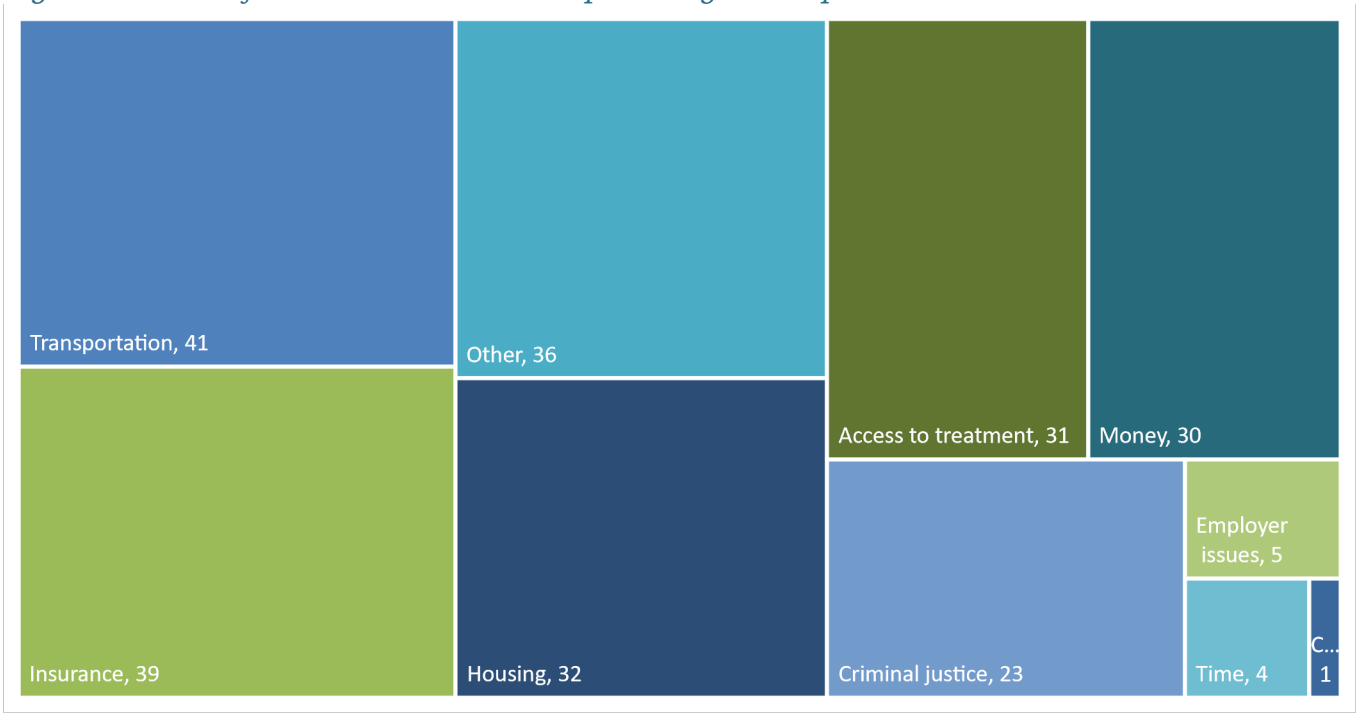
- POINT provided naloxone kits to 243 (63.9%) of POINT-engaged patients during the evaluation year. The proposal identified a target of 200 kits annually, and the target was exceeded. Forty percent (n=48) of those who were not provided a kit did not want one.
- HCV testing was completed with only 38 (10%) of POINT-engaged patients. This fell far short of the target of 500 identified at the outset of the project. Sixteen of the 38 patients tested (42.1%) were HCV positive. For several patients (n=44; 11.6% of POINT patients), the testing was not clinically indicated. Several refused testing (n=57; 15.0% of POINT patients). However, 75 patients (19.7% of POINT patients) were not tested due to the lack of tests or testers.
- Brief motivational interviews were completed for 93.2% of POINT-engaged patients.
- PRC services were provided to 88.4% of POINT-engaged patients. Lack of open capacity accounted for 14 of the 41 individuals (34.1%) who did not receive PRC services.[1]
- A treatment referral was made by POINT for 134 (35.3%) POINT-engaged patients.
- Assistance with insurance or other billing concerns was provided to 38 (10.0%) patients. More than half of patients (n=210; 55.3%) had active insurance in place at the time of their ED visit.

POINT made contact with 44.5% of POINT-engaged patients (n=169) following their discharge from the ED. These individuals had between 1 and 65 interactions with POINT or Midtown staff during follow-up, with a mean number of 8.6 interactions, a median of 3.0 interactions, and a mode of 2.0 interactions.

While in the ED, POINT-engaged patients were asked about their perceived barriers to treatment, as follows: "*What are your biggest barriers to getting help with your drug problem*?" Patients could report more than one barrier. Of the 153 patients (40.3% of POINT-engaged patients) who were asked/answered this question, the Figure 7 treemap demonstrates the prevalence of responses. There were a total of 242 barriers reported by the 153 patients who responded.

[1] Data on PRC service receipt is missing for 3 individuals.

Figure 7. Count of barriers to treatment reported by POINT patients



Note: The smallest group shown in this figure represents Child Protective Services (n=1).

Several of the most-reported barriers – transportation, insurance, and access to treatment – were specifically targeted by POINT in the provision of additional services. As Table 4 shows, the most common assistance provided was for transportation (20.3%), medical costs/insurance (13.7%), and housing (7.1%). Notably, 15.0% of POINT-engaged patients were followed by POINT during incarceration.

Table 4. Additional services provided to POINT-engaged patients after ED discharge

POINT also helped with:	POINT-engaged	
	Number	Percent of patients N=380
Ride-sharing (Uber/Lyft)	41	10.8%
Bus passes	36	9.5%
Health insurance application/process	27	7.1%
Prescriptions, co-pays or other medical costs	25	6.6%
Help with housing	27	7.1%
Legal/CPS support or referral	5	1.3%
Followed during incarceration	57	15.0%
Other services	38	10.0%

Note: "Other services" includes a variety of assistance or referral services for medical and social needs; it is based on an open-response option.

How do patients who engaged with POINT compare with patients who did not engage?

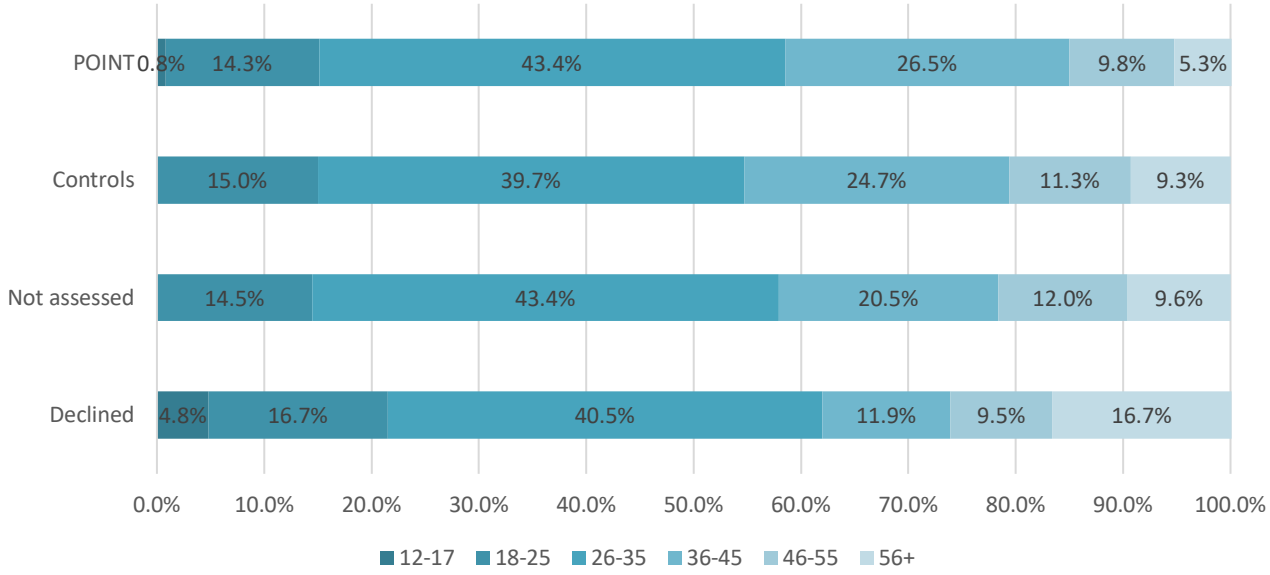
At the point of ED intake, limited data were captured for all patients presenting with opioid overdose. This included demographics as well as some medical details pertinent to the overdose. In this section, we report data to compare and contrast all groups, after which the evaluation will focus on comparing only POINT-engaged patients to controls.

Overall, patients presenting to the Eskenazi ED for opioid overdose were more often male (68.4%), white (83.9%), non-Hispanic (98.3%), and in the age range of 26-35 (41.8%).

The charts below demonstrate demographic distributions across the four patient groups by age, gender, race, and insurance status. Ethnicity is not charted, as only 1.7% (n=14) of all patients were Hispanic. (See Appendix A. for a table reporting patient demographics by group.) There are some key demographic differences between groups, which are most salient to the evaluation when those differences are between the POINT-engaged and control groups, whose outcomes will be compared. Statistically significant differences between the POINT-engaged and control group were found for proportion insured (p=0.02), female (p=0.04), and African American (p=0.001).

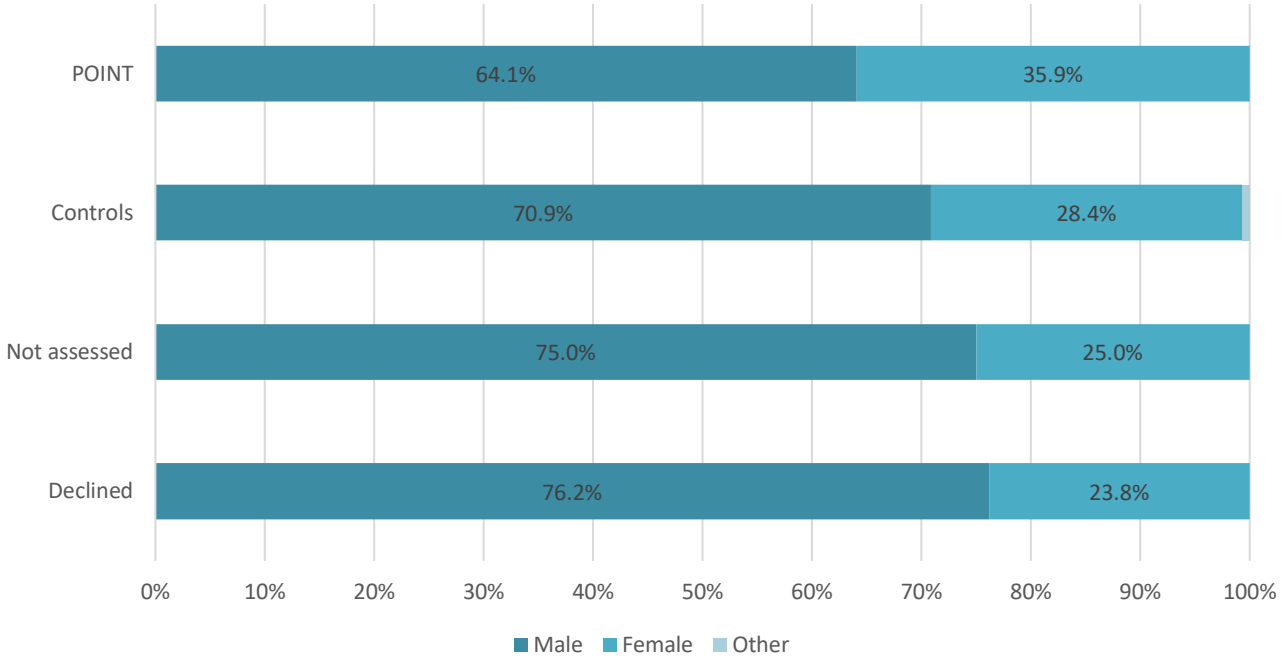
As shown in Figure 8, the group who declined POINT participation had a different age distribution than other groups, with higher proportions among the youngest and oldest patients than other groups; notably, 16.7% of those who declined were 56 or over. The POINT-engaged group had a slightly lower representation of older patients age 46+, 15.1% compared to 20.6% (not statistically significant, with p=0.06), and a younger mean age than the control group (35.2 compared to 36.5).

