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7   **eSupp1 – Study Protocol**

8

Evaluating the Impact of the Bridge Clinic in Patients with Opioid Use Disorder

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Study Schema

1. **Study Summary**

Title: Evaluating the Impact of the Bridge Clinic in Patients with Opioid Use Disorder

Study Aims:

- Aim 1: To determine whether referral to the Bridge Clinic reduces overall index hospital length of stay when compared to direct referral to a long-term outpatient addiction provider for patients with active opioid use disorder (OUD) being considered for medications-for-addiction treatment (MAT).
- Aim 2: To evaluate the effects of the same intervention in the same population on secondary outcomes including costs, care-linkage, readmission rates, self-reported buprenorphine or naltrexone fills, rate of known recurrent opioid use, and measures of overall quality of life.
- Aim 3: Evaluate fidelity outcomes including Bridge Clinic acceptance and attendance rates among those referred to Bridge Clinic and reasons why patients were not considered to be eligible for inclusion.
- Aim 4: Among the subgroup of patients with an infection for which a course of IV antibiotics is required, additionally evaluate whether access to the Bridge Clinic facilitates outpatient management of the antibiotic therapy, with consequent improvement in clinical (infection and mortality) and resource (inpatient days, time to discharge following a negative blood culture) outcomes.

Study Hypotheses:

- Primary: Among patients with active OUD being considered for MAT, index hospital length of stay will be shorter among patients randomized to referral to the Bridge Clinic than among patients randomized to no referral to the Bridge Clinic.
- Secondary: Among patients with active OUD being considered for MAT, total costs, readmission rates, and rate of recurrent opioid use will be lower while successful care-linkage, self-reported buprenorphine or naltrexone prescription fill rates and quality of life will be higher among patients randomized to referral to the Bridge Clinic than among patients randomized to no referral to the Bridge Clinic.
- Exploratory: Among patients with active OUD being considered for MAT who also have an infection requiring IV antibiotics, referral to the Bridge Clinic will result in lower resource use without worse clinical outcomes when compared with not being referred to the Bridge clinic.

Study Population: Inpatients with OUD being considered for medications-for-addiction treatment (MAT) who have not previously utilized Bridge Clinic.

Due to COVID and the resulting changes in patient flow, we will temporarily suspend eligibility for the trial for OPAT patients as of December 3rd, 2020.

Comparators:
- Direct referral to a long-term outpatient addiction provider
- Referral to the Bridge Clinic while long-term outpatient addiction provider is located/identified

Randomization: Randomization will occur at the individual patient level. Currently, the Bridge Clinic can only accept a limited number of patients. To learn from the care provided, we propose randomizing all patients eligible for referral to Bridge Clinic in a ratio such that the Bridge Clinic is at capacity. In this way, the choice to refer is unbiased and the strength of evidence is greatly enhanced.

Consent: This study involves comparing two approaches to care: i) inpatient MAT (buprenorphine or naltrexone) with search for an outpatient MAT provider to accept the patient, or ii) inpatient MAT (buprenorphine or naltrexone) with referral to the Bridge Clinic to maintain the patient's care until a long-term outpatient MAT provider accepts the patient. Both approaches represent standard of care.

It is not practicable to answer the research question with informed consent because patients who choose to participate will necessarily differ from those who do not in substantial ways, including access to care.

We request a waiver of consent as 1) data for the research will be obtained from the medical record, financial systems, state-mandated reporting systems, and from routine standard of care telephonic outreach to patients, 2) we are comparing usual care practices, albeit with randomization, 3) there is no additional interaction with the participant for research purposes, and 4) it is impracticable to conduct the research with consent.

2.   **Background**

Opioid overdoses continued to increase in Tennessee in 2017, where rates of overdose already exceed the national average, and these trends were reflected in VUH admissions for opioid use disorder (OUD)-related problems, which were up 55% in the first 6 months of 2018 over 2017.[1] Vanderbilt is implementing several initiatives to improve outcomes in patients with OUD. On July 20th, 2018, a new Addiction Consult Team (ACT) went live at Vanderbilt. The service has completed 1,082 patient visits as of May 29th 2019 (373 new visits and 709 follow up visits). Additionally, we have created an outpatient "Bridge Clinic" at VUMC that is available to manage patients with OUD for a transitional period of up to 3 months following hospital discharge. ACT clinicians staff both the consult service and the Bridge Clinic, providing continuity of care to patients leaving VUH. Staff include internal medicine, psychiatry, pain-anesthesia, nursing, social work and a recovery coach. A patient discharged from VUH who is deemed appropriate for the Bridge Clinic is written a bridge script for buprenorphine MAT. Upon discharge and between Bridge Clinic visits, the use of VUMC preferred communications (telephone, text, email) outreach by case management is implemented; telephone outreach may improve outcomes similarly to face-to-face contact among addicted patients.[2]

157
158 The Bridge Clinic was designed and implemented based on work completed at MGH, Boston
159 Medical Center, Yale and UAB. The intent is to obviate the challenge that patients being
160 considered for MAT are often not discharged until an outpatient provider willing to accept the
161 patient has been identified, resulting in delays to discharge. By serving as a bridging provider,
162 any delay in discharge is avoided. Moreover, the subset of patients requiring IV antibiotic
163 therapy are often admitted for a full six-week course of treatment unless a skilled nursing facility
164 is available, also at considerable expense to the healthcare system. For patients meeting low
165 risk criteria, the multi-specialty Bridge Clinic is available to manage the antibiotic therapy as an
166 outpatient. This provides further opportunities for the Bridge Clinic to broadly impact the hospital
167 bed days dedicated to caring for this patient population while simultaneously providing access to
168 dedicated care. While implemented clinically based on available evidence, the effectiveness of
169 this care model in improving patient outcomes while reducing time in hospital has yet to be
170 quantified in situ.
171
172
173   3.   **Rationale and Specific Aims**
174
175 In order to rigorously evaluate the impact of the Bridge Clinic on improving care for patients with
176 OUD, a randomized controlled trial is needed. Evidence generated in this way will support either
177 the sustained implementation of the Bridge Clinic with scale up to meet demand, or sufficient
178 evidence will accumulate to indicate the expected impact is not achieved and alternative
179 approaches are needed to improve the system of care for OUD patients being considered for
180 MAT. Given the overarching goal of evaluating the Bridge Clinic as it is operating, the specific
181 aims of this study are to:
182
183 •   Aim 1: To determine whether referral to the Bridge Clinic reduces overall index
184   hospital length of stay when compared to direct referral to a long-term outpatient
185   addiction provider for patients with active opioid use disorder (OUD) being
186   considered for medications-for-addiction treatment (MAT).
187 •   Aim 2: To evaluate the effects of the same intervention in the same population on
188   secondary outcomes including costs, care-linkage, readmission rates, self-reported
189   buprenorphine or naltrexone fills, rate of known recurrent opiate use, and measures
190   of overall quality of life.
191 •   Aim 3: Evaluate fidelity outcomes including Bridge Clinic acceptance and
192   attendance rates among those referred to Bridge Clinic and reasons why patients
193   were not considered to eligible for inclusion.
194 •   Aim 4: Among the subgroup of patients with an infection for which a course of IV
195   antibiotics is required, additionally evaluate whether access to the Bridge Clinic
196   facilitates outpatient management of the antibiotic therapy, with consequent
197   improvement in clinical (infection and mortality) and resource (inpatient days, time to
198   discharge following a negative blood culture) outcomes.
199
200 To complete these aims, patients admitted to VUH with OUD and being considered for MAT,
201 who have not previously utilized Bridge Clinic, will be enrolled in a pragmatic, single-center,
202 randomized, controlled trial comparing referral to Bridge Clinic versus no referral to usual care in
203 the community. Randomization ratio will be set to ensure the Bridge Clinic is functioning at
204 capacity and the remaining patients will serve as the control. For example, if there is an average
205 of five available slots for new referrals to the Bridge Clinic in a week, and there is an average of
206 20 eligible patient discharges in a week, the randomization ration will be set as 1:3.
207

208 If the Bridge Clinic is successful in bridging buprenorphine-naloxone use (as well as IM
209 naltrexone in some cases) and linking to additional care, it is expected to decrease the overall
210 length of stay of patients with OUD who are initiating buprenorphine-naloxone therapy. This
211 reduction in length of stay for these patients will reduce costs and increases bed availability for
212 other patients while simultaneously providing these patients with the care they need.
213
214
215   4.   **Inclusion/Exclusion Criteria**
216
217 Inclusion Criteria:
218   •   Inpatients at VUH with active OUD being considered for MAT who have not
219   previously utilized Bridge Clinic
220   •   Patient accepting a transitional prescription for buprenorphine-naloxone or IM
221   naltrexone whose outpatient plans are not fixed
222
223 Exclusion Criteria:
224   •   Deemed ineligible for referral to outpatient Bridge Clinic by the ACT (examples
225   include by are not limited to patients with severe, active co-occurring psychiatric
226   disorders requiring a higher level of psychiatric care or patients for whom methadone
227   maintenance is deemed the best choice of MAT).
228   •   Patients previously randomized in this study.
229   •   Patients previously utilized Bridge Clinic
230
231
232   5.   **Enrollment/Randomization**
233
234 The Addiction Consult Team (ACT) will be notified of potentially eligible patients via an EPIC
235 consult order or referral from the general or homeless psychiatry service. Those patients for
236 whom an order for an addiction medicine consultation is placed will be evaluated by the ACT for
237 MAT. If the ACT considers MAT to be clinically appropriate, the patient does not have set plans
238 for outpatient care, and the patient has not been previously randomized in this study, they will
239 be enrolled and randomized. All other patients will be treated with usual care without availability
240 of referral to the Bridge Clinic.
241
242 Screening information from enrolled patients will be entered into REDCap. For patients meeting
243 objective criteria but whom the ACT determine ineligible for MAT, the reason for not enrolling
244 them will be collected.
245
246 Once eligibility is confirmed, the patient will be randomized to being offered referral to the Bridge
247 Clinic or not, as described below. Randomization will occur at the individual patient level.
248 Randomization ratio will start at 1:1 and will be updated as necessary, but no more frequently
249 than bi-weekly, to maintain the Bridge Clinic at capacity.
250
251
252   6.   **Study Procedures**
253
254 An enrolled patient will receive a referral to social work for "outpatient MAT". The ACT social
255 worker will approach the patients with resources for outpatient MAT determined by
256 randomization (though the social worker can escalate patients in either condition to a higher
257 level of care as appropriate after randomization). All patients will be offered usual information
258 about outpatient MAT. Patients randomized to be eligible for referral to the Bridge Clinic will
259 additionally receive information about the Bridge Clinic and this will be offered as an option

260 during discussion of the plan for MAT. Patients who are randomized to not being offered a
261 Bridge Clinic referral will not receive information about the Bridge Clinic and the Bridge Clinic
262 will not be offered as an option.
263
264 Subsequent to comparator group assignment, patients will be followed to measure outcomes.
265 Data will be captured from the medical record, financial systems, state-mandated reporting
266 systems, and from other standard of care documentation. Due to complications with the social
267 deprivation index (ADI) data within the RD, these associated variables will be obtained from the
268 Neighborhood Atlas (https://www.neighborhoodatlas.medicine.wisc.edu/). The data elements to
269 be collected include the following:
270
271 Baseline demographics collected at time of enrollment
272 • Age
273 • Gender
274 • Race
275 • Ethnicity
276 • SES indicators (e.g., ADI)
277
278 Primary Endpoint
279 • Overall index hospital length of stay
280
281 Additional Endpoints collected for 16 weeks following randomization
282 • Costs of care (total costs, and costs for each admission and care
283 resource used (e.g. Bridge Clinic))
284 • Linkage to MAT provider (attending at least one visit with a MAT
285 provider)
286 • Self-reported buprenorphine-naloxone (or naltrexone) prescriptions filled
287 • Readmission
288 • ED visits
289 • Hospital and ED free days
290 • Recurrent opiate use
291 • Overall quality of life as measured by the Schwartz Outcome Scale-10
292 (SOS10)
293 • Overdose
294 • Death
295 • Intervention Contamination (Bridge Clinic to community care or vice-
296 versa)
297
298 Additional Endpoints for patients with infection suitable for outpatient management, collected for
299 16 weeks following randomization
300 • New, persistent, or recurrent infection (as defined by a positive culture
301 and/or change in antibiotic regimen)
302 • Completion of antibiotic therapy
303 • Days from negative blood culture to first hospital discharge
304
305 Implementation Measurements
306 • Acceptance of Bridge Clinic as a bridging provider
307 • Reasons for ineligibility
308
309 Data will be abstracted from the EMR, REDCap and the Research Derivative (RD). Due to
310 complications with the area deprivation index (ADI) data within the RD, these associated
311 variables will be obtained from the Neighborhood Atlas