Figure 8. Age distribution by patient group



As shown in Figure 9, men were less represented among the POINT-engaged (64.1%) than any other group, including controls (70.9%); this is a statistically significant difference (p=0.04). The inverse relationship is true of women, who were over-represented in the POINT group relative to controls, those not assessed, and those who declined to participate.

Figure 9. Gender distribution by patient group

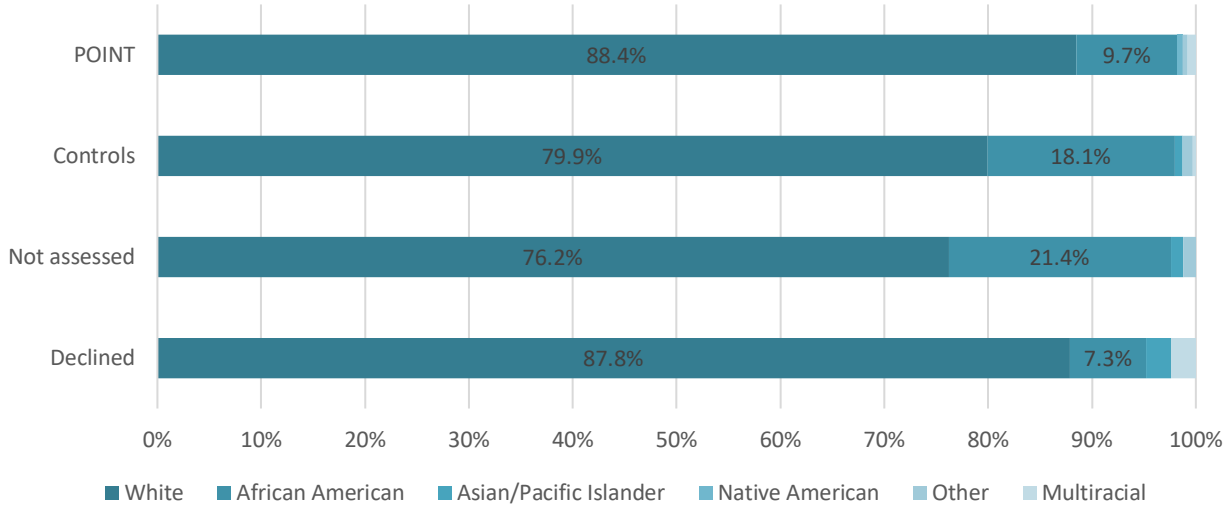


Note: Data labels included for groups with at least 5%; for full results see Appendix A.

Figure 10 shows the racial distribution of patient groups. The main difference across groups is that African Americans' representation among the not assessed (21.4%) and controls (18.1%) is much higher than among the POINT-engaged (9.7%) and those who declined (7.3%). This points to a different racial patterning in terms of time and conditions of ED presentation that is hindering their opportunity to access POINT services.[2]

[2] The difference in the percent African American between POINT-engaged and controls is statistically significant (p=0.001).

Figure 10. Racial distribution by patient group

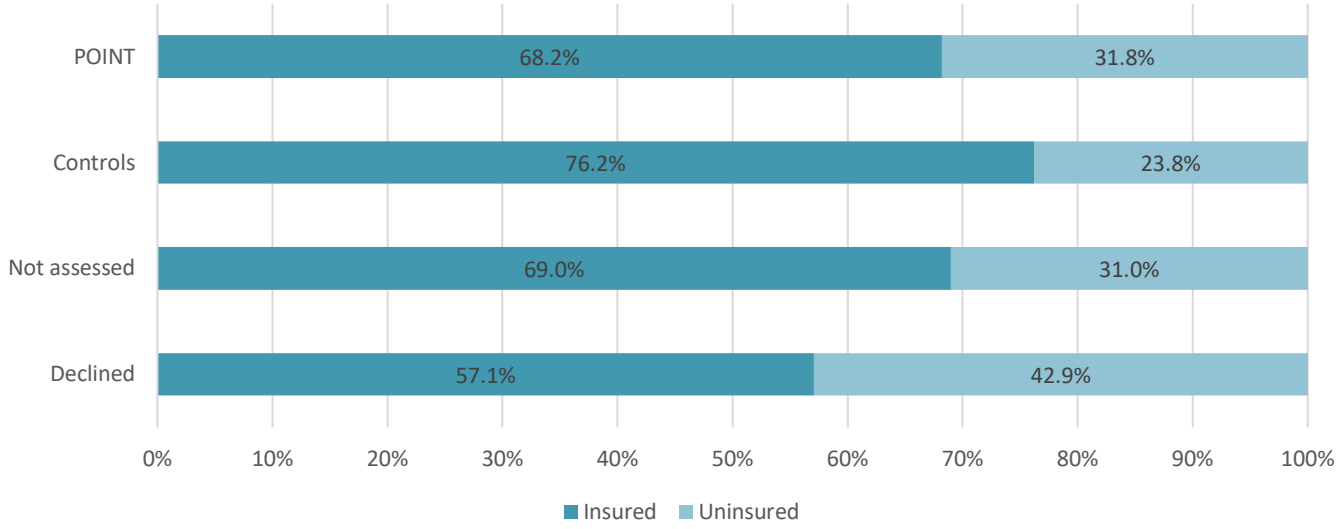


Note: Data labels included for groups with at least 5%; for full results see Appendix A.

Of note, POINT-engaged patients were asked about their education level and employment status as supplemental demographics. However, this information was missing for many patients (38.2% and 56.1%, respectively) and is therefore not reported here.

Another characteristic recorded at ED intake for all patients was their insurance status. Since one goal of POINT was to assist with insurance coverage and reduce this potential barrier to care, the distribution of insurance status by patient groups at ED intake is shown in Figure 11. We find that a lower proportion of POINT-engaged patients had insurance (68.2%) at ED intake than did controls (76.2%). Controls were the group most likely to have insurance, while those who declined POINT were least likely of all groups to have insurance (57.1%).

Figure 11. Health insurance status at ED intake by patient group



Additional details captured for all patients at ED intake are shown in Table 5. Control patients, who would have arrived during off-hours for POINT, were most likely to have been given naloxone prior to arrival at the ED (97.0%). About one-third of all ED visits involved intravenous drug use, with similar rates among POINT-engaged and controls. Across all groups, the majority of patients had unknown HCV status (75.5% - 90.5%). Patients in custody made up a greater percentage of the not assessed group (44.6%) than other groups (33.0-36.8%).

Table 5. ED intake characteristics for all patients

ED intake characteristics	POINT-engaged N=380		Controls N=300		Not assessed N=84		Declined N=42		All N=806	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Naloxone given pre-ED	328	86.3%	291	97.0%	69	83.1%	40	95.2%	728	90.3%
Overdose related to IV drug use	138	36.3%	98	32.6%	21	25.0%	6	14.3%	263	32.6%
HCV status unknown	287	75.5%	254	84.7%	72	86.7%	38	90.5%	651	80.8%
Patient in custody in ED	140	36.8%	99	33.0%	37	44.6%	11	26.2%	287	35.6%

Finally, the primary drug and secondary drug(s) involved in the overdose were recorded. (See Appendix B for drug involvement details by group.) Heroin was the most prevalent primary drug across all groups, recorded for 69.5% of all overdoses in the year. Ranking a distant second was prescription pain killers, accounting for 5.8%-11.9% of all overdoses. Benzodiazepines (0.0%-6.0%) and Fentanyl (0.0%-2.4%) round out the top four specific drugs recorded. Interestingly, 8.3% of all patients overall denied opioid use despite responding to naloxone. These five responses account for roughly 90% of all the drug overdoses recorded in the Eskenazi ED during the evaluation year.

Comparing the POINT-engaged group to controls, we find that POINT-engaged patients were more likely to report heroin use (74.5% vs. 67.0%) and less likely to deny opioid use (4.5% vs. 12.0%).

Table 6. Primary drug involved at ED intake

Primary drug	POINT-engaged N=380		Controls N=300		Not assessed N=84		Declined N=42		All N=806	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Heroin	283	74.5%	201	67.0%	50	59.5%	26	61.9%	560	69.5%
Prescription painkillers	22	5.8%	22	7.3%	8	9.5%	5	11.9%	57	7.1%
Benzodiazepines	14	3.7%	3	1.0%	5	6.0%	0	0.0%	22	2.7%
Fentanyl	7	1.8%	5	1.7%	2	2.4%	0	0.0%	14	1.7%
Denies opioid use though responded to Naloxone	17	4.5%	36	12.0%	8	9.5%	6	14.3%	67	8.3%

Regarding secondary drugs, none were reported for 19.0% of patients. Across all patients, the most prevalent secondary drugs were benzodiazepines (11.2%), alcohol (10.0%), and methamphetamine (7.7%). The reported prevalence of other secondary drugs was below 5.0% for all groups. POINT-engaged patients were more likely to report no secondary drug (26.6%) than controls (12.3%). While benzodiazepines were the most commonly reported secondary drug for POINT-engaged patients (14.5%), alcohol was the most commonly reported secondary drug among controls (14.0%).

What more was learned about POINT-engaged patients through this ED interview?

Patients who were approached and agreed to engage with POINT were interviewed during their ED visit, typically by a PRC. The evaluation team, in consultation with the POINT director, spent the initial months of the project revising and building on the prior Patient Questionnaire to remove any items not needed and to add new items for greater context about the patient population and ways to improve the project's effectiveness. This included information about patients' basic needs and living conditions, social support, history and patterns of drug use, barriers to and readiness for treatment, and overall physical and mental health. The Patient Questionnaire is lengthy, and POINT staff often found it difficult to complete in the ED setting. As a quality improvement initiative, the emphasis was placed on making a meaningful connection with the patient during the interview, not rote completion of a questionnaire. However, when responses are missing for a large proportion of the POINT-engaged group, the results are not representative of the group on the whole and can be misleading. Therefore, we report here only on items for which missing responses do not exceed 30.0% or for which it is informative to know the values as a conservative estimate (a lower bound) for the true prevalence.

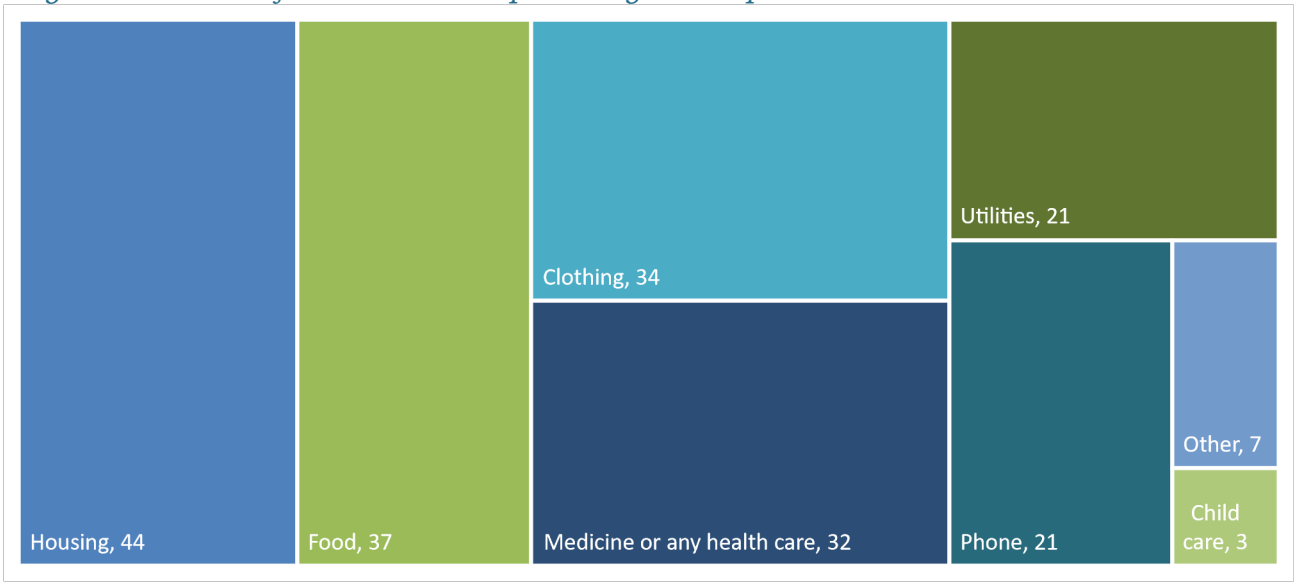
Social support present in the ED

The vast majority of POINT-engaged patients (83.0%) did not have anyone, such as a friend or family member, in the ED with them at the time of their overdose visit.[3]

Unmet basic needs

During the ED visit, patients were asked the following question: *"In the past year, have you or any family members you live with been unable to get any of the following when it was really needed?"* Results for unmet basic needs reported by POINT patients are shown in Figure 12. None were recorded for 61.0% of patients (n=230). The prevalence of needs reported by type is indicated in Figure 11 below. Each patient could report more than one. Housing was the need most often reported by POINT patients, followed closely by food.

Figure 12. Count of unmet needs reported by POINT patients



Health status

A few items were included in the Patient Questionnaire to gauge overall mental and physical health, as well as diagnosed mental illness. There is a very high proportion of missing data on health items,[4] but in Table 7 we report the number and percentage of all patients who reported different mental illnesses as a conservative estimate (a lower bound) for this population. These data indicate that many patients with OUD also have coinciding mental illness.

[3] We do not report results from the 6-item Perceived Social Support scale, as the response rate was less than 70%.

[4] Missing rates are as follows: self-rated health questions (84.7%); poor mental health days (84.5%); has a primary care doctor (45.3%).

Table 7. Reported prevalence of diagnosed mental illness among POINT patients

Has a doctor or mental health professional ever told you that you have any of these mental illnesses?	Number	Percent of patients N=380
Anxiety	62	16.3%
Depression	54	14.2%
Post-traumatic stress disorder	25	6.6%
Bipolar/manic-depression	19	5.0%
Other	11	2.9%
Childhood trauma (e.g., abuse)	7	1.8%
Schizophrenia/schizoaffective disorder	4	1.1%

Context of current overdose

POINT-engaged patients were asked about conditions surrounding the current overdose. Some conditions place people at greater risk of overdose. Patients were asked how many of the conditions listed described their use at the time of the overdose. Each patient could indicate more than one or none. **About one-fourth of all patients (23.4%, n=89) reported that "nothing was different today."** The conditions reported are listed in rank order by their prevalence. This being the first time a person had used in a while was, by far, the most common scenario of all in the list, affecting 27.6% of all POINT-engaged patients. This indicates that a lowered opioid tolerance was likely a contributing factor in about one-fourth of overdoses. The second most mentioned condition was that more than one drug was taken at the same time (7.9%), with 5.5% of patients specifically mentioning benzodiazepines (a drug that significantly increases the risk of overdose when taken with opioids) as an additional drug taken.

Table 8. Conditions surrounding overdose

How many of these describe your use today?	Number	Percent of patients N=380
Nothing was different today	89	23.4%
This was the first time you'd used in a while	105	27.6%
Used more than one drug at the same time	30	7.9%
Used drug(s) along with a benzodiazepine	21	5.5%
Something else was different about drug use today	16	4.2%
New drug source or supplier	12	3.2%
Used a different amount of drug(s)	11	2.9%
Used alone	10	2.6%
Tried a different way of taking the drug	7	1.8%
This was the first time I had used this drug	6	1.6%
Used with new people	6	1.6%
Used drug(s) along with alcohol	5	1.3%

Used in a new location	4	1.1%

Patients were also asked about all the drugs taken in the 24 hours leading up to the overdose. Table 9 shows, in order of prevalence, the drugs each patient reported taking. Note that the total exceeds 380 (the number of patients), as some patients reported multiple drugs/alcohol. This information is largely consistent with that reported from ED Intake, but reflects more than just the primary drug. Patients were asked if they had a prescription from a doctor for any of these drugs, and 5.3% of all patients (20) said they did.

Table 9. Report of all drugs taken on day of overdose

Tell me about all the drugs you used or took since this time yesterday, including prescription drugs. (Include alcohol.)	**Number**	**Percent of patients N=380**
Heroin	227	59.7%
Methamphetamine or other amphetamines	50	13.2%
Benzodiazepines	50	13.2%
Alcohol	36	9.5%
Marijuana or hashish	28	7.4%
Other opioids	27	7.1%
Buprenorphine or Methadone	18	4.7%
Other	17	4.5%
Cocaine/Crack	15	3.9%
Non-prescription GHB	2	0.5%
Some other drug but doesn't know/remember what it was	2	0.5%
Total	472	N/A

The method of drug use was asked. Of the 289 patients reporting (76.0% of POINT-engaged patients), the most common method was injection (58.8%), followed by snorting (23.9%), taking pills (12.8%), and other/multiple methods (4.2%).

Finally, questions regarding access to clean needles and naloxone were intended. As shown in Table 10, these questions were not asked/answered by a large proportion of patients (approximately 40-70%). However, responses among those who answered might indicate patient responsiveness. Few indicated having access to naloxone while using (13.1%) and very few said they would purchase them in a pharmacy (4.1%); however, nearly all (86.8%) were interested in taking home a free naloxone kit from the ED. Nearly half (48.2%) were interested in having access to clean needles.

Table 10. Access to Naloxone and clean needles

Questions about Naloxone and needle access	Number yes	Number who answered	% Yes	% missing
Do you OR anyone you know have access to Narcan (Naloxone) at the time you are using?	25	191	13.1%	49.7%
Are you interested in getting Narcan to take home today?	181	213	85.0%	43.9%
Narcan is available in Indiana pharmacies without a prescription. The cost is currently $70-$100. Do you think you would ever purchase Narcan for yourself at a pharmacy?	6	145	4.1%	61.8%
If we were to provide you with a FREE Narcan kit to take home with you today, would you be interested in having one?	171	197	86.8%	48.2%
Are you interested in having access to clean needles (i.e., a needle exchange program?	54	112	48.2%	70.5%

Treatment history

In addition to inquiring about the context of the current overdose, patients were also asked about their experiences with various substance use treatments. Two series of questions included in the Patient Questionnaire were insufficiently completed to report: (1) interest in hearing about various treatment options and (2) readiness for treatment.

While questions about past experiences with substance use treatment programs were also often unanswered/missing in the program data, we report in Table 11 all affirmative responses for treatment involvement as a conservative estimate for the patient population.

Table 11. POINT-engaged patients' history of substance use treatment

Treatment	Number	Percent of patients N=380
Ever enrolled in a drug treatment program?	163	42.9%
-Was this program specifically for opioid use?	132	34.7%
Ever enrolled in a methadone program?	46	12.1%
Ever been on Suboxone® (buprenorphine) that was prescribed to you?	80	21.1%
Ever bought Suboxone® (buprenorphine) on the street?	86	22.6%
Ever been on Vivitrol (naltrexone)?	25	6.6%
Ever tried anything else to prevent withdrawal?	11	2.9%

The opening question in Table 11 demonstrates that nearly half of all POINT patients report having some experience in a substance use treatment program (42.9%). However, only about one in ten (12.1%) said they had ever enrolled in a methadone program, while about two in ten (21.1%) reported having been prescribed buprenorphine. A similar proportion (22.6%) had bought it on

the street.

Conclusions

Patients who engaged with POINT differed from controls in some ways, other than the hours in which they presented to the ED: a greater percentage were female, a lower percentage were African American, and fewer had insurance (all statistically significant differences).

POINT demonstrated a substantial expansion of reach during this one-year evaluation period, increasing the proportion of opioid overdose patients engaged in the ED from 21% to 47%. POINT engaged 380 patients of the 806 who presented with opioid overdose to the ED in the year.

POINT provided many services to patients who engaged, though there was variability by service. PRC services were provided to nearly all (88.4%) POINT-engaged patients, a main focus of the foundation's funding. POINT provided naloxone kits to about two-thirds (63.9%) of POINT-engaged patients, exceeding the annual target of 200 stated in the proposal. HCV testing was completed in only 38 patients (10.0%), falling far short of the target of 500. Unlike naloxone and PRC services, HCV testing was not identified as a core element in the model definition process of Chapter 1. Roughly one-third of all POINT patients (35.3%) were referred to treatment by POINT.

Across all groups, heroin was, by far, the most common drug involved in overdoses (69.5% of all patients), followed distantly by prescription pain killers (7.1%) as well as those who denied/were unaware of having used an opioid despite responding to naloxone (8.3%). When asked about anything that was different about their drug use on the day of the overdose, about one-fourth of POINT-engaged patients said "nothing was different." However, 27.6% reported that this was the first time they had used in a while, and 7.9% used more than one drug at a time. Both of these situations increase risk of overdose. Most patients did not report having access to naloxone while using drugs, but nearly all were interested in getting it to take home on the day of the ED visit.

Nearly half of all POINT patients reported having some experience in a substance use treatment program (42.9%). However, only about one in ten (12.1%) said they had ever enrolled in a methadone program, while about two in ten (21.1%) reported having been prescribed buprenorphine; a similar proportion (22.6%) had bought it on the street.

The POINT team made contact with 44.5% of all POINT-engaged patients following their discharge from the ED. POINT delivered wrap-around services that matched well to the treatment barriers identified by POINT patients, including assistance with transportation, insurance/medical costs, and housing.

Chapter 4 | Hearing Patient Perspectives about POINT

Aim(s)

The main aim of this component of the evaluation was to understand the experiences of patients participating in POINT.

Methods and materials

We conducted semi-structured interviews with 11 current POINT patients. The POINT team referred potential participants based on inclusion criteria of current POINT participation and accomplishment of certain treatment milestones. Research assistants not affiliated with the POINT team conducted informed consent and the semi-structured interviews via phone or in person, based on participant preference. Participants received a $20 gift card for completing the interview, which was focused on the patient's experience, what they liked, what could have been better, and how POINT compared to other recovery and treatment experiences. Data were analyzed using thematic analysis. The analyst read each transcript in order to understand the overall scope of each patient's report before developing a codebook of emergent themes. The analyst then re-read each transcript, applying the codebook and looking for data that disconfirmed or expanded the initial set of themes. This process was repeated, with codes revised until stable. The finalized codebook was then applied to all included transcripts.

Results

Four themes emerged regarding successful POINT patients' experiences with the program. Patients described an experience in which they found themselves in the ED completely lost and deflated; the POINT staff provided them caring compassion, direction, and the supports they needed to travel in that direction. These supports continued through the initial linkage with treatment and included constant supportive contact with the team, all of which was aimed at providing the instrumental and emotional support the patient needed to own their own recovery: "The ladies [POINT STAFF] there really showed me that they were concerned and they cared about me."