312 (https://www.neighborhoodatlas.medicine.wisc.edu/). The Research Derivative is a database of
313 clinical and related data derived from the Medical Center's clinical systems and restructured for
314 research. Data is repurposed from VU's enterprise data warehouse, which includes data from
315 StarPanel, VPIMS, and ORMIS (Operating Room Management Information System), EPIC,
316 Medipac, and HEO among others. The medical record number and other person identifiers are
317 preserved within the database. Data types include reimbursement codes, clinical notes and
318 documentation, nursing records, medication data, laboratory data, encounter and visit data,
319 among others. Output may include structured data points, such as ICD 9 codes or encounter
320 dates, semi-structured data such as laboratory tests and results, or unstructured data such as
321 physician progress reports. The database is maintained by the Office of Research Informatics
322 under the direction of Paul Harris, Ph.D.
323
324
325   7.   **Risks and Benefits**
326
327 The risks associated with this study are limited to those associated with protection of private
328 health information; beyond the randomization, the interaction with human subjects is limited to
329 collection of data from existing records. Allocation made by randomization is between two usual
330 approaches of care: i) inpatient MAT (buprenorphine or naltrexone) or appropriate alternative
331 until a long-term outpatient MAT provider accepts the patient (sometimes after SNF stay), or ii)
332 inpatient MAT (buprenorphine or naltrexone) or appropriate alternative with referral to the Bridge
333 Clinic, who will maintain the patient's care until a long-term outpatient MAT provider accepts the
334 patient. Currently, the Bridge Clinic can only accept a limited number of patients and so the
335 choice of approach is based on availability. By randomizing the availability of the Bridge Clinic, it
336 is possible to derive knowledge of the impact of the clinic on patient outcomes that would
337 otherwise not be discoverable without bias. The results of this study will help understand the
338 impact of the Bridge Clinic and be used as data for potentially expanding the resources and
339 availability of the Bridge Clinic to additional patients or refining services to improve patient
340 care.
341
342 We expect that patients randomized to being eligible for Bridge Clinic services will experience
343 decreased overall length of stay. We also expect overall reduced costs. The resource savings
344 benefit not only the study participant, but this approach will open up hospital days/beds for other
345 patients.
346
347 Risks associated with the collection of personal health information (PHI) will be mitigated by
348 taking all reasonable efforts to keep the information private and confidential. The minimum
349 amount of health information necessary for study conduct will be abstracted from the medical
350 record. PHI will be entered into REDCap, which is a secure platform for maintaining research
351 data. Identifiers will be needed to prevent duplicate enrollments and to track patients through
352 the health system, but user level access will be set up to limit access to any identifiers only to
353 those study personnel who need this access. Analysis datasets may be stored on secure
354 servers but will not include direct identifiers. Direct identifiers will not be included in datasets
355 unless absolutely necessary.
356
357
358   8.   **Reporting of Adverse Events or Unanticipated Problems Involving Risk to**
359   **Participants or Others**
360
361 Participating in the study does not add risk related to treatment. The Bridge Clinic is operational
362 and provides usual clinical care to those patients fitting within its capacity. All other processes
363 for linking patients to outpatient MAT are well established. Events associated with MAT or other

364 care of patients are clinical and not associated with the research. Risks to patients from
365 participating in the study are limited to the collection of PHI. We recognize there may be
366 adverse events related to loss of privacy. These will be reported according to appropriate
367 timelines. The Principal Investigator will be responsible for overseeing the study on a daily
368 basis.
369
370
371   9.   **Study Withdrawal/Discontinuation**
372
373 Because this study involves only observational data collection after randomization to Bridge
374 Clinic or no Bridge Clinic availability, there are no plans to withdraw participants or discontinue
375 them in the study. Implementation outcomes, such as uptake of Bridge Clinic referrals, are
376 important to gather and will be included. If a patient requests that their records not be included
377 in any research, they will not be included and all data collected for this study will be removed
378 from the dataset. However, if analyses have already been completed and reported at the time of
379 the request, we will retain a copy of the data in a de-identified manner to ensure rigor and
380 reproducibility of the research.
381
382
383   10.   **Statistical Considerations**
384
385 <u>Statistical Analysis Plan</u>:
386 Initially, we will characterize participants overall and grouped by study arm using descriptive
387 statistics (e.g. means with standard deviations, medians with interquartile range, and counts
388 with percentages, as appropriate). Data may also be described graphically. The primary
389 analysis will compare length of index hospital stay between those offered referral to the Bridge
390 Clinic and those not offered referral to the Bridge Clinic on an intent-to-treat basis. We will
391 compare length of stay using a generalized linear model with group assignment as the primary
392 predictor variable, with adjustment for important covariates. We expect to model the outcome as
393 a continuous outcome. We may choose to use a proportional hazards model or a gamma GLM
394 with a log-link function if the data are substantially skewed; we do not expect this based on our
395 experience with length of stay in this patient cohort. For secondary outcomes, costs will be
396 similarly modeled. Binary outcomes will be modeled using logistic regression, Quality of life
397 outcomes will be modeled using a proportional odds regression. Additional analyses that we
398 expect to perform include 'per protocol' comparisons between study groups and characterization
399 of implementation measures.
400
401 <u>Power and Sample Size Considerations</u>:
402 We estimate 700 patients per year, or about 14 patients per week, will be eligible to participate
403 in this study, with a capacity for approximately 3-4 new patients per week to be seen at the
404 Bridge Clinic. We expect approximately 2/3 of patients referred to the Bridge Clinic to make their
405 first appointment. Therefore, we will randomize patients at a rate of 1:1 to Bridge Clinic versus
406 usual care. The randomization may be adapted if eligibility and follow up rates are different to
407 expected. The mean length of stay for patients is currently 15 days, ranging from 3-42 and a
408 standard deviation of about 15 days. With 700 patients in a year, allocated 1:1, we will have
409 about 80% power to detect a 3-day reduction in length of stay. This does assume a reduced
410 standard deviation of 10 days. If the standard deviation remains at about 15 days, the difference
411 detectable with 80% power is 3.5 days.
412
413 <u>Interim Analysis</u>
414 Because of the disruption caused by COVID-19 and lower than expected enrollment, midway
415 through the recruitment period we decided to re-estimate the sample size based on the

416 experience of patients. Blinded to allocation, we estimated the distribution of length of stay for
417 all enrolled patients. We found the mean length of stay was shorter, at 9 days, with a standard
418 deviation of 11. However, the distribution was decidedly right skewed. Therefore, we log
419 transformed the length of stay variable for deciding on the final sample size. The mean length of
420 stay was ln(5.5) days with a standard deviation of ln(2.7) days. **Assuming that a reduction in**
421 **length of stay of 1.5 days is meaningful and the observed common standard deviation is**
422 **a good estimate, about 168 patients per group, or 336 patients total, would be required to**
423 **have 80% power to detect a difference**.
424
425
426   11.   **Privacy/Confidentiality Issues**
427
428 At no time during the course of this study, its analysis, or its publication will patient identities be
429 revealed. The minimum necessary data will be collected and data containing patient or provider
430 identifiers will only be obtained as required to complete the research. Data will be unlinked from
431 identifiers, using a unique key to facilitate linkage when needed. Data will be collected into a
432 password-protected, secure, web-based application for managing research data (REDCap). All
433 patients will be assigned a unique study number for use in the computerized database. At the
434 time of publication all identifiers will be removed from the archival dataset.
435
436
437   12.   **Follow-up and Record Retention**
438
439 The initial study is anticipated to progress from initiation to completion in about 12 months. For
440 each participant, the study will commence at enrollment and last until 16 weeks from
441 randomization. Patient clinical outcomes will be collected. Identified data in the secure database
442 will be stored consistent with record retention requirements, typically 5 years from completion of
443 the research. De-identified dataset will be maintained for secondary analyses and to support the
444 reproducibility of reports.
445

446   **eSupp2 – Statistical Analysis Plan**

Statistical analysis plan for Evaluating the Impact of the Bridge Clinic in Patients with Opioid Use Disorder
PI: Marcovitz, DE

Evaluating the Impact of the Bridge Clinic in Patients with Opioid Use Disorder

Statistical Analysis Plan

Version 1.0

April 11, 2022

_____

Christopher J. Lindsell, PhD

April 11, 2022
Date

Statistical analysis plan for Evaluating the Impact of the Bridge Clinic in Patients with Opioid Use Disorder
PI: Marcovitz, DE

Introduction

To improve care for patients with opioid use disorder (OUD), Vanderbilt has implemented an Addiction Consult Team (ACT) and a Bridge Clinic. The primary purpose of the Bridge Clinic is to facilitate discharge for inpatients who are being considered for medications for OUD (MOUD). Specifically, the Bridge Clinic provides patients with temporary access to treatment at an outpatient clinic while they are waiting to be accepted into a long-term clinic. This document describes the statistical analysis plan for a pragmatic, single center, randomized, controlled trial designed to evaluate the impact of the Bridge Clinic on improving care for patients with active OUD. This document has been prepared prior to final data collection and unblinding. Because inpatient providers may delay discharge for patients with OUD who lack a source of outpatient care for MOUD, it is hypothesized that OUD patients referred to the Bridge Clinic will have a decreased overall length of stay, will follow up with their Bridge Clinic provider, and will have a reduction in overall costs for care.

Population and design considerations

Study Population:
Inpatients at VUH with OUD being considered for MOUD who have not used the Bridge Clinic before and who do not have a fixed outpatient plan are considered potentially eligible for this trial. If the ACT considers MOUD is clinically appropriate for the patient, the patient does not have plans for outpatient care, and the patient has not been enrolled in this study previously, they are enrolled, randomized, and offered a referral to either Bridge Clinic or treatment as usual (TAU) depending on randomization.

Study Design:
This study is designed as a pragmatic, single center, randomized, controlled trial comparing clinical outcomes between patients assigned to receive a referral to the Bridge Clinic and patients assigned to TAU.

Randomization:
Randomization occurs at the individual patient level. The Bridge Clinic can only accept a limited number of patients, so eligible patients will be randomized in a ratio so that the Bridge Clinic is at capacity. To start, the ratio will be 1:1, and can be updated as often as bi-weekly to maintain the Bridge Clinic capacity. There has been no indication or need to change the ratio during the study.

Sample Size Considerations:
We estimated about 700 patients per year would be eligible for this study, with a capacity for about 3-4 new patients a week to be seen at the Bridge Clinic. We expected about 2/3 of patients referred to the Bridge Clinic to make their first appointment. The mean length of stay was 15 days with a standard deviation of about 15 days. Assuming a reduced standard deviation of 10 days, with 700 patients a year and a 1:1 randomization ratio, we would have 80% power to detect a 3-day reduction in length of stay. If the standard deviation remains at 15 days, we would have 80% power to detect a 3.5-day reduction in length of stay. Due to COVID-19, enrollment was lower than expected and hospital inpatient experiences differed from historical data. Midway through the recruitment period, the overall, ungrouped distribution of length of stay was re-estimated based on participant experience. Based on the revised assumptions, to detect a 1.5-day

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reduction in length of stay and assuming the observed common standard deviation is a good estimate, about 336 patients (168 per group) is needed to have 80% power.