Several patients contrasted their POINT experience with previous treatments: "I've noticed a lot of doctors they treat you like a drug addict. Absolutely. I mean it's horrible… [POINT staff] want to help people so it makes you feel good. It makes you feel better. You know what I'm saying?"

Similarly a patient reported, "But I felt like [the PRC] didn't judge me at all. She was very professional, very kind – made me feel a lot more comfortable than I would have because I – I've been to other emergency rooms and did not get treated very well." Several patients found the mere existence of a program that sought to help people who had overdosed to instill hope. "The thing is that they are in existence. That's the main thing, that POINT is in existence." Finally, consistent with battling stigma, some patients talked about how they felt that the POINT team's support was unconditional, stating: "So even if I did relapse, they wouldn't have disowned me" and "Then after I started being engaged, it was kind of like the drugs kind of came back a little bit. But, they didn't give up on me." For many patients, this support was essential. As one patient stated: "They instilled so much confidence in me that I was proud to do what I had to do in order to clean myself up and keep myself clean. Without Project POINT, I would either be dead or I'd be locked up. Either-or."

Many patients talked about being in a place of utter disorientation, with no resources, no idea how to go about how to recover or to gather the strength necessary to pursue that path. For example, one patient said, "I had nothing. I had no ID, no insurance, no Social Security card. I was just a mess – no resources basically." The POINT team began helping many patients get started establishing necessary resources and building a plan. One patient reflected upon this experience, stating, "In the beginning they're great. I didn't know if I'd have any insurance [at the] time. They got the insurance. I didn't know where to go to treatment. They set that up. They knew what to do. I didn't." Similarly, another person reported:

> They just do so much for a person with a lost soul like I had. They brought me back out of the wilderness. I got to the real world, and they made sure that I was strong enough to do this battle on my own knowing that it is a battle. They let me know that if I have any doubt, they're there for me.

As described by one patient, many people may not know what recovery options are available to them or what may be best for their situation: "I really didn't know there was all these options, for sure…I don't know about for everyone else, but it's like, give me direction, like what is the best route." Moreover, patients highlighted that the direction and support was emphasized in the beginning with the goal of building the patient's confidence that they could continue the process on their own. As one patient described, "Yes, they helped me get connected and saw to it that I was completing the courses that I needed to complete. They just took me by the hand, so to speak, and just led me through the programs that I needed to go through." This patient described the team providing information on numerous treatment and recovery options, providing support such as transportation, and regularly checking in with the patient. Eventually, after this intensive

support, the patient began to feel he could handle his own recovery without so much support: "They just really rolled out the carpet for me, it seemed like, really got it to where I wasn't afraid anymore."

Whatever it takes

The ostensive focus of POINT is connecting patients with MAT and other recovery services. Patients described rapid linkage with treatment coupled with services and support aimed at eliminating barriers to engaging in treatment. One patient stated: "I was sick, and I didn't know if I wanted to go to the hospital or not, and [the PRC] talked me into going. She just helps through everything, anything and everything. Everything to get me into treatment and everything else since then." Several patients emphasized how quickly they were linked with treatment and how crucial that was. For instance, "[The PRC] gave the phone number to call for me to make an appointment. I called and got in pretty quickly." and "Since I was a Project POINT patient, I was able to get right in." Emphasizing how crucial timely linkage is, one patient stated:

> I knew that I'd see a doctor immediately and I didn't have to go in and talk to somebody for a couple of weeks and then maybe see a doctor in a couple of weeks...You know, when they're ready to go, they need to go immediately…It needs to happen right there at that time. Because I know when they call me, I considered not going the next day, and I kind was like, "Well…" And then, anything could have happened. I could've got really high or I could have gotten some money or something could've happened. And it could've changed me from going easily.

In terms of specific supports, many patients received support with transportation: "They had me hooked up the very next day. They got me an Uber and they got me cabs, and then they gave me bus passes." Transportation supports often continued past the initial appointment: "Before I started working, I just didn't have transportation money. So, they would supply bus tickets for me, after I told them that I found a job." Support extended to whatever the patient needed not only to make their initial appointment but helping the person ease into a clean and normal life.

> We talk about things that are going on in my life, and they help me find the place that I will be living at. They help me find resources in the community for like baby stuff. I know [a PRC] has helped me get a winter coat, and she's gotten me plenty of baby stuff. They help me with anything and everything, bus passes, rides to appointments.

Constant contact

As described by the patient above, the POINT team initiates support in the ED, but they persist in supporting the patient unceasingly. "They're just there. If I'm not feeling good one day, [a PRC] will call me up, 'what are you doing?'" Similarly, "They would let me know that they were there for me, and they would call and do follow-up calls and things of that nature." This constant follow-up demonstrated to patients that they were cared for. For example, one patient described, "They actually care. They text message me to see how I'm doing. … And they understand. They understand how hard it is to stay clean, how drugs are everywhere." Another commented, "Well, if I don't call them, or text them, or something, then they'll text me and call me, ask me what I'm doing, or what I'm doing positive for my recovery." This constant contact gave some patients a psychological safety net they needed to continue their recovery. For instance, one patient stated: "And when I talk to them, they're happy for me and the way my life is going, and I've got a relationship with them to where it kind of makes me feel better to know I have people in my corner." This constant support is aimed at building the patient up so that she can own her own recovery: "Just having them there already waiting to help, you don't need a whole lot of confidence when they're there waiting for you.

Conclusions

Results must be viewed in context of the sampling frame—invited patients were required to have met certain treatment thresholds and were referred by the POINT team based on the patient's positive recovery. Therefore, it is unlikely participating patients would have overall negative or even neutral views of the POINT program. However, these patients' perspectives provide valuable insight to what those patients who benefited from the program found most useful.

Patients clearly valued the positive and supportive stance of the POINT staff members. Moreover, the POINT team's approach was a clear contrast to some patients' negative previous experiences with the ED or substance abuse treatment settings. The attitude was supported by the team's consistent follow-up and "whatever it takes" approach to supporting not only the patient's initial linkage with treatment, but their continued recovery and reconnection with mainstream society. It is important to note that many patients described their emotional and instrumental reserves to be completely tapped at the time they arrived at the ED; therefore, the POINT team played a key role in providing guidance in how to resume their recovery journey and the instrumental and emotional support they needed to sustain that journey. Several patients evidenced an increasing level of confidence and independence in sustaining their recovery. POINT provides intensive

supports starting in the ED and continued time-unlimited; however, these supports may be necessary and successful in nurturing patient's own recovery potential and resuming independence.

Chapter 5| Measuring the Impact of POINT on Patient Outcomes

Aim

The main goal of POINT is to reduce future overdoses and fatalities by increasing access to naloxone and connection to treatment for OUD. The aim of this component of the evaluation is to estimate the impact of POINT on key patient outcomes.

Methods and materials

To measure the impact of POINT on patient outcomes, we use two approaches.

The first is a comparison of key outcomes among POINT-engaged patients and non-POINT-engaged patients (i.e., controls) through 6 months of follow-up after an initial ED visit, using information in the Eskenazi electronic medical record (EMR) and IEMS (i.e., ambulance) records. As described in Chapter 3, the sample includes 380 POINT-engaged patients and 300 control patients who visited the Eskenazi ED during the one-year enrollment period (November 6, 2017 – November 5, 2018). Control patients presented to the ED during hours not covered by the POINT staff and were not engaged in POINT.

The second is a "difference-in-differences" analysis that uses data from the Indiana Network for Patient Care (INPC). This analysis allows us to follow individuals who engage with other healthcare systems outside of Eskenazi following their initial encounter at the Eskenazi ED. It also allows us to account for differences in individuals' engagement with MAT or utilization of the ED prior to entering the Eskenazi ED during the POINT period by exploiting data going back to 2011.[5] This allows us to be more confident that we are measuring the causal impact of POINT on patient outcomes, and for this reason, difference-in-differences analyses are widely used in health services research to estimate causal impacts in cases where a randomized experiment is not available.

The sample for the difference-in-differences analysis includes 1,462 individuals who were observed within the INPC in the period both before and after POINT was in effect and for whom complete data were available. **In this analysis, the arms are defined differently** because patients are assigned to POINT and control groups based on the hours they presented at the ED with an overdose. As such, the POINT arm refers to all patients meeting POINT's eligibility criteria

[5] It measures the difference in outcomes like MAT engagement for individuals who entered the ED during POINT's hours of operation after POINT launched, relative to their MAT engagement before POINT's launch, to MAT engagement for those who entered the ED outside of POINT's hours of operation after POINT's launch, relative to their MAT engagement before POINT's launch. Full technical detail on the difference-in-difference approach is provided in Appendix C.

who were admitted to the ED during POINT hours of operation (whether or not they engaged with the intervention). The control arm refers to all patients meeting POINT's eligibility criteria who were admitted to the ED during a time outside of POINT's hours of operation. An analysis of observable characteristics (not shown) indicates no statistically significant differences between POINT and control groups.

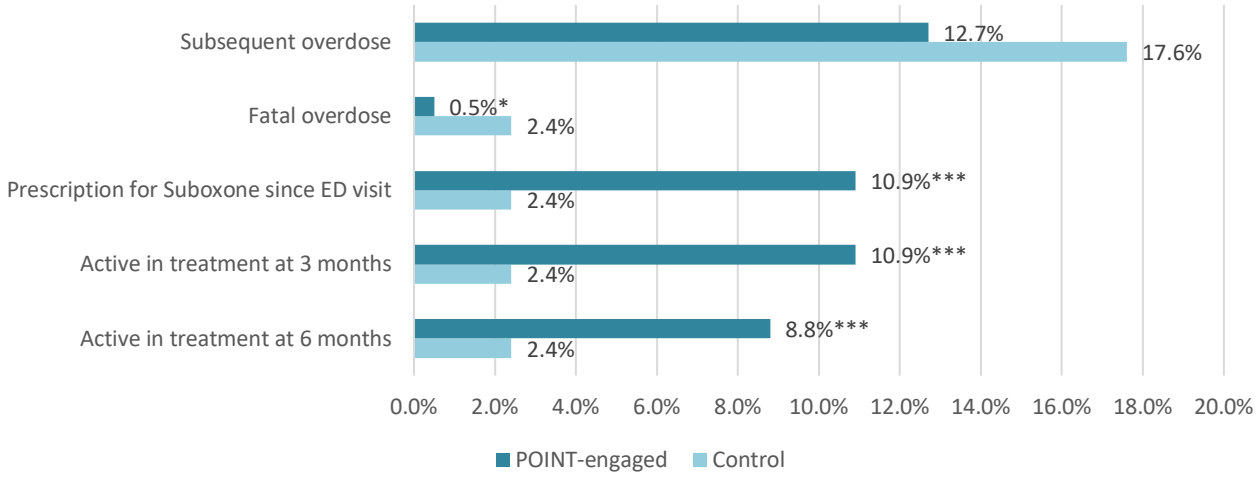
This analytic approach provides an intent-to-treat impact estimate. That is, estimates reflect the impact of being *offered POINT,* regardless of whether the patient engaged with POINT. This is a policy-relevant parameter, as it reflects the impact of having POINT available. These analyses do not estimate the impact of receiving POINT services.[6]

Results

Comparison of POINT-engaged and control patients per Eskenazi and IEMS records

Figure 13 demonstrates the comparison of the main outcomes. POINT-engaged patients had lower rates of subsequent overdose and fatal overdose per the program's records. The difference in the rate of subsequent overdose between groups was approaching significance (p =.08), but the rate of fatal overdose was significantly lower in the POINT group (p =.04). Knowledge of fatalities is limited, however, to deaths reflected in the EMR. **POINT-engaged patients had 3-4 times higher rates of having a buprenorphine prescription and of being in active treatment at 3 and 6 months. All measures of engagement in treatment were significantly better among POINT-engaged patients than controls (p <.001).**

Figure 13. Comparison of key outcomes between POINT-engaged and control individuals



*p≤0.05, **p≤0.01, ***p≤0.001

[6] The estimates likely underestimate the impact of participating in POINT, as the treatment group of all eligible individuals includes some who engaged with POINT and some who did not.