Interventions

Inpatients with OUD who are deemed eligible for this trial are enrolled and randomized. The patients are randomized to one of two treatment arms:

a) Direct referral to a long-term outpatient addiction provider (TAU)
b) Referral to Bridge Clinic for temporary care while a long-term outpatient addiction provider is identified (intervention)

Endpoints

Primary Endpoint

The primary endpoint is the overall index hospital length of stay. The index length of stay is defined as the time between the admission and time of discharge during the inpatient visit when the participant is identified as being eligible for the study.

Secondary Endpoints

Multiple secondary endpoints are prespecified for this trial. Secondary endpoints are collected for 16 weeks following randomization:
a) Overall quality of life as measured by the Schwartz Outcome Scale-10 (SOS10). The SOS10 has ten questions scored on a 0 (never) to 6 (all or nearly all of the time) scale. A total score is computed as the sum across the 10 questions. If two questions are missing, a mean score can be imputed for the missing values to generate a total score. No further imputation will be used for this score. This is self-reported and captured at the 16-week follow-up call.
b) Linkage to MOUD provider, defined as attending at least one visit with a MOUD provider after discharge, assessed by self-report at 16-week follow-up call.
c) Self-reported buprenorphine-naloxone (or naltrexone) prescriptions filled (number filled) at the 16-week follow-up call.
d) Any recurrent opioid use reported at the 16-week phone call follow-up.
e) Number of recurrent opioid uses reported at the 16-week phone call follow-up.
f) Number of ED visits or readmissions to VUH 16 weeks post discharge identified in the electronic medical record.
g) Hospital and emergency department free days
   a. Hospital free days will be calculated as a count of whole days during the 16 weeks the subject is not in the hospital. If the subject dies before the end of 16 weeks, hospital free days will be equal to -1.
   b. Hospital and emergency department free days will be calculated as a count of whole days during the 16 weeks the subject is not in the emergency department or in the hospital. If the subject dies before the end of 16 weeks, emergency free days will be equal to -1.
h) Any overdose reported at the 16-week phone call follow-up.
i) Death in hospital or documented at the 16 week follow up or in the medical record.
j) Costs of care, defined as total costs for all care episodes at VUMC 16 weeks post discharge.

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Exploratory Endpoints

Exploratory endpoints have been specified for patients with infection suitable for outpatient antibiotic therapy (OPAT) management. These endpoints are collected for 16 weeks following randomization by review of VUMC's electronic medical record:

    a) New, persistent, or recurrent infection: defined by positive culture and/or change in antibiotic regimen
    b) Completion of antibiotic therapy
    c) Days from negative blood culture (i.e., blood draw date) to first hospital discharge

Implementation Endpoints

    a) Acceptance of Bridge Clinic as a bridging provider, defined by being physically checked in for at least 1 visit with the Bridge Clinic within 16 weeks of follow up.
    b) Reasons for ineligibility among participants screened, specifically:
        o Absence of a qualifying OUD
        o Previously linked with a MOUD provider either prior to or during the current visit?
        o ACT determines the participant does not qualify

Fidelity Endpoint

    a) Cross-over, defined as when a patient randomized to usual care is offered the Bridge Clinic, or when a patient is randomized to Bridge Clinic but is only offered usual care, at the time of discharge from the inpatient stay.

Analysis dataset

The analysis for the trial will use an intent-to-treat approach to answer the effectiveness question posed. That is, participants will be evaluated by treatment group as assigned regardless of what was delivered. All eligible participants will be included. There is no plan to restrict the analysis to a per protocol set.

Statistical Approach

Our initial analysis will be descriptive in nature, summarizing information that characterizes the cohort and the outcomes. Then, we will proceed with inferential analysis to answer the main study question. Then, we will compare the secondary endpoints between study groups.

Descriptive Analysis

To characterize the study sample, baseline demographic and clinical data will be described overall and by group. Categorical variables will be described using frequencies and proportions, and continuous variables will be described using means and standard deviations, as well as medians and interquartile ranges. Missingness will be reported for each variable. Graphical summaries using box plots, violin plots, and/or histograms may be used to describe the data graphically. At a minimum, the following variables will be described at time of enrollment:

    • Age (years)
    • Gender (male, female, unknown)
    • Race (African American, Asian/Pacific Islander, Caucasian, Multiple, Native American, Other, Unknown)
    • Ethnicity (Hispanic, Non-Hispanic, Unknown)
    • Census tract area deprivation index

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We will describe all of the outcome variables overall and grouped by study arm using the same approach as for the demographic data. Summary statistics and graphical representations may be displayed, and missingness will be reported for each variable.

No statistical comparisons between groups will be done for this descriptive analysis.

Main Analysis
The primary outcome variable (hospital index length of stay) will be compared between groups using an adjusted generalized linear model. Since the data are positive and may be skewed, like a gamma distribution, we may use a negative inverse link function, a proportional odds model, or transform the data.

In this analysis, group assignment is the main predictor variable. For drawing conclusions about the effect of the Bridge clinic, a critical p-value of 0.05 for the effect of treatment group assignment on the primary outcome will be used. The model will be adjusted for age, race, ethnicity, and area deprivation index. The influence of continuous variables will be assessed using restricted cubic splines with a minimum of three knots. We do not expect missingness in our primary outcome. If there are missing covariates, cases will not be excluded; we will use multiple imputation with predictive mean matching for missingness in adjusting covariates.

Secondary and implementation outcomes will be compared between study groups using adjusted generalized linear models, just as for the primary endpoint. Binary endpoints will use a logit link function. For counts, such as number of medication refills, either a zero-inflated Poisson or a negative binomial model will be fit.

Exploratory outcomes for OPAT patients will not be compared between study groups but will be reported by study group.

There may be missingness in secondary or implementation outcomes. If there are missing outcomes, these may be imputed of they occur in less than 5% of cases. Otherwise, the cohort for which the outcome is available will be described, along with the results of the model evaluating treatment effects in this cohort. All model results will be summarized with point estimates and 95% confidence intervals (CIs), which will be emphasized over p-values when reporting the results for secondary and implementation outcomes. No adjustments for multiplicity will be made.

Differential treatment effects
To determine whether effects of treatment on the primary endpoint depends on any of the baseline characteristics, we will test the interaction between the baseline characteristics and treatment effect in the regression model. If evidence of an interaction is observed using a threshold of $p<0.2$, we will proceed to subgroup analyses. For categorical variables, endpoints will be compared between within categories. For continuous variables, we will display the partial effects plots showing how treatment effects change with the putative subgrouping variable.

Statistical analysis plan for Evaluating the Impact of the Bridge Clinic in Patients with Opioid Use Disorder
PI: Marcovitz, DE

Summary

The results of this study will help to determine whether the Bridge Clinic is effective at improving patient outcomes. The analysis approach we describe is selected based on the trial's pragmatic nature and the intent to understand the effectiveness of Bridge Clinic when compared to TAU.

Evaluating the Impact of the Bridge Clinic in Patients with Opioid Use Disorder

Statistical Analysis Plan Addendum

March 1, 2023

Endpoints

Exploratory Endpoints

Post hoc, it was determined that there is uncertainty in specifying the timing of a consult with the inpatient psychiatric service. Therefore, an additional exploratory length of stay endpoint was defined using a consistent start point. This hospital length of stay variable is defined as the time between the time of randomization and the time of discharge during the index inpatient visit. This endpoint is incorporated into the statistical plan prior as an exploratory endpoint.

Christopher J Lindsell
Christopher J. Lindsell, PhD

3/1/2023
Date

454 **eSupp3 – Statistical Analysis Report**

Evaluating the Impact of the Bridge Clinic in Patients with Opioid Use Disorder

<div style="text-align:center">455</div>
<div style="text-align:center">456</div>

457 Cassie Hennessy

458 2023-06-20

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542

Project Summary

A pragmatic, single center, randomized, controlled trial designed to evaluate the impact of the Bridge Clinic on improving care for patients with active opioid use disorder (OUD).

- The Bridge Clinic provides patients with temporary access to treatment at an outpatient clinic while they are waiting to be accepted into a long-term clinic

Hypothesis: Because inpatient providers may delay discharge for patients with OUD who lack a source of outpatient care for MOUD, it is hypothesized that OUD patients referred to the Bridge Clinic will have a decreased overall length of stay, will follow up with their Bridge Clinic provider, and will have a reduction in overall costs for care.

Inclusion:

- Adults (age >= 18 years old)
- Inpatients at VUH
- Active OUD
- Being considered for MAT (MOUD)
- No fixed outpatient plan
- ACT considers MOUD clinically appropriate for the patient

Exclusion:

- Ineligible for referral to outpatient Bridge Clinic by ACT
- Previously randomized in the study
- Previously used Bridge Clinic

Interventions:

- Direct referral to a long-term outpatient addiction provider (Usual Care)
- Referral to Bridge Clinic to temporary care while a long-term outpatient addiction provider is identified

Calculate quartiles for ADI, using National Percentile (0-100)

- Quartile 1: [0,42)
- Quartile 2: [42,55)
- Quartile 3: [55,72)
- Quartile 4: [72,100]

40 subjects are allocated to specific quartiles, as determined by the study team

- 38 subjects allocated to Quartile 1
- 2 subjects allocated to Quartile 2

575   # Data Summary

576   ## Table 1: Demographics by treatment group and overall

	Overall	Bridge Clinic	Usual Care
N	335	167	168
Age (mean (SD))	39.8 (10.3)	40.4 (10.8)	39.1 (9.7)
Age (median [IQR])	38.0 [31.9, 45.7]	38.7 [32.1, 47.0]	37.9 [31.8, 44.5]
Sex			
Female	141 (42.1)	72 (43.1)	69 (41.1)
Male	194 (57.9)	95 (56.9)	99 (58.9)
Area Deprivation Index (Quartiles)			
Quartile 1	112 (33.4)	55 (32.9)	57 (33.9)
Quartile 2	73 (21.8)	35 (21.0)	38 (22.6)
Quartile 3	71 (21.2)	35 (21.0)	36 (21.4)
Quartile 4	79 (23.6)	42 (25.1)	37 (22.0)
Race			
White	287 (85.7)	144 (86.2)	143 (85.1)
Black or African American	36 (10.7)	16 (9.6)	20 (11.9)
Other	10 (3.0)	6 (3.6)	4 (2.4)
Missing/Unknown	2 (0.6)	1 (0.6)	1 (0.6)
Ethnicity			
Hispanic/Latino	12 (3.6)	6 (3.6)	6 (3.6)
Non-Hispanic/Latino	320 (95.5)	161 (96.4)	159 (94.6)
Missing/Unknown	3 (0.9)	0 (0.0)	3 (1.8)

577   Figure 1: Continuous Variable Distributions
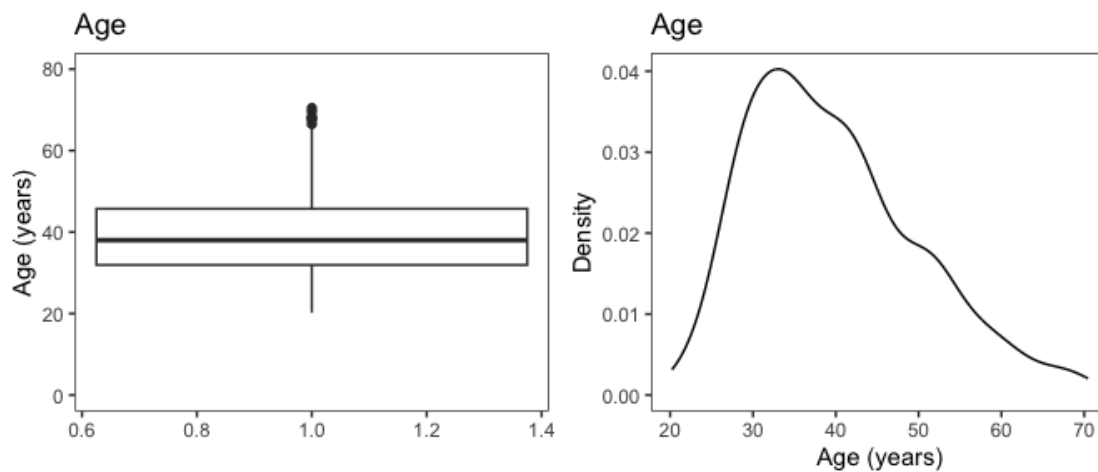
578

579

580   ## Outcomes

581   ### Table 2: Primary outcome: overall index hospital length of stay

582   • The time between admission and time of discharge during the inpatient visit when the
583   participant is identified as being eligible for the study

584

	Overall	Bridge Clinic	Usual Care
n	335	167	168
Length of stay (hours) (mean (SD))	223.6 (252.0)	215.0 (236.1)	232.1 (267.4)
Length of stay (hours) (median [IQR])	139.1 [84.6, 258.0]	141.7 [78.1, 276.1]	136.2 [86.9, 256.7]

585

586   ### Figure 2: Index hospital length of stay, overall and by group

587

588

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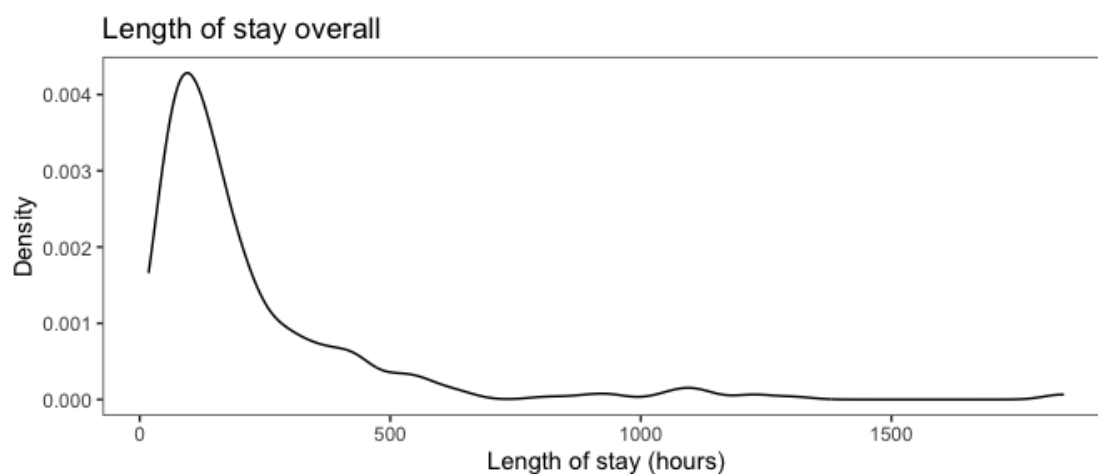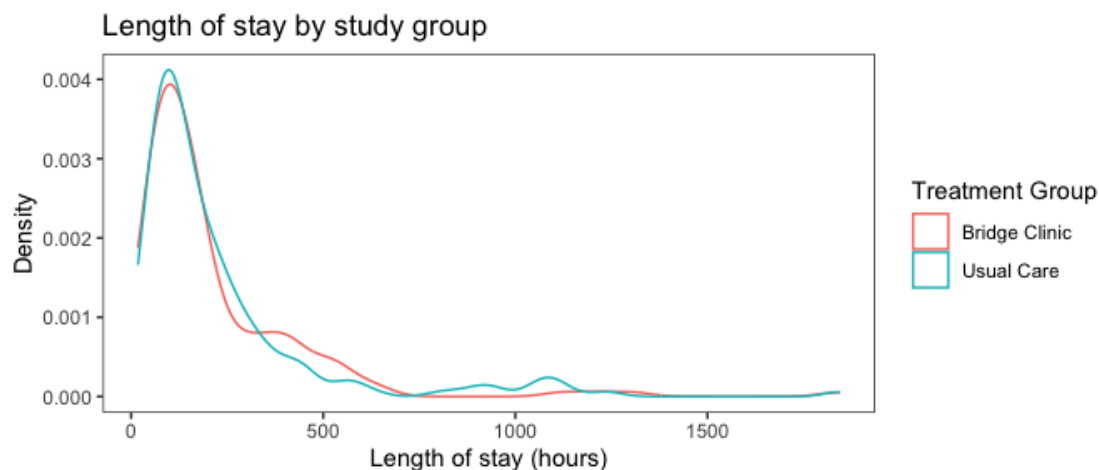
Table 3: Secondary outcomes

- Readmission: number of readmissions to VUH 16 weeks post discharge
- ED Visits: number of ED visits to VUH 16 weeks post discharge
- Readmission and ED visits: number of ED visits or readmissions to VUH 16 weeks post discharge
- Recurrent opioid use: yes/no; any recurrent opioid use within the 16 week follow up
- Opioid use in the last 30 days:
    - No use, single use, multiple use
- Cost of care: total costs for all care episodes at VUMC 16 weeks post discharge
    - Remove the patient encounters listed as 'NI'
    - Sum up the Total Costs for each patient, across their encounters
- Linkage to MOUD provider: yes/no; attended at least one visit with a MOUD provider after discharge
- Quality of Life: Schwartz Outcome Scale-10
    - Sum across the 10 questions
    - If one or two questions are missing, the mean of the non-missing questions is used to impute the missing column
    - If three or more questions are missing, the quality of life is missing
- Overdose: yes/no; within the 16 week follow up
- Death: yes/no; within the 16 week follow up
- Hospital free days and Hospital free & ED free days:
    - Hospital free days will be calculated as a count of whole days during the 16 weeks the subject is not in the hospital. If the subject dies before the end of 16 weeks, hospital free days will be equal to -1.
    - Hospital and emergency department free days will be calculated as a count of whole days during the 16 weeks the subject is not in the emergency department or in the hospital. If the subject dies before the end of 16 weeks, emergency free days will be equal to -1.
    - Per SAP, admission and discharge date each count as 1 day in the hospital/ED so the calculated LOS should not be used for this
    - Some patients have inpatient encounters listed that happened during their index hospital stay (i.e., were in the hospital for multiple days and had a surgery or lab after they were enrolled in the study). These should be filtered out to only include subsequent encounters 16 weeks after discharge from index stay.
    - If a subject has no hospital or emergency room encounters and does not die within the 16 week follow up, hospital and hospital & ED frees are set to 112 days (16 weeks)
- Self-reported buprenorphine-naloxone (or naltrexone) prescriptions filled (number filled) at the 16-week follow-up call

	Overall	Bridge Clinic	Usual Care

	Overall	Bridge Clinic	Usual Care
N	335	167	168
Number of readmissions (median [IQR])	0.00 [0.00, 0.00]	0.00 [0.00, 1.00]	0.00 [0.00, 0.00]
At least one readmission (%)			
Yes	70 (20.9)	45 (26.9)	25 (14.9)
No	265 (79.1)	122 (73.1)	143 (85.1)
Number of ED visits (median [IQR])	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]
At least one ED visit (%)			
Yes	76 (22.7)	40 (24.0)	36 (21.4)
No	259 (77.3)	127 (76.0)	132 (78.6)
Number of readmissions or ED visits (median [IQR])	0.00 [0.00, 1.00]	0.00 [0.00, 1.00]	0.00 [0.00, 1.00]
At least one readmission or ED visit (%)			
Yes	121 (36.1)	69 (41.3)	52 (31.0)
No	214 (63.9)	98 (58.7)	116 (69.0)
Recurrent opioid use (%)			
Yes	38 (11.3)	23 (13.8)	15 (8.9)
No	50 (14.9)	33 (19.8)	17 (10.1)
Missing	247 (73.7)	111 (66.5)	136 (81.0)
Opioid use in last 30 days (%)			
No use	4 (1.2)	2 (1.2)	2 (1.2)
Single use	4 (1.2)	0 (0.0)	4 (2.4)
Multiple use	24 (7.2)	17 (10.2)	7 (4.2)
Missing	303 (90.4)	148 (88.6)	155 (92.3)
Total cost of care (mean (SD))	20052.86 (34970.10)	25066.64 (40311.33)	14740.26 (27379.09)
Total cost of care (median [IQR])	4926.93 [678.99, 22109.90]	9481.93 [1478.28, 29376.14]	1705.28 [360.16, 12146.33]
Missing	24 (7.2)	7 (4.2)	17 (10.1)

	Overall	Bridge Clinic	Usual Care
Linkage to MOUD provider (%)			
Yes	64 (19.1)	45 (26.9)	19 (11.3)
No	24 (7.2)	11 (6.6)	13 (7.7)
Missing	247 (73.7)	111 (66.5)	136 (81.0)
Quality of Life (mean (SD))	40.42 (16.44)	40.36 (17.75)	40.53 (14.21)
Quality of Life (median [IQR])	44.00 [29.50, 54.00]	47.00 [26.00, 53.75]	41.50 [32.50, 54.25]
Missing	249 (74.3)	113 (67.7)	136 (81.0)
Overdose (%)			
Yes	5 (1.5)	1 (0.6)	4 (2.4)
No	81 (24.2)	53 (31.7)	28 (16.7)
Missing	249 (74.3)	113 (67.7)	136 (81.0)
Death (%)			
Yes	6 (1.8)	2 (1.2)	4 (2.4)
No	329 (98.2)	165 (98.8)	164 (97.6)
Hospital free days (mean (SD))	107.09 (16.79)	106.38 (15.70)	107.80 (17.83)
Hospital free days (median [IQR])	112.00 [112.00, 112.00]	112.00 [109.00, 112.00]	112.00 [112.00, 112.00]
Hospital and ED free days (mean (SD))	106.54 (16.88)	105.77 (15.85)	107.31 (17.86)
Hospital and ED free days (median [IQR])	112.00 [110.00, 112.00]	112.00 [107.00, 112.00]	112.00 [111.00, 112.00]
Self-reported number of buprenorphine fills (mean (SD))	7.60 (7.57)	10.26 (7.80)	3.65 (5.17)
Self-reported number of buprenorphine fills (median [IQR])	6.00 [0.00, 15.00]	10.00 [4.00, 16.00]	1.00 [0.00, 6.00]
Missing	258 (77.0)	121 (72.5)	137 (81.5)