Additional outcomes include measures of healthcare insurance and healthcare utilization; these results are included in Table 12. **A higher proportion of POINT-engaged patients were insured at 6 months (70.0%) than controls (64.2%)**, though at intake the opposite was true (68.2% POINT vs. 76.2% control patients were insured at intake). The groups' insurance rates did not differ significantly at 6-month follow-up (p=0.11), though they were significantly different at intake (p=0.02). **Even though POINT does not seem to have increased the proportion of patients insured, it does seem to have assisted patients in maintaining their coverage.** POINT-engaged patients had lower utilization of EMS ambulance runs and ED visits, but higher hospitalization rates. None of the measures of healthcare utilization were significantly different between the two groups. Of note, the data were incomplete in terms of identifying the proportion of hospitalizations that were substance-abuse related.

Difference-in-differences analysis using INPC data

The difference-in-differences analysis provides an additional check on the findings from comparing POINT-engaged and non-POINT-engaged patients. We test whether POINT-eligible patients who came into the Eskenazi ED during POINT's hours of operation saw greater increases in outcomes like engagement with MAT than POINT-eligible patients who came into the Eskenazi ED outside of POINT's hours of operations.

The key outcomes for this analysis were measured at the 6-month follow-up and fall into two categories. One set of outcomes consists of dichotomous measures: whether the patient had an opioid poisoning, had any poisoning, had insurance, had an HCV test, and had an HIV test in the past six months. The second set of outcomes consists of count measures: the number of psychiatric consultations, the number of MAT prescriptions, the number of opioid prescriptions, and the number of times naloxone was used in the previous 6 months. These different types of outcomes require different types of models (logistic regression and negative binomial regression); see Appendix C for analytic details.

Table 13 provides an overview of the logistic regression results. Coefficients should be interpreted as percentage point increases; for example, though it is not statistically significant, we find that POINT patients had an 18 percentage point higher likelihood of being insured at the 6-month follow up. To be clear, we do not find statistically significant impacts of POINT on poisonings, having insurance, or HCV or HIV testing.

Table 12. Comparison of outcomes between POINT-engaged and control patients

Outcome	POINT-engaged N=380 Number	Percent	Control N=300 Number	Percent	Ratio P:C	p-value	Number missing
Subsequent overdose or death							
Patients with evidence of overdose since index ED visit	48	12.7%	52	17.6%	0.72	0.08	6
Number of overdoses since index ED visit (through 6-month follow-up)	70	0.19	72	0.24	0.79	0.22	6
Patients with fatal overdose per death record, EMR, or other follow-up	2	0.5%	7	2.4%	0.21	**0.04**	7
Insurance							
Patients with evidence of insurance at 6-month follow-up	264	70.0%	190	64.2%	1.09	0.11	6
Treatment							
Patients with evidence of following up for one substance abuse treatment appointment	96	25.5%	21	7.1%	3.59	**<0.001**	5
Patients with buprenorphine prescription since initial evaluation	41	10.9%	7	2.4%	4.54	**<0.001**	9
Patients active in treatment at 3 months post index ED visit	41	10.9%	7	2.4%	4.54	**<0.001**	6
Patients active in treatment at 6 months post index ED visit	33	8.8%	7	2.4%	3.67	**<0.001**	9
Healthcare utilization							
Patients with evidence of repeat EMS (ambulance) call per EMR review	71	19.0%	69	23.2%	0.82	0.18	4
Patients with repeat EMS calls that were substance abuse related	52	73.2%	53	76.8%	0.95	0.53	0
Number of EMS calls since index ED visit across all patients in group	115	0.30	112	0.38	0.79	0.33	4
Number of EMS calls since index ED visit across all patients in group that were substance abuse related	78	0.21	78	0.26	0.81	0.29	4
Patients with evidence of repeat ED visit per EMR review	123	32.6%	114	38.3%	0.85	0.22	4
Number of repeat ED visits since index ED visit across all patients in group	273	0.73	297	0.82	0.89	0.47	6
Number of repeat ED visits since index ED visit across all patients in the group that were substance abuse related	129	0.34	104	0.35	0.97	0.52	7
Number of hospitalizations (overnight stays) since index ED visit across all patients in group	46	0.12	29	0.10	1.20	0.44	10
Percent of hospitalizations since index ED visit that were substance abuse related	These data are too incomplete to report. 23 of the 75 hospitalizations were not accounted for in the data, which represents 31.7%.						23
Number of hospitalizations across all patients in group that were substance abuse related							23

Notes: Percentages are valid percentages, where denominator excludes missing cases. The P:C ratio is calculated by dividing the POINT-engaged group value by the control group value. Bold p-values indicate the difference between groups is statistically significant

Table 13. Impact of POINT from difference-in-difference model, logistic regression

Outcome	Impact
Poisoning	
Opioid poisoning	0.07
Any poisoning	0.14
Insurance	
Have insurance	0.18
Other outcomes	
HCV testing	-0.07
HIV testing	0.00

Note: All outcomes are dichotomous, for example whether a person had any opioid poisoning instances or had insurance at the 6-month follow-up.

Table 14 summarizes the results of the negative binomial regression model. These coefficients should be interpreted as increases in the number of times something occurred. For example, we estimate that POINT increased patients' number of MAT prescriptions by 1.53. Results for MAT prescriptions, opioid prescriptions, and naloxone uses are statistically significant. These results are discussed in more detail below.

Table 14. Impact of POINT from difference-in-difference model, negative binomial regression

Outcome	Impact
Treatment	
Psychiatric consultations	-0.44
MAT prescriptions	1.53**
Other outcomes	
Opioid prescriptions	1.00**
Naloxone uses	2.35**

Note: All outcomes are count variables, for example the number of psychiatric consultations or the number of opioid prescriptions
**p≤0.001

POINT led to a substantial increase in use of MAT, confirming findings from the comparison of POINT-engaged and non-POINT-engaged patients. Individuals who enter the ED during POINT hours after the launch of POINT saw substantially greater increases in MAT utilization (1.53 more prescriptions), relative to their utilization before POINT's launch, than individuals who entered the ED outside of POINT hours after the launch of POINT, relative to their utilization before POINT's launch.

Additionally, POINT clients saw a **significant increase in naloxone dispensed to them,** which is one of the program's primary goals. Specifically, POINT increased the number of times patients

used naloxone in the six months following the ED visit by 2.35.

While both the simple comparison of POINT-engaged and non-POINT-engaged patients and the difference-in-differences approach find POINT increases the likelihood of having insurance, neither of these results is statistically significant.

An unexpected finding is that POINT led to an increase in (non-MAT) opioid prescriptions. Specifically, we find that being offered POINT led to 2.65 additional opioid prescriptions in the 6-month follow-up window, and it is not clear how to interpret this. This outcome might indicate increased use of opioids, which is unexpected.

Conclusions

Consistent with the main goals of the program, POINT leads to substantial increases in initial MAT engagement. POINT-engaged patients were more likely to have a prescription for buprenorphine and be engaged in treatment at three and six months after their initial engagement with POINT. This finding was further corroborated in the difference-in-differences analysis, which may overcome some potential shortcomings of the simple comparison of POINT-engaged and non-POINT-engaged individuals.

Chapter 6| Conducting Cost-Benefit and Cost-Effectiveness Analyses of POINT

Aim

The previous chapter discusses the impact of POINT on patient outcomes and finds POINT led to substantial increases in initial MAT engagement. This section describes how the costs of POINT compare to its benefits, measured both in dollar terms (cost-benefit analysis) and the number of individuals engaged in treatment (cost-effectiveness analysis). This information may be useful to decision makers comparing POINT to other interventions designed to increase engagement with MAT or those assessing whether programs like POINT are financially sustainable without grant funding.

Methods and materials

We completed two analyses. The first is a *cost-benefit analysis*, which compares the costs of POINT to its benefits, measured in dollar terms. We undertook this analysis from the healthcare perspective in order to understand whether the benefits of POINT (e.g., through any cost savings due to decreases in healthcare utilization) exceeded the costs to the healthcare provider—in this case, Eskenazi Health.

Key inputs into the cost-benefit analysis are described below:

- Estimates of the impact of POINT on engagement with MAT, healthcare utilization and other outcomes come from the analyses of the impact of POINT shared in Chapter 5.
- The direct costs of POINT include salaries for PRCs, social workers, care coordinators, medical directors and addiction psychiatrists; travel for PRCs; supplies, including naloxone kits, HCV test kits, incentives, and phones; education and promotion to raise awareness of the program; and other costs, such as training. These costs are calculated based on the budget provided to the Richard M. Fairbanks Foundation in October 2016 as part of Eskenazi Health Foundation's proposal for support for POINT.
- Additional costs may include costs of medication for those receiving MAT that are not reimbursed (e.g., because patients lack insurance or reimbursement through Medicaid or other payors is below the actual cost). The benefits of POINT from the healthcare perspective include reduced ED utilization if POINT leads to a reduction in ED visits for opioid overdose. Costs of MAT and ED visits come from conversations with Eskenazi Health (Eskenazi Health 2019).

For a healthcare provider, a cost-benefit analysis can help the provider understand whether the program "pays for itself" through lowered costs. If not, this may justify seeking outside support through grants or other external funding sources.

The second analysis is a *cost-effectiveness analysis*. A cost-effectiveness analysis is designed to measure the dollars required to achieve a certain benefit. In this case, we focus on the number of individuals engaged with MAT and seek to estimate how many individuals were engaged with MAT as a result of POINT per dollar spent, given the costs (and any cost savings) described above. Cost-effectiveness analysis provides a way to compare the relative costs of different interventions aimed at promoting engagement with MAT by the type of individuals seen by POINT.

Results

As discussed in Chapter 5, the primary impact of POINT was on engagement with MAT. We use the impact observed in REDCap data analysis, which found 2% of individuals in the control group were engaged with MAT at three-month follow-up and 11% of individuals in the POINT group were engaged with MAT at three-month follow-up. Given that 380 individuals participated in POINT, this means that **POINT was associated with an additional 32 individuals to become engaged with MAT at three-month follow-up**.

The **total costs of implementing POINT are $421,339 per year**. This includes $408,199 in personnel, travel, supplies, education and other costs, plus $13,140 in increased costs due to the additional 32 individuals engaged with MAT. Costs of MAT include only the cost of medication. We do not include costs for personnel, since addiction psychiatrists are included in the costs of implementation; however, adding costs of additional staff to assist in administering MAT would increase POINT's costs further. Based on estimates provided by Eskenazi Health, methadone charges are $1,356 for 12 weeks (Eskenazi Health 2019).[2] Medicaid approximately covers this entire cost, so the increase in cost comes from the estimated 30% of patients who do not have insurance, based on the REDCap data described in Chapter 3.

Previous analyses of the cost-benefit of MAT find substantial cost savings realized through a reduction in ED visits for opioid use (Busch et al. 2017, Mohlman et al. 2016; Ettner et al. 2006). However, because the evaluation failed to find statistically significant reductions in these

[2] It was not possible to obtain estimates for costs of buprenorphine or vivitrol and their reimbursement rates.

outcomes, these savings do not factor into our analysis. Additional cost savings could also come from earlier detection of HCV. However, because there were no statistically significant impacts found for HCV testing in POINT, these costs are omitted as well.