628   Figure 3a: Number of Readmissions
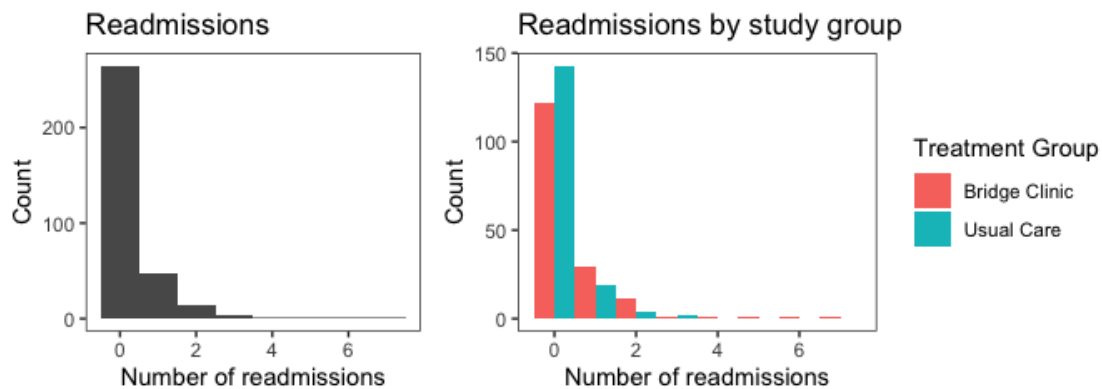
629

630   Figure 3b: Number of ED Visits
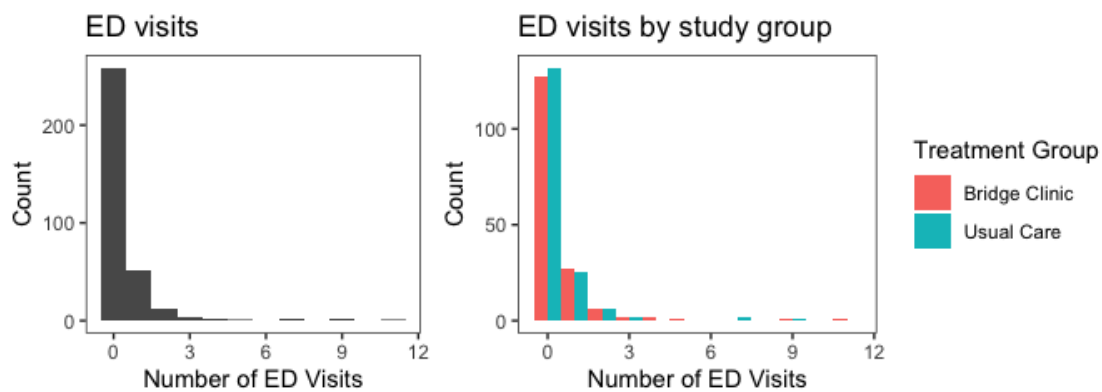
631

632   Figure 3c: Number of Readmissions or ED Visits
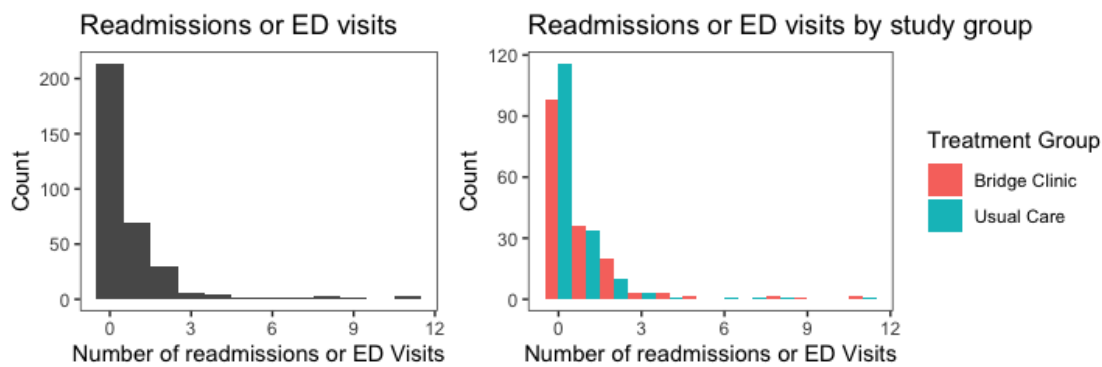
633

634

635 Figure 4: Cost of care
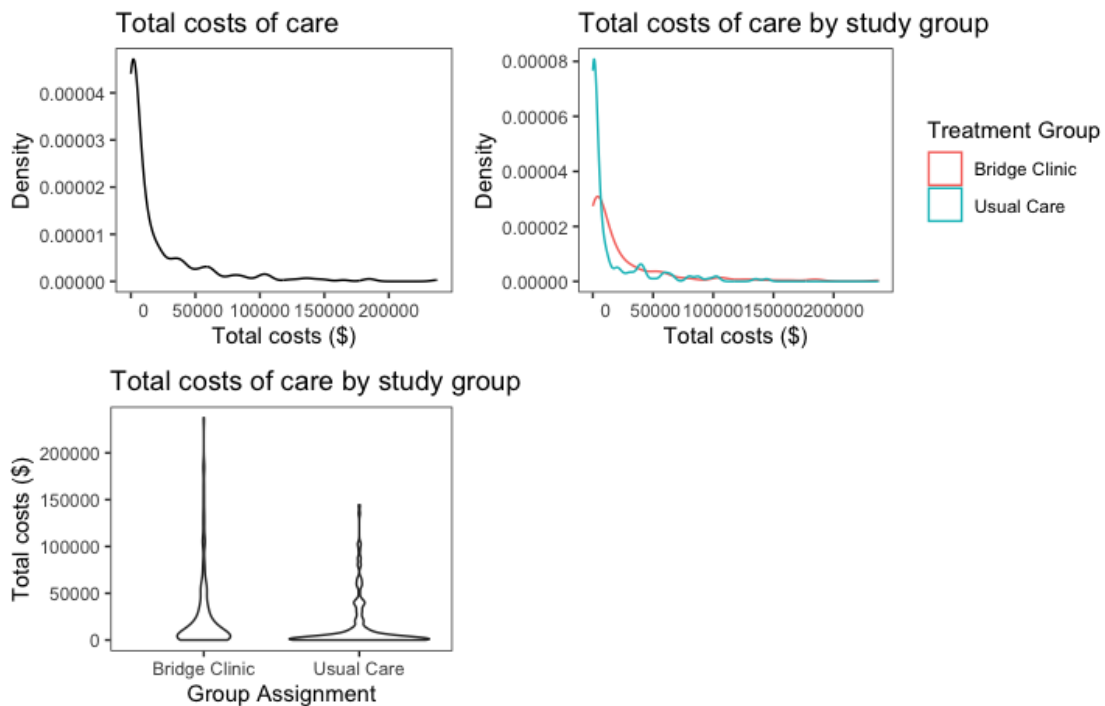
636

637 Figure 5: Quality of life
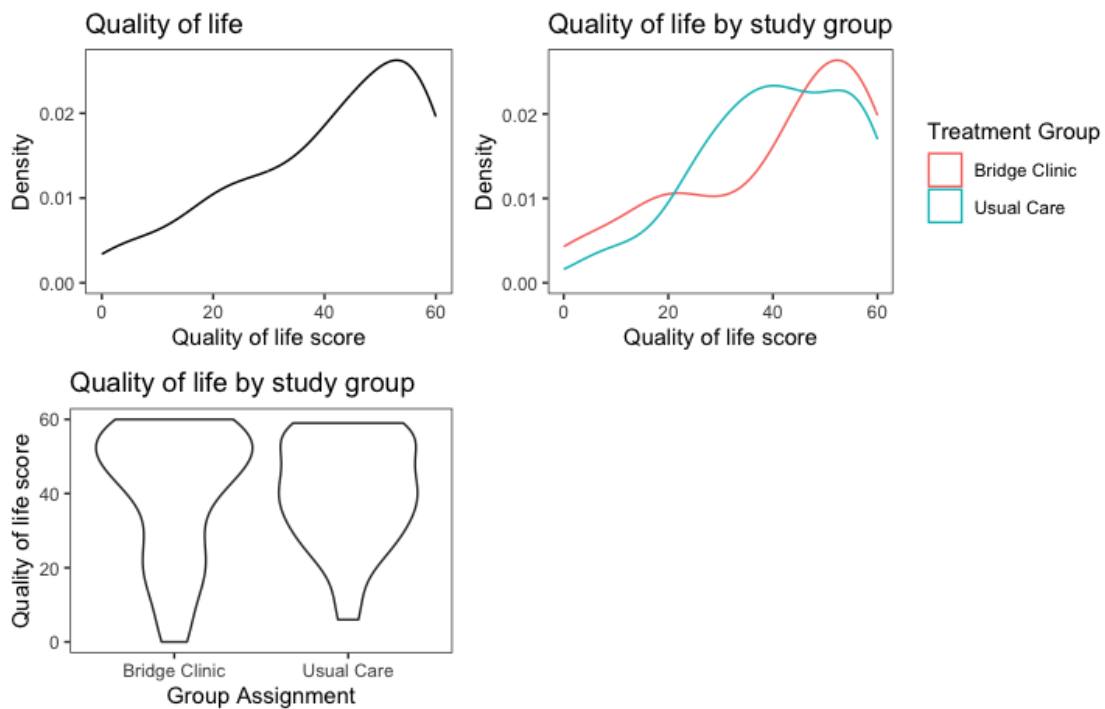
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639

640 ## Table 4: Exploratory Outcomes

641 **Exploratory outcomes for OPAT patients will not be compared between study groups but will**
642 **be reported by study group**

643 Exploratory endpoints have been specified for patients with infection suitable for outpatient
644 antibiotic therapy (OPAT) management

645

646 • New, persistent, or recurrent infection: defined by positive culture and/or change in
647   antibiotic regimen
648 • Completion of antibiotic therapy
649 • Days from negative blood culture (i.e., blood draw date) to first hospital discharge

650

	Overall	Bridge Clinic	Usual Care
N	7	6	1
New, persistent, or recurrent infection (%)			
No	7 (100.0)	6 (100.0)	1 (100.0)
Yes	0 (0.0)	0 (0.0)	0 (0.0)
Completion of antibiotic therapy (%)			
No	1 (14.3)	0 (0.0)	1 (100.0)
Yes	6 (85.7)	6 (100.0)	0 (0.0)
Days from negative blood culture (mean (SD))	17.40 (8.96)	19.75 (8.38)	8.00 (NA)
Days from negative blood culture (median [IQR])	15.00 [12.00, 21.00]	18.00 [14.25, 23.50]	8.00 [8.00, 8.00]
Missing	2 (28.6)	2 (33.3)	0 (0.0)

651

652 Table 5a: Implementation Outcome - Acceptance of Bridge Clinic

653

654 • Acceptance of Bridge Clinic as a bridging provider, defined by being physically checked
655   in for at least 1 visit with the Bridge Clinic within 16 weeks of follow up.

656

		Overall	Bridge Clinic	Usual Care
n		335	167	168
At least one Bridge Clinic Visit (%)	No	237 (70.7)	70 (41.9)	167 (99.4)
	Yes	98 (29.3)	97 (58.1)	1 (0.6)

657

658 Table 5b: Implementation Outcome - Reasons for ineligibility

659

660 • Reasons for ineligibility among participants screened, specifically:
661   – Absence of a qualifying OUD
662   – ACT determines the participant does not qualify

663

	Overall
n (number screened but not enrolled)	37
Does the patient have OUD? = No (%)	1 (11.1)
Does the ACT believe the patient is a candidate for Bridge Clinic = No (%)	3 (60.0)

664

665   ## Table 6: Fidelity Outcome

666

667   • Intervention Contamination: defined as when a patient randomized to usual care is
668   offered the Bridge Clinic, or when a patient is randomized to Bridge Clinic but is only
669   offered usual care, at the time of discharge from the inpatient stay.

670

	Overall	Bridge Clinic	Usual Care
n	335	167	168
Intervention Contamination = Yes (%)	1 (1.2)	1 (1.9)	0 (0.0)

671

Primary Analysis

673 • Since the data are positive and skewed, a proportional odds model is used

674

Unadjusted Primary Analysis

676 • Outcome: index hospital length of stay (hours)

677 • Predictor: Group assignment (Bridge Clinic or usual care)

678 • Number of observations included in this analysis: 335

679

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Group Assignment (Bridge Clinic vs Usual Care)	2	1		-0.06	0.19	-0.43	0.31	1
Odds Ratio	2	1		0.94		0.65	1.37	2

680 The unadjusted OR (95% CI) for the index hospital length of stay being longer for a subject in
681 Bridge Clinic vs Usual Care is 0.944 (0.651-1.368), p = 0.761.

682

Adjusted Primary Analysis

684

Multiple Imputation

686 • Multiple imputation was used to impute missing data for race and ethnicity

Proportional Odds Model

688 • Outcome: index hospital length of stay (hours)
689 • Predictor: Group assignment (Bridge Clinic or usual care)
690 • Adjusted for age, race, ethnicity, area deprivation index (quartiles)
691 – Restricted cubic splines are used for continuous covariates (with 3 knots)
692 • Age
693 • Number of observations included in this analysis: 335
694

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Age	31.93	45.72	13.79	0.26	0.16	-0.05	0.58	1
Odds Ratio	31.93	45.72	13.79	1.30		0.95	1.79	2
Group Assignment (Bridge Clinic vs Usual Care)	2.00	1.00		-0.06	0.19	-0.44	0.31	1
Odds Ratio	2.00	1.00		0.94		0.65	1.36	2
Race (Black or African American vs White)	1.00	2.00		-0.13	0.31	-0.75	0.48	1
Odds Ratio	1.00	2.00		0.87		0.47	1.62	2
Race (Other vs White)	1.00	3.00		-0.45	0.72	-1.85	0.95	1
Odds Ratio	1.00	3.00		0.64		0.16	2.60	2
Ethnicity (Hispanic/Latino vs Non-Hispanic/Latino)	2.00	1.00		0.75	0.66	-0.55	2.05	1
Odds Ratio	2.00	1.00		2.12		0.58	7.76	2
ADI Quartile (2 vs 1)	1.00	2.00		0.15	0.26	-0.37	0.66	1
Odds Ratio	1.00	2.00		1.16		0.69	1.94	2
ADI Quartile (3 vs 1)	1.00	3.00		0.12	0.26	-0.40	0.63	1
Odds Ratio	1.00	3.00		1.12		0.67	1.88	2
ADI Quartile (4 vs 1)	1.00	4.00		0.08	0.26	-0.42	0.59	1
Odds Ratio	1.00	4.00		1.09		0.66	1.80	2

695   The adjusted OR (95% CI) for the index hospital length of stay being longer for a subject in
696   Bridge Clinic vs Usual Care is 0.939 (0.646-1.364), p = 0.74.

697

698

699   Test differential treatment effects

700   Differential treatment effects will be evaluated at a significance level = .2, decided a priori.

701   • Age
702   • Race
703   • Ethnicity
704   • Area deprivation index (quartiles)

705

706   **Age**
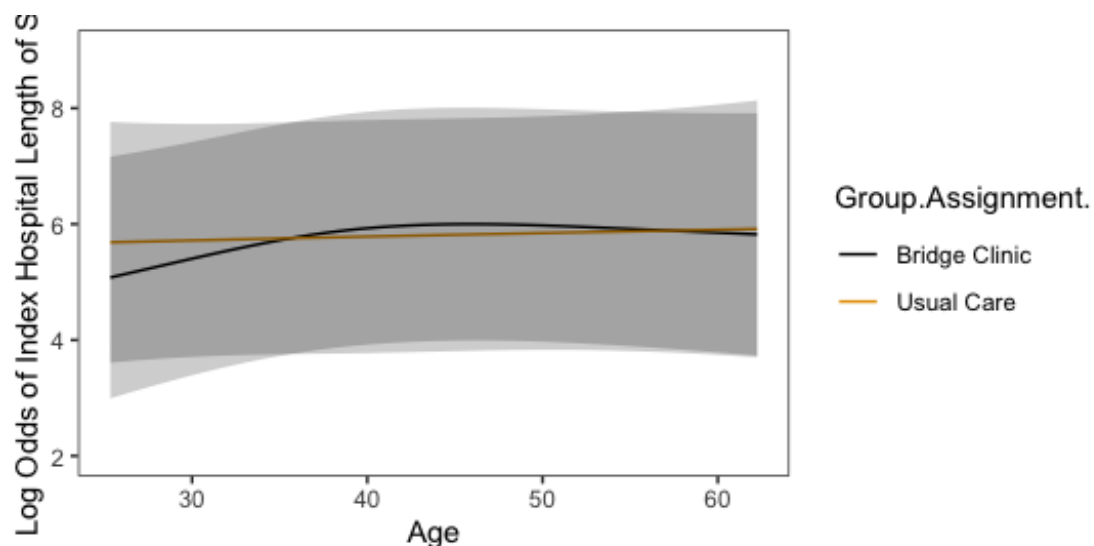
707   ```
708   ##
       ## Model 1: los_hrs ~ Group.Assignment. * rcs(AGE, 3) + RACE_2 + ETHNI
709   CITY +
710   ##   quartile_grp
711   ## Model 2: los_hrs ~ Group.Assignment. + rcs(AGE, 3) + RACE_2 + ETHNI
712   CITY +
713   ##   quartile_grp
714   ##
715   ## L.R. Chisq   d.f.   P
716   ## 1.5642566   2.0000000   0.4574314
       ```



RACE_2=White ETHNICITY=Non-Hispanic/Latino quartile_grp=Quartile 1

717

718    There is no evidence suggesting that the effect of intervention group on the index hospital
719    length of stay depends on age (p-value = 0.457).

720

721    **Race**

```
## 
## Model 1: los_hrs ~ Group.Assignment. * RACE_2 + rcs(AGE, 3) + ETHNI
CITY +
##       quartile_grp
## Model 2: los_hrs ~ Group.Assignment. + rcs(AGE, 3) + RACE_2 + ETHNI
CITY +
##       quartile_grp
##
## L.R. Chisq        d.f.           P
##   3.055476    2.000000    0.217026
```

There is no evidence suggesting that the effect of intervention group on the index hospital length of stay depends on race (p-value = 0.217).

Ethnicity

```
## 
## Model 1: los_hrs ~ Group.Assignment. * ETHNICITY + rcs(AGE, 3) + RA
CE_2 +
##       quartile_grp
## Model 2: los_hrs ~ Group.Assignment. + rcs(AGE, 3) + RACE_2 + ETHNI
CITY +
##       quartile_grp
##
## L.R. Chisq        d.f.           P
##   0.1975030   1.0000000   0.6567439
```

There is no evidence suggesting that the effect of intervention group on the index hospital length of stay depends on ethnicity (p-value = 0.657).

Area Deprivation Index (Quartiles)

```
## 
## Model 1: los_hrs ~ Group.Assignment. * quartile_grp + rcs(AGE, 3) +
RACE_2 +
##       ETHNICITY
## Model 2: los_hrs ~ Group.Assignment. + rcs(AGE, 3) + RACE_2 + ETHNI
CITY +
##       quartile_grp
##
## L.R. Chisq        d.f.           P
##   0.1354324   3.0000000   0.9872701
```

There is no evidence suggesting that the effect of intervention group on the index hospital length of stay depends on area deprivation index (p-value = 0.987).

Secondary Analysis

761
762 • Continuous outcomes will be compared between study groups like the primary outcome:
763 proportional odds model

764 • Binary endpoints will use a logit link function

765 • For counts either a zero-inflated Poisson or a negative binomial model will be fit.

766 • If there are missing outcomes, these may be imputed if they occur in less than 5% of cases.
767 Otherwise, the cohort for which the outcome is available will be described, along with the
768 results of the model evaluating treatment effects in this cohort.

769 • No adjustments for multiplicity will be made.

770 • Missing data for covariates will be imputed using single imputation

771 – Modes will be imputed for categorical variables
772 – Means will be imputed for continuous variables

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788 ## Number of readmissions

789 ### Unadjusted - Proportional odds model
790 • Outcome: number of readmissions

791 • Predictor: Group assignment (Bridge Clinic or usual care)

792 • Model: proportional odds model

793 • Number of observations included in this analysis: 335

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Group Assignment (Bridge Clinic vs Usual Care)	1	2		0.77	0.28	0.23	1.31	1
Odds Ratio	1	2		2.15		1.25	3.71	2

794 The unadjusted OR (95% CI) for the number of readmissions being greater for a subject in
795 Bridge Clinic vs Usual Care is 2.155 (1.252-3.707).

796

797

798 ### Adjusted - Proportional odds model
799 • Proportional odds model
800 • Single imputation was used to impute missing data for race and ethnicity
801 • Outcome: number of readmissions
802 • Predictor: Group assignment (Bridge Clinic or usual care)
803 • Adjusted for age, race, ethnicity, area deprivation index (quartiles)
804   – Restricted cubic splines are used for continuous covariates (with 3 knots)
805   • Age
806 • Number of observations included in this analysis: 335

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Age	31.93	45.72	13.79	0.25	0.24	-0.22	0.71	1
Odds Ratio	31.93	45.72	13.79	1.28		0.81	2.03	2
Group Assignment (Bridge Clinic vs Usual Care)	1.00	2.00		0.77	0.28	0.22	1.32	1
Odds Ratio	1.00	2.00		2.17		1.25	3.76	2
Race (Black or African American vs White)	1.00	2.00		-0.71	0.52	-1.72	0.30	1

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Odds Ratio	1.00	2.00		0.49		0.18	1.35	2
Race (Other vs White)	1.00	3.00		-7.23	33.27	-72.43	57.97	1
Odds Ratio	1.00	3.00		0.00		0.00	1.506e+25	2
Ethnicity (Hispanic/Latino vs Non-Hispanic/Latino)	2.00	1.00		-7.37	31.33	-68.79	54.04	1
Odds Ratio	2.00	1.00		0.00		0.00	2.946e+23	2
ADI Quartile (2 vs 1)	1.00	2.00		0.27	0.37	-0.46	1.00	1
Odds Ratio	1.00	2.00		1.31		0.63	2.72	2
ADI Quartile (3 vs 1)	1.00	3.00		-0.53	0.42	-1.35	0.29	1
Odds Ratio	1.00	3.00		0.59		0.26	1.33	2
ADI Quartile (4 vs 1)	1.00	4.00		-0.03	0.36	-0.73	0.66	1
Odds Ratio	1.00	4.00		0.97		0.48	1.94	2

807   The adjusted OR (95% CI) for the number of readmissions being greater for a subject in Bridge
808   Clinic vs Usual Care is 2.165 (1.246-3.762).

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821 ## Number of ED visits

822 ### Unadjusted - Proportional odds model
823 • Outcome: number of ED visits

824 • Predictor: Group assignment (Bridge Clinic or usual care)

825 • Model: proportional odds model

826 • Number of observations included in this analysis: 335

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Group Assignment (Bridge Clinic vs Usual Care)	1	2		0.15	0.26	-0.36	0.66	1
Odds Ratio	1	2		1.16		0.70	1.93	2

827 The unadjusted OR (95% CI) for the number of ED visits being greater for a subject in Bridge
828 Clinic vs Usual Care is 1.162 (0.699-1.931).

829

830 ### Adjusted - Proportional odds model
831 • Proportional odds model
832 • Single imputation was used to impute missing data for race and ethnicity
833 • Outcome: number of ED visits
834 • Predictor: Group assignment (Bridge Clinic or usual care)
835 • Adjusted for age, race, ethnicity, area deprivation index (quartiles)
836   – Restricted cubic splines are used for continuous covariates (with 3 knots)
837   • Age
838 • Number of observations included in this analysis: 335

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Age	31.93	45.72	13.79	0.45	0.23	-0.01	0.90	1
Odds Ratio	31.93	45.72	13.79	1.57		0.99	2.46	2
Group Assignment (Bridge Clinic vs Usual Care)	1.00	2.00		0.14	0.27	-0.38	0.66	1
Odds Ratio	1.00	2.00		1.15		0.68	1.94	2
Race (Black or African American vs White)	1.00	2.00		0.48	0.39	-0.29	1.25	1
Odds Ratio	1.00	2.00		1.61		0.75	3.50	2

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Race (Other vs White)	1.00	3.00		-0.38	1.22	-2.78	2.02	1
Odds Ratio	1.00	3.00		0.68		0.06	7.53	2
Ethnicity (Hispanic/Latino vs Non-Hispanic/Latino)	2.00	1.00		-0.91	1.20	-3.26	1.44	1
Odds Ratio	2.00	1.00		0.40		0.04	4.22	2
ADI Quartile (2 vs 1)	1.00	2.00		0.17	0.34	-0.51	0.84	1
Odds Ratio	1.00	2.00		1.18		0.60	2.32	2
ADI Quartile (3 vs 1)	1.00	3.00		-0.67	0.40	-1.44	0.11	1
Odds Ratio	1.00	3.00		0.51		0.24	1.12	2
ADI Quartile (4 vs 1)	1.00	4.00		-0.49	0.37	-1.20	0.23	1
Odds Ratio	1.00	4.00		0.62		0.30	1.26	2

839   The adjusted OR (95% CI) for the number of ED visits being greater for a subject in Bridge Clinic
840   vs Usual Care is 1.151 (0.683-1.942).

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852 ## Number of readmissions or ED visits

853 ### Unadjusted - Proportional odds model

854 • Outcome: number of readmissions or ED visits

855 • Predictor: Group assignment (Bridge Clinic or usual care)

856 • Model: proportional odds model

857 • Number of observations included in this analysis: 335

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Group Assignment (Bridge Clinic vs Usual Care)	1	2		0.50	0.22	0.06	0.93	1
Odds Ratio	1	2		1.64		1.06	2.55	2

858 The unadjusted OR (95% CI) for the number of readmissions or ED visits being greater for a
859 subject in Bridge Clinic vs Usual Care is 1.643 (1.06-2.547).