Finally, if POINT increased Medicaid enrollment among participants, that could also lead to cost savings from a healthcare perspective. However, the more rigorous test of program impact—the difference-in-differences model—failed to find a statistically significant increase in Medicaid enrollment. Even if there were a significant increase in Medicaid enrollment, this alone would not substantially reduce healthcare costs. Communications with Eskenazi Health suggest cost savings would primarily be achieved through a reduction in ED visits instead of Medicaid enrollment because ED visits involving opioid overdose are reimbursed at levels lower than their actual cost.

As a result, **cost savings for POINT are estimated to be $0**.

For the cost-benefit analysis, these results suggest that **POINT cost $421,339 during the evaluation period, or $1,109 per person engaged with POINT, from the healthcare provider perspective**. In terms of cost-effectiveness, **POINT spent $13,045 per person engaged in treatment.** These calculations are shown in Table 14.

Table 14. Cost-benefit analysis and cost-effectiveness of POINT

Number of individuals participating in POINT		**380**
Costs of implementing POINT	**$**	**408,199**
Personnel	$	311,889
Travel	$	12,000
Supplies	$	49,660
Education/toolkit/promotion	$	17,500
Other	$	17,150
MAT costs from POINT, net of any cost savings	**$**	**13,140**
Baseline probability of receipt of MAT		2%
Probability of receipt of MAT with POINT		11%
Increase in number of individuals receiving MAT due to POINT		32
Benefit per individual receiving MAT	$	-
Cost per individual receiving MAT	$	407
Total costs of POINT, net of any cost savings	**$**	**421,339**
Total costs of POINT, net of any cost savings, per person	**$**	**1,109**
Total costs of POINT, net of any cost savings, per person engaged with MAT	**$**	**13,045**

Conclusions

From the perspective of Eskenazi Health, POINT did not "pay for itself" through decreases in healthcare utilization. This provides motivation for a continued need for grants and other external sources of funding to support POINT. While POINT's costs exceeded its monetary benefits during the evaluation period, improvements to the program based on some of the findings of this report may increase its impact on outcomes like ED utilization. In addition, improved reimbursement for POINT services, such as those provided by the PRC, would also decrease the costs of POINT.

The analysis presented in Chapter 5 found POINT was effective at linking individuals with MAT, the gold standard for OUD treatment. The cost-effectiveness findings provide a benchmark with which to compare other interventions aimed at promoting use of MAT, especially for a population that may be especially difficult to engage in treatment. If other interventions targeted toward this population are more expensive per person engaged, this would suggest POINT is a cost-effective strategy for engaging individuals in treatment.

Finally, while a healthcare perspective is useful for organizations considering implementation of similar programs, this perspective ignores benefits of POINT beyond those that might show up on a healthcare provider's balance sheet. Previous analyses have documented cost savings from MAT due to lower criminal activity and improved employment outcomes (Watson et al. 2018, Busch et al., 2017, Ettner et al., 2006). Incorporating these additional benefits suggests a smaller monetary loss from POINT and provides further motivation for supporting programs like POINT from funding sources outside of healthcare providers, since these additional benefits accrue to others beyond healthcare providers, such as government.[7]

References, Chapter 6

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Chapter 7 | Synthesizing Results with Key Takeaways and Recommendations

In this section, we provide an overview and synthesis of the main evaluation results, discuss its impact beyond Eskenazi and POINT's future sustainability, and provide concluding remarks. When reading this synthesis, it is important to keep in mind that POINT is a novel strategy for addressing one aspect of the nation-wide opioid crisis (i.e., improving treatment access), and the intervention grew and evolved in light of new opportunities and challenges it faced. Furthermore, the data collected reflect a single stage in POINT's history; as such, the evaluation does not sufficiently capture the intervention's successes prior to the receipt of foundation funding.

Implementation of POINT

Chapter 1 highlighted the most important ingredients of POINT from the perspective of program administrators and staff. The fact that PRCs were the most supported element of the program (even though they were a relatively new addition to the intervention at the time data were collected) helps to justify the expansion of staffing to include this role as part of the foundation's support. While not stated explicitly, the importance of coaches to the model was affirmed through the work of the PEC described in Chapter 2. This work pointed to the need for non-judgmental and attentive communication when interacting with overdose survivors specifically and users of opioids in general, and one of the primary benefits of peer professionals discussed in the literature is their ability to empathize with patients through shared lived experiences (Jacobson, Trojanowski, & Dewa, 2012). This is further supported by qualitative interviews with POINT patients described in Chapter 4 that highlight interactions with coaches as being one of the primary aspects of POINT that patients liked. Quantitative results in Chapter 3 demonstrating higher rates of reported heroin use and a lower rate of outright denials of heroin use among POINT versus control patients might also be indicative of coaches' ability to better engage and communicate with patients (in comparison to regular ED staff who would have interacted with control patients) in a manner that makes them more willing to be open an honest about their use. Finally, the importance of patient-PRC interaction to the POINT intervention demonstrates a **need to develop or adopt fidelity guidelines that go beyond the structural aspects of the program** described in Chapter 1 and **drill down more deeply into the specific clinical aspects of PRC interactions** that should be replicated in all patient encounters.

Also related to Chapter 1's implementation findings, it is curious that HCV testing was not identified as a core element of the program, particularly since expansion of HCV testing was a goal of the grant funding. A potential explanation for this can be found in Chapter 3, which

demonstrated HCV testing was not carried out for most POINT patients because of lack of clinical need, patient refusals, or unavailability of tests or testers. Therefore, it could be that POINT team members who participated in the fidelity interviews did not see HCV as being important simply because it was not getting done. In light of this and opioid users' high-risk status for contracting HCV, it might be worthwhile to **re-evaluate whether HCV testing should be added as a core element of the intervention**. (It is important to note that opioid users are similarly at high risk of contracting HIV; however, HIV testing was not funded under the grant because it was part of standard care in the ED.)

The characteristics and needs of POINT patients

Regarding the characteristics of POINT patients, Chapter 3 demonstrates PONT patients were largely male, white, and under the age of 46, which is consistent with the demographics of the epidemic nationally (Henry J. Kaiser Foundation, n.d.). The data in this chapter also demonstrate that POINT seems to have had less effective reach among men, African Americans, and those over 56 based on the lower representation of these groups among enrolled patients verses those in the control group. **Identifying barriers to enrolling these groups and ways to overcome them would be beneficial**. Not surprisingly, Chapter 3 also demonstrates high rates of heroin use, injection opioid use, polysubstance use (including benzodiazepines—a class of drugs that increase the risk of overdose), as well as a substantial number of patients with co-morbid mental health issues that likely need to be addressed in tandem with their OUD. An additional high-risk behavior identified in the data is that approximately one-fourth of patients indicated their opioid use immediately prior to hospitalization was the first time they had used in a while, meaning they likely had a lowered tolerance that could have helped precipitate the overdose.

Despite the substantial levels of admitted high-risk opioid use behaviors (use of illicit opioids, injection drug use, polysubstance use, using with a lowered tolerance), relatively few patients reported they have any access to naloxone when they use. In addition, very few patients said they would be interested in purchasing naloxone at a pharmacy (which is not surprising considering the out-of-pocket cost and potential public stigma they might encounter); however, most indicated they were interested in taking home a naloxone kit from the ED. These data drive home the importance of POINT's naloxone distribution activities, which are a primary goal of the program and a core element of the intervention discussed in Chapter 1. In addition to interest in naloxone, nearly half of POINT patients indicated wanting access to clean needles. Unfortunately, these are not able to be distributed through the ED or purchased at a pharmacy for the purpose of reducing

transmission of diseases related to injection drug use. However, a syringe exchange opened within the City of Indianapolis after the majority of these data were collected, and POINT coaches can help link patients to the syringe exchange program in the future.

Furthermore, POINT patients have high levels of unmet needs, including but not limited to: lack of insurance, housing and food insecurity, clothing needs, and lack of regular medical care. All these are barriers to SUD treatment and retention that POINT aims to address through its PRC activities. The findings from Chapter 4 help demonstrate that addressing these barriers was one of the key aspects of POINT that patients found beneficial.

Chapter 3 also highlights the fact that almost half of POINT patients had prior experience with SUD treatment, and many of these patients had OUD experience. This is important in light of Chapter 2's PEC findings, as it demonstrates many POINT patients likely had less than positive treatment experiences in the past, thus reinforcing the need for PRC's non-judgmental approach. However, these data also demonstrate the other half of the POINT-engaged patients had no prior treatment experience. This highlights that a different approach to referral of these patients might be beneficial, **such as providing them with a step-by-step overview of what to expect when they go to their first treatment appointment**.

Outcomes bearing consideration

Many of the service-related outcomes highlight POINT's successes. For instance, as shown in Chapter 3, POINT was successful in its stated goal of expanding services to reach more clients, with a 26 percentage point increase in the proportion of overdose patients that were engaged with POINT during their Eskenazi ED visit, stemming from the expansion in staffing and hours resulting from the foundation's funding. Additionally, close to 90% of the patients POINT staff encountered agreed to engage in services, which is an accomplishment considering general mistrust of the healthcare system, internalized stigma, and other factors that are recognized barriers to treatment engagement among this population (Knudsen, Abraham, & Oser, 2011; Kresina, & Lubran, 2011; Olsen & Sharfstein, 2014). Of those who engaged with the intervention, the vast majority of patients were provided with PRC services and brief motivational interviewing. POINT exceeded its stated naloxone distribution goals within the evaluation year. And, while treatment referrals were only made for a minority of patients, it is important to keep in mind that two of the critical ingredients of POINT described in Chapter 1 are harm reduction and patient choice, which means POINT staff respect all patient decisions and will continue to work with them even if they refuse treatment. Finally, when looking at what happened with patients after they were discharged from the ED, POINT was successful in making contact with 169 patients, which is just under half of all those who engaged with the intervention. The only area

where service outcomes were less than optimal was related to the low numbers of HCV tests completed that were discussed previously above.

Regarding clinical/patient outcomes, a primary goal of POINT is to connect patients with MAT and other recovery services, and the data indicate the intervention was successful in doing this. As demonstrated in Chapter 5, POINT-engaged patients were significantly more likely to have received an MAT (specifically buprenorphine) prescription after their ED discharge than controls were, and the validity of these findings was supported by the difference-in-differences analysis that compared changes in outcomes for overdose patients who presented in the ED during a POINT shift verses those who presented at another time, before and after the POINT expansion. Findings from Chapter 4 support the premise that intensive PRC services played a role in this by helping to eliminate barriers to treatment engagement for patients. Looking at longer-term outcomes presented in Chapter 5, POINT patients were also more likely to be engaged in treatment at 3 and 6 months post-ED discharge than controls.

Though the impact was not statistically significant, POINT patients also had a higher rate of insurance coverage at 6 months than controls, despite having a lower rate of insurance at time of ED visit. POINT appears to have assisted patients in maintaining coverage, while the insurance rate among controls dropped significantly between the time of ED visit and 6-month follow-up.

Chapter 5 showed mixed results in relation to opioid poisoning, with the comparison of POINT and control patients showing higher rates of overdose and overdose deaths in the control group; these results were approaching statistical significance and statistically significant, respectively. However, the difference-in-differences analysis found no difference in opioid poisoning in individuals who were admitted to the ED during a POINT shift.

Strangely, the difference-in-differences analysis showed those admitted to the ED during a POINT shift were more likely to have a non-MAT opioid prescription in their record after their ED discharge. This is a result that we are unable to explain given the limitations in our data. Regardless, the POINT team might consider instituting a **process for tracking non-MAT opioid prescribing as a form of quality control** in light of this finding.

Finally, Chapter 6 shows that, despite its successes, POINT is not an intervention that can pay for itself given the outcomes observed. This in no way means that POINT is not a beneficial intervention, as every person POINT connects with treatment and services is a successful outcome, as these linkages would not have happened otherwise. Additionally, the economic analysis we conducted did not account for social benefits, such as improvements in quality-

adjusted life years, people returning to the workforce, reduced criminal justice involvement, or potential reduction in involvement with the child welfare system for those patients who have children. While these societal benefits could be significant, they do not result in a cost savings for the hospital. As such, the sustainability of POINT will likely rely on the attainment of funding from external sources.

POINT's impact beyond Eskenazi

Any discussion of POINT's impact would be incomplete without pointing to the wider influence the intervention has had within the State of Indiana at the time this evaluation was coming to a close in August of 2019. Because of the significant attention POINT has received, it became part of the inspiration for the State of Indiana's Recovery Coach and Peer Support Initiative, which was funded through the U.S. Substance Abuse and Mental Health Services Administration's (SAMHSA's) Opioid State Targeted Response Act mechanism. Between June 2017 and May 2019, this initiative funded 10 healthcare organizations across Indiana to implement ED-based peer support models. Statewide, 1,032 ED patients were served by recovery coaches through this program from February 5, 2018 to March 14, 2019. Of these patents, 596 agreed to PRC services, 210 of whom were connected with MAT (Paquet et al., 2019). In addition to POINT's inspiration for the broader initiative, many of these programs based their service models on POINT.

The POINT model has also been replicated within IU Health Methodist (Indianapolis, IN) and Ball Memorial (Muncie, IN) as part of a clinical trial funded by the National Institute on Drug Abuse (Watson et al., 2019). This study aims to demonstrate the effectiveness of PRCs in connecting ED patients with OUD to MAT. It will accomplish this using a randomized trial approach that will more effectively allow researchers to determine the impact of the program than the data able to be collected through this evaluation. This study has potential for national impact as, despite the expansion of ED-based PRC services and some evidence supporting their implementability and impact on service-related outcomes (see Samuels, 2014 and Samuels et al., 2019), no studies to date have provided strong experimental evidence to demonstrate these interventions are truly effective at improving clinical outcomes.

Looking toward POINT's future

Regarding sustainability, as the current grant ends, POINT has successfully obtained some additional federal funding through the State of Indiana that will help support services through May 2020. In addition to supporting the addition of two PRCs and a significant portion of the POINT program manager's salary, this funding also specifically requires Eskenazi to begin initiating buprenorphine (a form of MAT) treatment within the ED. This is exciting, as ED-based buprenorphine initiation is considered an evidence-based practice (D'Onofrio et al., 2015) that

leads to higher rates of OUD treatment linkage and retention because it eliminates the highly precarious period between ED discharge and MAT initiation when patients are likely to use again in order to avoid withdrawal. Hence, it is promising that the implementation of this practice will improve POINT's patient outcomes to a level that the program will begin to pay for itself. (Busch et al., 2017).

In addition, the State of Indiana has recently allowed for billing of PRC services through Medicaid, which provides a new avenue for service reimbursement. However, it is likely that coaching services performed in the ED will not be reimbursable since they are considered part of an existing bundled ED-visit payment. Though, this should hopefully not preclude Eskenazi from **billing for PRC services provided after ED discharge to ensure patients have a successful transition to a long-term MAT provider**.

Finally, it is important to note that Eskenazi has continued to apply for external grant funding to support POINT beyond this grant, including funding from SAMHSA and the U.S. Department of Justice. While decisions on this funding have not been made at the time of this report, the fact Eskenazi dedicated resources to develop and submit these applications demonstrates the value it places in Project POINT.

Conclusion

In considering the content of this report, it is important to understand that, while there have been some challenges, the evaluation results largely demonstrate that POINT has been successful in meeting the majority of its stated goals in relation to this grant. It is worth calling attention to the fact that POINT is a highly complex intervention that fits within a number of different intervention categories. Through its mission to serve highly stigmatized and underserved ED patients to contribute a solution to a pervasive social problem, POINT has aligned itself with the philosophy of social emergency medicine. A new paradigm of emergency medicine aims to identify and develop solutions for health inequities through its unique position in the community and healthcare system – a position that frequently provides care to members of vulnerable populations (Anderson, Hsieh, and Alter, 2016). POINT is also a critical time intervention because it engages with patients at a highly critical period (post overdose) when they might be most willing to make a change in their life regarding their opioid use and assisting them through a key transition phase of services (Center for the Advancement of Critical Time Intervention, n.d). It is a harm reduction intervention because of its non-judgmental approach to working with and educating patients to reduce their risk of a future overdose despite their desire to engage in treatment services (Marlatt, 1996). And, it is a treatment linkage intervention, due to its focus on facilitating patients' initial connection to MAT. All of these aspects of the intervention have been demonstrated to be

important in one way or another through this evaluation. However, **it is the treatment linkage aspect that is most important to keep in mind when considering the evaluation results**, as two different analyses using two different datasets demonstrated POINT has been successful in this regard. While POINT's recovery coaches continue to provide feasible supports that they are able to continue after the initial treatment linkage occurs, it is also a responsibility of MAT providers to ensure their services are appropriately meeting patient needs. This next link in the treatment chain that is somewhat beyond POINT's scope. That said, POINT does fill this gap to some extent through the intensive and non-judgmental supports it offers to patients after they have connected to treatment. Perhaps the lessons learned through this evaluation of POINT, particularly in regard to patient engagement, could be applied in a treatment retention context, an area that is currently lacking when it comes to evidence-based intervention (Timko et al., 2016).

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Appendices

Appendix A. Demographics of patient groups

	POINT-engaged N=380		Controls N=300		Not assessed N=84		Declined N=42		All N=806	
Age										
Mean	35.2		36.5		36.2		36.3		35.9	
Range	15 - 75		18 - 78		22 - 70		17 - 68		15 - 78	
Age Groups	**No.**	**Percent**	**No.**	**Percent**	**No.**	**Percent**	**No.**	**Percent**	**No.**	**Percent**
12-17	3	0.8%	0	0.0%	0	0.0%	2	4.8%	5	0.6%
18-25	54	14.3%	45	15.0%	12	14.5%	7	16.7%	118	14.7%
26-35	164	43.4%	119	39.7%	36	43.4%	17	40.5%	336	41.8%
36-45	100	26.5%	74	24.7%	17	20.5%	5	11.9%	196	24.4%
46-55	37	9.8%	34	11.3%	10	12.0%	4	9.5%	85	10.6%
56 and Over	20	5.3%	28	9.3%	8	9.6%	7	16.7%	63	7.8%
Total:	378	100.0%	300	100.0%	83	100.0%	42	100.0%	803	100.0%
Missing	*2*		*0*		*1*		*0*		*3*	
Gender	**No.**	**Percent**	**No.**	**Percent**	**No.**	**Percent**	**No.**	**Percent**	**No.**	**Percent**
Male	243	64.1%	212	70.9%	63	75.0%	32	76.2%	550	68.4%
Female	136	35.9%	85	28.4%	21	25.0%	10	23.8%	252	31.3%
Other	0	0.0%	2	0.7%	0	0.0%	0	0.0%	2	0.2%
Total:	379	100.0%	299	100.0%	84	100.0%	42	100.0%	804	100.0%
Missing	*1*		*1*		*0*				*2*	
Race	**No.**	**Percent**	**No.**	**Percent**	**No.**	**Percent**	**No.**	**Percent**	**No.**	**Percent**
White	336	88.4%	238	79.9%	64	76.2%	36	87.8%	674	83.9%
African American	37	9.7%	54	18.1%	18	21.4%	3	7.3%	112	13.9%
Asian/Pacific Islander	0	0.0%	2	0.7%	1	1.2%	1	2.4%	4	0.5%
Native American	2	0.5%	0	0.0%	0	0.0%	0	0.0%	2	0.2%
Other	2	0.5%	3	1.0%	1	1.2%	0	0.0%	6	0.7%
Multiracial	3	0.8%	1	0.3%	0	0.0%	1	2.4%	5	0.6%
Total:	380	100.0%	298	100.0%	84	100.0%	41	100.0%	803	100.0%
Missing	*0*		*2*		*0*		*1*		*3*	
Ethnicity	**No.**	**Percent**	**No.**	**Percent**	**No.**	**Percent**	**No.**	**Percent**	**No.**	**Percent**
Hispanic	5	1.3%	4	1.3%	3	3.6%	2	4.8%	14	1.7%
Non-Hispanic	374	98.7%	295	98.7%	81	96.4%	40	95.2%	790	98.3%
Total:	379	100.0%	299	100.0%	84	100.0%	42	100.0%	804	100.0%
Missing	*1*		*1*		*0*		*0*		*2*	

Appendix B. Primary and secondary drug(s) involved in overdoses by patient group

Primary drug	POINT-engaged N=380		Controls N=300		Not assessed N=84		Declined N=42		All N=806	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Heroin	283	74.5%	201	67.0%	50	59.5%	26	61.9%	560	69.5%
Prescription pain killers	22	5.8%	22	7.3%	8	9.5%	5	11.9%	57	7.1%
Benzodiazepines	14	3.7%	3	1.0%	5	6.0%	0	0.0%	22	2.7%
Fentanyl	7	1.8%	5	1.7%	2	2.4%	0	0.0%	14	1.7%
Denies opioid use though responded to naloxone	17	4.5%	36	12.0%	8	9.5%	6	14.3%	67	8.3%
Methamphetamine	4	1.1%	0	0.0%	0	0.0%	1	2.4%	5	0.6%
Cocaine/crack	4	1.1%	0	0.0%	0	0.0%	0	0.0%	4	0.5%
Buprenorphine	4	1.1%	2	0.7%	1	1.2%	0	0.0%	7	0.9%
Methadone	3	0.8%	0	0.0%	0	0.0%	0	0.0%	3	0.4%
Alcohol	2	0.5%	2	0.7%	2	2.4%	0	0.0%	6	0.7%
Other, unspecified	6	1.6%	11	3.7%	2	2.4%	2	4.8%	21	2.6%
Missing	*14*	*3.7%*	*18*	*6.0%*	*6*	*7.1%*	*2*	*1.8%*	40	5.0%
Group	380	100.0%	300	100.00%	84	100.0%	42	100.0%	806	100.0%

Secondary drug(s)	POINT-engaged N=380		Controls N=300		Not assessed N=84		Declined N=42		All N=806	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
None	101	26.6%	37	12.3%	3	3.6%	12	28.6%	153	19.0%
Benzodiazepines	55	14.5%	23	7.7%	11	13.1%	1	2.4%	90	11.2%
Methamphetamine	39	10.3%	42	4.3%	9	10.7%	1	2.4%	62	7.7%
Alcohol	24	6.3%	42	14.0%	9	10.7%	6	14.3%	81	10.0%
Marijuana	16	4.2%	7	2.3%	3	3.6%	0	0.0%	26	3.2%
Cocaine/crack	12	3.2%	9	3.0%	3	3.6%	0	0.0%	24	3.0%
Prescription pain killers	6	1.6%	4	1.3%	3	3.6%	0	0.0%	13	1.6%
Heroin	3	0.8%	2	0.7%	2 0.	0.0%	0	0.0%	5	60.0%
Methadone	3	0.8%	2	0.7%	0	0.0%	0	0.0%	5	60.0%
Fentanyl	2	0.5%	3	1.0%	0	0.0%	0	0.0%	5	60.0%
Spice or K2	1	0.3%	6	2.0%	0	0.0%	1	2.4%	8	1.0%
Buprenorphine	0	0.0%	0	0.0%	1	1.2%	0	0.0%	1	0.1%
Other, unspecified	7	1.8%	7	2.3%	5	6.0%	1	2.4%	20	2.5%
Missing/not documented	*126*	*33.2%*	154	*51.3%*	*49*	*58.3%*	*20*	*47.6%*	349	43.3%