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861 ### Adjusted - Proportional Odds Model

862 • Proportional odds model

863 • Single imputation was used to impute missing data for race and ethnicity

864 • Outcome: number of readmissions or ED visits

865 • Predictor: Group assignment (Bridge Clinic or usual care)

866 • Adjusted for age, race, ethnicity, area deprivation index (quartiles)

867 – Restricted cubic splines are used for continuous covariates (with 3 knots)

868 • Age

869 • Number of observations included in this analysis: 335

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Age	31.93	45.72	13.79	0.32	0.19	-0.05	0.70	1
Odds Ratio	31.93	45.72	13.79	1.38		0.95	2.01	2
Group Assignment (Bridge Clinic vs Usual Care)	1.00	2.00		0.51	0.23	0.06	0.96	1
Odds Ratio	1.00	2.00		1.66		1.06	2.60	2
Race (Black or African American vs White)	1.00	2.00		0.12	0.36	-0.59	0.83	1
Odds Ratio	1.00	2.00		1.12		0.55	2.29	2

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Race (Other vs White)	1.00	3.00		-1.00	1.20	-3.34	1.35	1
Odds Ratio	1.00	3.00		0.37		0.04	3.86	2
Ethnicity (Hispanic/Latino vs Non-Hispanic/Latino)	2.00	1.00		-1.48	1.17	-3.76	0.81	1
Odds Ratio	2.00	1.00		0.23		0.02	2.25	2
ADI Quartile (2 vs 1)	1.00	2.00		0.10	0.30	-0.49	0.70	1
Odds Ratio	1.00	2.00		1.11		0.61	2.01	2
ADI Quartile (3 vs 1)	1.00	3.00		-0.85	0.34	-1.52	-0.17	1
Odds Ratio	1.00	3.00		0.43		0.22	0.84	2
ADI Quartile (4 vs 1)	1.00	4.00		-0.37	0.30	-0.96	0.23	1
Odds Ratio	1.00	4.00		0.69		0.38	1.25	2

870   The adjusted OR (95% CI) for the number of readmissions or ED visits being greater for a subject
871   in Bridge Clinic vs Usual Care is 1.661 (1.061-2.6).

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883 ## Recurrent opioid use

884 ### Unadjusted

885 • Outcome: recurrent opioid use (yes/no)

886 • Predictor: Group assignment (Bridge Clinic or usual care)

887 • Model: binary logistic regression model

888 • Number of observations included in this analysis: 88

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Group Assignment (Bridge Clinic vs Usual Care)	1	2		-0.24	0.45	-1.11	0.64	1
Odds Ratio	1	2		0.79		0.33	1.89	2

889 The unadjusted OR (95% CI) for a subject in Bridge Clinic to have recurrent opioid use vs a
890 subject with usual care is 0.79 (0.329-1.895).

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893 ### Adjusted

894 • Binary logistic regression model

895 • Single imputation was used to impute missing data for race and ethnicity

896 • Outcome: recurrent opioid use (yes/no)

897 • Predictor: Group assignment (Bridge Clinic or usual care)

898 • Adjusted for age, race, ethnicity, area deprivation index (quartiles)

899   – Restricted cubic splines are used for continuous covariates (with 3 knots)

900   • Age

901 • Number of observations included in this analysis: 88

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Age	31.93	45.72	13.79	0.08	0.49	-0.87	1.04	1
Odds Ratio	31.93	45.72	13.79	1.09		0.42	2.83	2
Group Assignment (Bridge Clinic vs Usual Care)	1.00	2.00		-0.31	0.50	-1.29	0.68	1
Odds Ratio	1.00	2.00		0.74		0.28	1.97	2
Race (Black or African American vs White)	1.00	2.00		0.94	0.78	-0.58	2.46	1

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Odds Ratio	1.00	2.00		2.56		0.56	11.75	2
Race (Other vs White)	1.00	3.00		0.54	1.72	-2.84	3.91	1
Odds Ratio	1.00	3.00		1.71		0.06	50.10	2
Ethnicity (Hispanic/Latino vs Non-Hispanic/Latino)	2.00	1.00		-0.61	1.88	-4.31	3.08	1
Odds Ratio	2.00	1.00		0.54		0.01	21.73	2
ADI Quartile (2 vs 1)	1.00	2.00		-0.32	0.66	-1.62	0.98	1
Odds Ratio	1.00	2.00		0.73		0.20	2.67	2
ADI Quartile (3 vs 1)	1.00	3.00		0.67	0.64	-0.58	1.92	1
Odds Ratio	1.00	3.00		1.95		0.56	6.82	2
ADI Quartile (4 vs 1)	1.00	4.00		-0.66	0.62	-1.87	0.55	1
Odds Ratio	1.00	4.00		0.52		0.15	1.72	2

902   The adjusted OR (95% CI) for a subject in Bridge Clinic to have recurrent opioid use vs a subject
903   with usual care is 0.736 (0.276-1.966).

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914 ## Opioid use in last 30 days

915 ### Unadjusted

916 • Outcome: opioid use in past 30 days (no use, single use, multiple use)

917 • Predictor: Group assignment (Bridge Clinic or usual care)

918 • Model: proportional odds model

919 • Number of observations included in this analysis: 32

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Group Assignment (Bridge Clinic vs Usual Care)	1	2		1.76	0.92	-0.03	3.56	1
Odds Ratio	1	2		5.82		0.97	35.09	2

920 The unadjusted OR (95% CI) for a subject in Bridge Clinic to have more opioid uses in the past
921 30 days vs a subject with usual care is 5.822 (0.966-35.093).

922

923 ### Adjusted

924 • Proportional odds model
925 • Single imputation was used to impute missing data for race and ethnicity
926 • Outcome: opioid use in past 30 days (no use, single use, multiple use)
927 • Predictor: Group assignment (Bridge Clinic or usual care)
928 • Adjusted for age, race, area deprivation index (quartiles)
929 – Restricted cubic splines are used for continuous covariates (with 3 knots)
930 • Age
931 – This model was not adjusted for ethnicity because all subjects in this model (N =
932 32) are Non-Hispanic/Latino
933 • Number of observations included in this analysis: 32

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Age	31.93	45.72	13.79	2.45	1.24	0.02	4.88	1
Odds Ratio	31.93	45.72	13.79	11.62		1.02	132.03	2
Group Assignment (Bridge Clinic vs Usual Care)	1.00	2.00		3.78	1.55	0.75	6.81	1
Odds Ratio	1.00	2.00		43.76		2.11	906.46	2
Race (Black or African	1.00	2.00		2.49	1.74	-0.93	5.90	1

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
American vs White)								
Odds Ratio	1.00	2.00		12.04		0.40	366.03	2
Race (Other vs White)	1.00	3.00		9.11	72.48	-132.94	151.17	1
Odds Ratio	1.00	3.00		9,090.16		0.00	4.496e+65	2
ADI Quartile (2 vs 1)	1.00	2.00		-0.01	1.57	-3.10	3.07	1
Odds Ratio	1.00	2.00		0.99		0.05	21.57	2
ADI Quartile (3 vs 1)	1.00	3.00		-1.06	1.74	-4.47	2.35	1
Odds Ratio	1.00	3.00		0.35		0.01	10.51	2
ADI Quartile (4 vs 1)	1.00	4.00		8.48	27.07	-44.57	61.54	1
Odds Ratio	1.00	4.00		4,829.69		0.00	5.310e+26	2

934 The adjusted OR (95% CI) for a subject in Bridge Clinic to have more opioid uses in the past 30
935 days vs a subject with usual care is 43.758 (2.112-906.462).

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948 Total cost of care

949 Unadjusted
950 • Outcome: total cost of care

951 • Predictor: Group assignment (Bridge Clinic or usual care)

952 • Model: proportional odds model

953 • Number of observations included in this analysis: 311

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Group Assignment (Bridge Clinic vs Usual Care)	1	2		0.82	0.2	0.42	1.21	1
Odds Ratio	1	2		2.27		1.53	3.36	2

954 The unadjusted OR (95% CI) for the total cost of care being greater for a subject in Bridge Clinic
955 vs Usual Care is 2.265 (1.525-3.365).

956

957 Adjusted
958 • Proportional odds model
959 • Single imputation was used to impute missing data for race and ethnicity
960 • Outcome: total cost of care
961 • Predictor: Group assignment (Bridge Clinic or usual care)
962 • Adjusted for age, race, ethnicity, area deprivation index (quartiles)
963   – Restricted cubic splines are used for continuous covariates (with 3 knots)
964   • Age
965 • Number of observations included in this analysis: 311

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Age	31.93	45.72	13.79	0.53	0.16	0.21	0.86	1
Odds Ratio	31.93	45.72	13.79	1.71		1.24	2.35	2
Group Assignment (Bridge Clinic vs Usual Care)	1.00	2.00		0.81	0.20	0.41	1.21	1
Odds Ratio	1.00	2.00		2.25		1.51	3.35	2
Race (Black or African American vs White)	1.00	2.00		-0.05	0.32	-0.68	0.58	1
Odds Ratio	1.00	2.00		0.95		0.50	1.79	2
Race (Other vs White)	1.00	3.00		0.14	0.73	-1.29	1.56	1
Odds Ratio	1.00	3.00		1.15		0.27	4.78	2
Ethnicity (Hispanic/Latino vs Non-	2.00	1.00		-0.25	0.68	-1.58	1.08	1

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Hispanic/Latino)								
Odds Ratio	2.00	1.00		0.78		0.21	2.93	2
ADI Quartile (2 vs 1)	1.00	2.00		0.05	0.28	-0.50	0.59	1
Odds Ratio	1.00	2.00		1.05		0.61	1.80	2
ADI Quartile (3 vs 1)	1.00	3.00		-0.62	0.27	-1.15	-0.08	1
Odds Ratio	1.00	3.00		0.54		0.32	0.92	2
ADI Quartile (4 vs 1)	1.00	4.00		-0.39	0.26	-0.91	0.12	1
Odds Ratio	1.00	4.00		0.68		0.40	1.13	2

966 The adjusted OR (95% CI) for the total cost of care being greater for a subject in Bridge Clinic vs
967 Usual Care is 2.25 (1.513-3.346).

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978 **Linkage to MOUD provider**

979 **Unadjusted**
980 • Outcome: Linkage to MOUD provider (yes/no)

981 • Predictor: Group assignment (Bridge Clinic or usual care)

982 • Model: binary logistic regression model

983 • Number of observations included in this analysis: 88

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Group Assignment (Bridge Clinic vs Usual Care)	1	2		1.03	0.49	0.06	1.99	1
Odds Ratio	1	2		2.80		1.07	7.35	2

984   The unadjusted OR (95% CI) for a subject in Bridge Clinic to attend at least one visit with a

985   MOUD provider vs a subject in usual care is 2.799 (1.066-7.351).

986

987   Adjusted

988   •   Binary logistic regression model

989   •   Single imputation was used to impute missing data for race and ethnicity

990   •   Outcome: Linkage to MOUD provider (yes/no)

991   •   Predictor: Group assignment (Bridge Clinic or usual care)

992   •   Adjusted for age, race, ethnicity, area deprivation index (quartiles)

993   –   Restricted cubic splines are used for continuous covariates (with 3 knots)

994   •   Age

995   •   Number of observations included in this analysis: 88

996

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Age	31.93	45.72	13.79	0.54	0.56	-0.55	1.63	1
Odds Ratio	31.93	45.72	13.79	1.72		0.58	5.10	2
Group Assignment (Bridge Clinic vs Usual Care)	1.00	2.00		0.92	0.57	-0.19	2.03	1
Odds Ratio	1.00	2.00		2.51		0.82	7.64	2
Race (Black or African American vs White)	1.00	2.00		-1.56	0.85	-3.23	0.10	1
Odds Ratio	1.00	2.00		0.21		0.04	1.10	2
Race (Other vs White)	1.00	3.00		13.79	57.02	-97.97	125.54	1
Odds Ratio	1.00	3.00		9.702e+05		0.00	3.328e+54	2
Ethnicity (Hispanic/Latino vs Non-Hispanic/Latino)	2.00	1.00		-6.92	41.87	-88.99	75.15	1
Odds Ratio	2.00	1.00		0.00		0.00	4.338e+32	2
ADI Quartile (2 vs 1)	1.00	2.00		1.03	0.85	-0.64	2.70	1

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Odds Ratio	1.00	2.00		2.79		0.53	14.87	2
ADI Quartile (3 vs 1)	1.00	3.00		-0.54	0.72	-1.95	0.87	1
Odds Ratio	1.00	3.00		0.58		0.14	2.38	2
ADI Quartile (4 vs 1)	1.00	4.00		0.09	0.70	-1.27	1.45	1
Odds Ratio	1.00	4.00		1.09		0.28	4.28	2

997   The adjusted OR (95% CI) for a subject in Bridge Clinic to attend at least one visit with a MOUD

998   provider vs a subject in usual care is 2.509 (0.824-7.64).