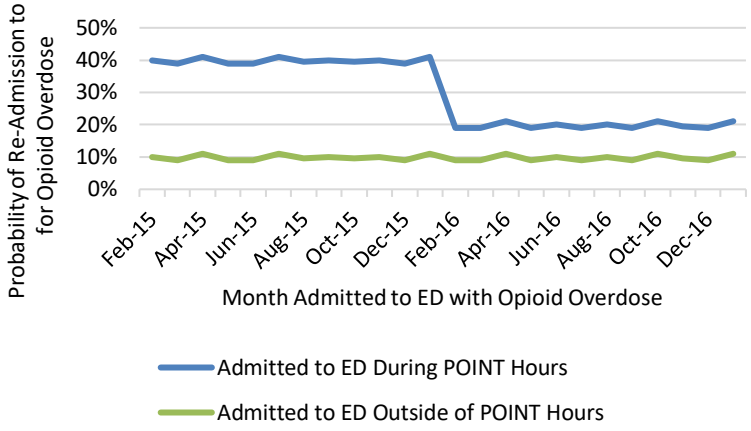
Appendix C. Technical Details of Difference-in-Differences Analysis

Methodology

POINT operates at specific times during the week, usually during business hours. Comparing outcomes for individuals who come in with an opioid overdose during and not during POINT hours may produce biased estimates of impact because individuals who overdose outside of business hours may differ in other ways besides participation in POINT.

As an alternative, we can compare individuals who came into the ED during and not during POINT hours *before and after POINT launched*. This difference-in-differences approach does not assume individuals with an opioid overdose who come in during POINT hours are the same as those who come in outside of POINT hours. Rather, the identification assumption is that the unobserved differences between these two groups should be constant over time.[8]

Figure C1. Hypothetical Example of Impact of POINT on Subsequent ED Admissions using Difference-in-Differences



If POINT does reduce likelihood of, say, subsequent ED admissions within 6 months, we would see something like Figure C1.

In this hypothetical case, those who come into the ED with an opioid overdose outside of POINT hours are less likely to be readmitted before POINT launched in February 2016. This group sees no change pre and post POINT. However, those who came into the ED during POINT's hours after POINT's launch were less likely to be readmitted than those who came into the ED during what would be POINT's normal hours before POINT launched. The application of the approach necessarily requires following these individuals in the pre- as well as post- POINT period.

The study uses INPC data and the observation window is March 1, 2011-July 6, 2019. The estimating sample consist of N=1462 unique individuals, of which 804 individuals (55% of

[8] To test this assumption, we analyzed data going back several months before POINT's launch in February 2016. This allowed us to see if, before POINT's launch, these two groups of individuals were showing different patterns over time that may bias our difference-in-difference results.

sample) may have interacted with POINT. The estimating sample was selected to include individuals who were observed within INPC in the period before and after POINT in effect and for whom the data was complete. The level of analysis was the individual, with each individual observed in two periods: before (t=0) and after (t=1) POINT was in effect.

Data and results

Eleven outcome variables were considered. Summary statistics for these outcome variables are shown in Table C1, below.

Table C1. Summary statistics

	Mean	Std. dev.	Range	10%	25%	50%	75%	90%	%
Opioid poisonings	0.61	1.03	[0,14]	0	0	0	1	2	59.54
Illicit poisonings	0.51	0.92	[0,12]	0	0	0	1	1	64.64
Other poisonings	0.40	0.95	[0,11]	0	0	0	1	1	74.42
Any poisonings	1.51	2.04	[0,25]	0	0	1	2	3	28.9
HCV testing	0.06	0.30	[0,4]	0	0	0	0	0	94.84
HIV testing	0.16	0.44	[0,4]	0	0	0	0	1	86.11
Psych consultations	0.61	5.51	[0,127]	0	0	0	0	0	95.79
MAT	1.22	6.32	[0,237]	0	0	0	0	2	86.22
Opioid prescriptions	2.72	6.79	[0,74]	0	0	0	2	9	63.27
Naloxone use	0.13	0.99	[0,29]	0	0	0	0	0	95.76
Insured	1.23	1.73	[0,20]	0	0	1	2	3	35.98

Before comparing incidence of the outcomes for POINT and non-POINT patients in the period before and after POINT implementation, it is important to note that we observe 1797 days of the period before POINT was in effect (March 1, 2011- January 31, 2016) and 1252 days following POINT implementation in February 2016. Consequently, patient outcomes may differ not only due to POINT but also due to longer duration of "exposure." Therefore, to facilitate comparison, Table 2 below presents monthly rates (i.e., number of outcomes per 30 days, for the POINT and non-POINT patients in the period before and POINT implementation).

From Table C2 we can note that the period following POINT is more densely captured than the period after. Two reasons may explain this. First, the sampling frame was retrospectively generated and thus by definition is more densely populated in the period post-POINT. Second, the observation window coincides with exponential rise of the "opioid epidemic" and may necessarily be capturing that confounding effect. The difference-in-differences strategy is particularly suitable to control for such confounders as they are exogenous to POINT participation. The implementation of the estimation strategy is explained next.

Table C2. Descriptive comparison of POINT and control patient outcomes in the period before and after POINT was in effect

Outcome	POINT patients		Control patients	
	pre-POINT	post-POINT	pre-POINT	post-POINT
Opioid poisonings	2.20	18.93	2.77	7.08
Illicit poisonings	2.92	14.13	3.10	5.22
Other poisonings	2.42	11.04	1.65	3.50
Any poisonings	9.83	78.08	9.13	20.22
HCV testing	0.57	1.89	0.32	0.84
HIV testing	1.81	3.96	1.42	1.77
Psych consultations	0.64	0.08	1.10	0.24
MAT	0.84	5.54	1.12	2.67
Opioid prescriptions	4.12	8.39	4.71	5.89
Naloxone use	0.11	1.95	0.28	1.01
Insured	386	758	275	453

For several outcomes (e.g., opioid poisonings, illicit poisonings, other poisonings, HCV testing, HIV testing and insurance status), there is zero-inflation (non-zero outcomes are rarely observed). In this case, the outcomes are recoded as binary and impact of POINT participation on patient outcomes is captured using an individual fixed-effect logistic regression of the form

(1) $y_{i,post} = \theta POINT + \gamma POST + \beta POINT * POST + \alpha_i + \epsilon_{i,POST}$

where $y_{i,post}$ is a binary indicator for whether the individual experienced a given outcome in the period prior to when POINT was in operation (POST = 0) or the period after POINT was in effect (POST = 1). Inclusion of the indicator for the period before or after POINT (*POST)* will control for the previously noted denser data for both POINT and non-POINT patients in the post-POINT period. The indicator POINT captures if the individual was seen in the emergency department at Eskenazi during the hours in which POINT was in effect and thus could have been recruited in POINT (*POINT* = 1) or not (*POINT* = 0). α_i captures the individual fixed effect that may otherwise confound our evaluation estimates. Thus, the coefficient β is the outcome of interest and captures the intent-to-treat difference-in-differences estimate of the effect of POINT on patient outcomes.

For four outcomes (patient enrollment in MAT, subsequent prescribing of opioids, naloxone uses and psychiatric consultations) the range of the outcome variable is not suitably characterized as a binary variable (see range in Table C1). Given the wider range of these outcomes, along with previously noted zero inflation, changes in these patient outcomes in response to potential POINT participation is modelled using an individual fixed effect negative binomial distribution as follows

(2) $c_{i,post} = \theta POINT + \gamma POST + \beta POINT * POST + \alpha_i + \epsilon_{i,POST}$

where $c_{i,post}$ is the count of the number of MAT treatments, opioid prescriptions, naloxone uses, and psychiatric consultations the patient received in the period before or after POINT was in effect. Interpretation of the other variables is identical to that in equation (1) above. Results of the evaluation are presented in Table C3 below.

Table C3. Difference-in-differences estimates of the effect of POINT on patient outcomes

	Logistic regression							Negative binomial regression			
	Opioid pois	Illicit pois	Other pois	Any pois	HCV test	HIV test	Insured	Psych consults	MAT	Opioid prescriptions	Naloxone use
Marginal effect of POINT	0.07	0.01	-0.03	0.14	-0.07	0.00	0.18	-0.44	1.53**	1.00***	2.35***
	[0.20]	[0.03]	[0.05]	[0.78]	[0.23	[0.00	[0.29]	[0.78]	[0.21]	[0.11]	[0.51]
N	1462	1462	1462	1462	1462	1462	1462	1462	1462	1462	1462

Notes: Authors calculation based on INPC data March 1, 2011- July 6, 2019. Unit of observation if the individual patient. All regression estimates control for individual fixed effects and a fixed effect for the period in which POINT was in effect (after February 2016). Estimates presented are marginal effects, standard errors are presented in parenthesis.

Results show that POINT has had no statistically significant impact on the probability of subsequent repeat poisonings, receiving hepatitis and HIV testing, receiving psychiatric consultations, or becoming insured. However, patients who may have interacted with POINT were significantly more likely to receive medicated assisted treatment for substance use disorders, to be prescribed any opioids, and to be using naloxone.

Appendix D. Cost-Benefit analysis and cost-effectiveness analysis from a societal perspective

The cost-benefit and cost-effectiveness analyses in Chapter 6 take a healthcare provider perspective. This section presents this analysis from a societal or social planner perspective, which also considers potential benefits due to lower rates of criminal activity and improved employment outcomes.

Since we do not observe impacts on criminal activity and improved employment outcomes directly, we use estimates of MAT's impacts on these outcomes from other studies. Watson et al. (2018) estimate a total benefit of $11,650 from MAT engagement in Porter, Starke and Scott counties from reduced jail, prison, arrests, court and victimization costs and increased wages. Ettner et al. (2006) generate a similar estimate for the impact of substance abuse treatment from the societal perspective ($11,487), which accrues primarily through reduced costs of crime and increased employment earnings. As a result, we assume a monetary benefit of $12,000 per person engaged with MAT. For costs of treatment, we include all costs regardless of payor, so cost per individual receiving MAT is $1,356, the estimated cost of 12 months of methadone treatment. All other parameters are the same as in the healthcare perspective.

Table D1. Cost-Benefit Analysis and Cost-Effectiveness of POINT, Societal Perspective

Number of individuals participating in POINT	**380**
Costs of implementing POINT	**$ 408,199**
Personnel	$ 311,889
Travel	$ 12,000
Supplies	$ 49,660
Education/toolkit/promotion	$ 17,500
Other	$ 17,150
MAT costs from POINT, net of any cost savings	**$ (343,801)**
Baseline probability of receipt of MAT	2%
Probability of receipt of MAT with POINT	11%
Increase in number of individuals receiving MAT due to POINT	32
Benefit per individual receiving MAT	$ 12,000
Cost per individual receiving MAT	$ 1,356
Total costs of POINT, net of any cost savings	**$ 64,398**
Total costs of POINT, net of any cost savings, per person	**$ 169.47**
Total costs of POINT, net of any cost savings, per person engaged with MAT	**$ 1,994**

For the cost-benefit analysis, these results suggest that **POINT cost $64,398 during the evaluation period, or $169 per person engaged with POINT, from the societal perspective**. In terms of cost-effectiveness, **POINT spent $1,994 per person engaged in treatment.** These calculations are shown in Table 1.

References, Appendices

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