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1009 ## Quality of life

1010 ### Unadjusted

1011 • Outcome: quality of life score

1012 • Predictor: Group assignment (Bridge Clinic or usual care)

1013 • Model: proportional odds model

1014 • Number of observations included in this analysis: 86

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Group Assignment (Bridge Clinic vs Usual Care)	1	2		0.17	0.38	-0.58	0.92	1
Odds Ratio	1	2		1.18		0.56	2.50	2

1015 The unadjusted OR (95% CI) for the quality of life score being greater for a subject in Bridge
1016 Clinic vs Usual Care is 1.181 (0.558-2.498).

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1019 ### Adjusted

1020 • Proportional odds mode1

1021 • Single imputation was used to impute missing data for race and ethnicity

1022 • Outcome: quality of life score

1023 • Predictor: Group assignment (Bridge Clinic or usual care)

1024 • Adjusted for age, race, ethnicity, area deprivation index (quartiles)

1025 – Restricted cubic splines are used for continuous covariates (with 3 knots)

1026 • Age

1027 • Number of observations included in this analysis: 86

1028

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Age	31.93	45.72	13.79	-0.42	0.43	-1.27	0.43	1
Odds Ratio	31.93	45.72	13.79	0.66		0.28	1.53	2
Group Assignment (Bridge Clinic vs Usual Care)	1.00	2.00		0.02	0.41	-0.79	0.83	1
Odds Ratio	1.00	2.00		1.02		0.45	2.29	2
Race (Black or African American vs White)	1.00	2.00		-0.84	0.59	-2.00	0.32	1

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Odds Ratio	1.00	2.00		0.43		0.14	1.38	2
Race (Other vs White)	1.00	3.00		-2.17	1.27	-4.67	0.32	1
Odds Ratio	1.00	3.00		0.11		0.01	1.38	2
Ethnicity (Hispanic/Latino vs Non-Hispanic/Latino)	2.00	1.00		0.76	1.42	-2.03	3.54	1
Odds Ratio	2.00	1.00		2.13		0.13	34.60	2
ADI Quartile (2 vs 1)	1.00	2.00		-0.25	0.57	-1.37	0.87	1
Odds Ratio	1.00	2.00		0.78		0.25	2.39	2
ADI Quartile (3 vs 1)	1.00	3.00		-0.50	0.56	-1.59	0.60	1
Odds Ratio	1.00	3.00		0.61		0.20	1.82	2
ADI Quartile (4 vs 1)	1.00	4.00		-0.10	0.51	-1.10	0.91	1
Odds Ratio	1.00	4.00		0.91		0.33	2.47	2

1029 The adjusted OR (95% CI) for the quality of life score being greater for a subject in Bridge Clinic
1030 vs Usual Care is 1.019 (0.453-2.295).

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1041 ## Overdose

1042 ### Unadjusted

1043 • Outcome: Overdose (yes/no)

1044 • Predictor: Group assignment (Bridge Clinic or usual care)

1045 • Model: binary logistic regression model

1046 • Number of observations included in this analysis: 86

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Group Assignment (Bridge Clinic vs Usual Care)	1	2		-2.02	1.14	-4.26	0.21	1
Odds Ratio	1	2		0.13		0.01	1.24	2

1047 The unadjusted OR (95% CI) for a subject in Bridge Clinic to overdose vs a subject in usual care is
1048 0.132 (0.014-1.239).

1049

1050 ### Adjusted

1051 • Binary logistic regression model

1052 • Single imputation was used to impute missing data for race and ethnicity

1053 • Outcome: Overdose (yes/no)

1054 • Predictor: Group assignment (Bridge Clinic or usual care)

1055 • Adjusted for age, race, ethnicity, area deprivation index (quartiles)

1056 – Restricted cubic splines are used for continuous covariates (with 3 knots)

1057 • Age

1058 • Number of observations included in this analysis: 86

1059

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Age	31.93	45.72	13.79	-1.51	1.73	-4.90	1.88	1
Odds Ratio	31.93	45.72	13.79	0.22		0.01	6.53	2
Group Assignment (Bridge Clinic vs Usual Care)	1.00	2.00		-2.11	1.33	-4.72	0.51	1
Odds Ratio	1.00	2.00		0.12		0.01	1.66	2
Race (Black or African American vs	1.00	2.00		-0.28	1.36	-2.94	2.38	1

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
White)								
Odds Ratio	1.00	2.00		0.76		0.05	10.80	2
Race (Other vs White)	1.00	3.00		-3.71	135.96	-270.19	262.77	1
Odds Ratio	1.00	3.00		0.02		0.00	1.315e+114	2
Ethnicity (Hispanic/Latino vs Non-Hispanic/Latino)	2.00	1.00		-8.63	135.95	-275.08	257.82	1
Odds Ratio	2.00	1.00		0.00		0.00	9.335e+111	2
ADI Quartile (2 vs 1)	1.00	2.00		0.63	1.45	-2.21	3.46	1
Odds Ratio	1.00	2.00		1.87		0.11	31.91	2
ADI Quartile (3 vs 1)	1.00	3.00		0.84	1.40	-1.90	3.58	1
Odds Ratio	1.00	3.00		2.32		0.15	35.89	2
ADI Quartile (4 vs 1)	1.00	4.00		-7.84	35.31	-77.05	61.36	1
Odds Ratio	1.00	4.00		0.00		0.00	4.465e+26	2

1060 The adjusted OR (95% CI) for a subject in Bridge Clinic to overdose vs a subject in usual care is
1061 0.122 (0.009-1.659).

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1069 ## Death

1070 ### Unadjusted
1071 • Outcome: Death (yes/no)

1072   •   Predictor: Group assignment (Bridge Clinic or usual care)

1073   •   Model: binary logistic regression model

1074   •   Number of observations included in this analysis: 335

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Group Assignment (Bridge Clinic vs Usual Care)	1	2		-0.7	0.87	-2.41	1.01	1
Odds Ratio	1	2		0.5		0.09	2.75	2

1075   The unadjusted OR (95% CI) for a subject in Bridge Clinic to die within the 16 week follow up
1076   period vs a subject in usual care is 0.497 (0.09-2.751).

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1079   Adjusted

1080   •   Binary logistic regression model

1081   •   Single imputation was used to impute missing data for race and ethnicity

1082   •   Outcome: Death (yes/no)

1083   •   Predictor: Group assignment (Bridge Clinic or usual care)

1084   •   Adjusted for age, race, ethnicity, area deprivation index (quartiles)

1085   –   Restricted cubic splines are used for continuous covariates (with 3 knots)

1086   •   Age

1087   •   Number of observations included in this analysis: 335

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Age	31.93	45.72	13.79	0.50	0.81	-1.09	2.09	1
Odds Ratio	31.93	45.72	13.79	1.65		0.34	8.09	2
Group Assignment (Bridge Clinic vs Usual Care)	1.00	2.00		-0.74	0.89	-2.49	1.00	1
Odds Ratio	1.00	2.00		0.47		0.08	2.72	2
Race (Black or African American vs White)	1.00	2.00		0.29	1.17	-2.00	2.58	1
Odds Ratio	1.00	2.00		1.34		0.13	13.25	2
Race (Other vs White)	1.00	3.00		-4.55	60.88	-123.88	114.77	1
Odds Ratio	1.00	3.00		0.01		0.00	6.988e+49	2

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Ethnicity (Hispanic/Latino vs Non-Hispanic/Latino)	2.00	1.00		-5.59	58.58	-120.40	109.22	1
Odds Ratio	2.00	1.00		0.00		0.00	2.703e+47	2
ADI Quartile (2 vs 1)	1.00	2.00		7.31	21.64	-35.10	49.72	1
Odds Ratio	1.00	2.00		1,494.94		0.00	3.922e+21	2
ADI Quartile (3 vs 1)	1.00	3.00		7.35	21.64	-35.06	49.76	1
Odds Ratio	1.00	3.00		1,556.76		0.00	4.074e+21	2
ADI Quartile (4 vs 1)	1.00	4.00		7.19	21.64	-35.22	49.60	1
Odds Ratio	1.00	4.00		1,324.72		0.00	3.466e+21	2

1088   The adjusted OR (95% CI) for a subject in Bridge Clinic to die within the 16 week follow up
1089   period vs a subject in usual care is 0.475 (0.083-2.721).

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1100   ## Hospital free days

1101   ### Unadjusted
1102   •   Outcome: hospital free days

1103   •   Predictor: Group assignment (Bridge Clinic or usual care)

1104   •   Model: proportional odds model

1105   •   Number of observations included in this analysis: 335

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Group Assignment (Bridge Clinic vs Usual Care)	1	2		-0.62	0.27	-1.14	-0.1	1
Odds Ratio	1	2		0.54		0.32	0.9	2

1106   The unadjusted OR (95% CI) for the number of hospital free days being greater for a subject in

1107   Bridge Clinic vs Usual Care is 0.537 (0.32-0.904).

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1110   Adjusted

1111   •   Proportional odds model

1112   •   Single imputation was used to impute missing data for race and ethnicity

1113   •   Outcome: hospital free days

1114   •   Predictor: Group assignment (Bridge Clinic or usual care)

1115   •   Adjusted for age, race, ethnicity, area deprivation index (quartiles)

1116   –   Restricted cubic splines are used for continuous covariates (with 3 knots)

1117   •   Age

1118   •   Number of observations included in this analysis: 335

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	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Age	31.93	45.72	13.79	-0.31	0.23	-0.76	0.15	1
Odds Ratio	31.93	45.72	13.79	0.73		0.47	1.16	2
Group Assignment (Bridge Clinic vs Usual Care)	1.00	2.00		-0.61	0.27	-1.14	-0.08	1
Odds Ratio	1.00	2.00		0.54		0.32	0.92	2
Race (Black or African American vs White)	1.00	2.00		0.48	0.48	-0.46	1.42	1
Odds Ratio	1.00	2.00		1.62		0.63	4.13	2
Race (Other vs White)	1.00	3.00		7.17	32.70	-56.92	71.27	1
Odds Ratio	1.00	3.00		1,304.81		0.00	8.924e+30	2
Ethnicity (Hispanic/Latino vs Non-Hispanic/Latino)	2.00	1.00		7.31	30.83	-53.11	67.73	1

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Odds Ratio	2.00	1.00		1,494.88		0.00	2.607e+29	2
ADI Quartile (2 vs 1)	1.00	2.00		-0.33	0.36	-1.03	0.37	1
Odds Ratio	1.00	2.00		0.72		0.36	1.45	2
ADI Quartile (3 vs 1)	1.00	3.00		0.41	0.40	-0.38	1.20	1
Odds Ratio	1.00	3.00		1.50		0.68	3.31	2
ADI Quartile (4 vs 1)	1.00	4.00		-0.15	0.35	-0.83	0.52	1
Odds Ratio	1.00	4.00		0.86		0.44	1.69	2

1120 The adjusted OR (95% CI) for the number of hospital free days being greater for a subject in
1121 Bridge Clinic vs Usual Care is 0.543 (0.32-0.92).

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1131 ## Hospital and ED free days

1132 ### Unadjusted
1133 • Outcome: hospital and ED free days

1134 • Predictor: Group assignment (Bridge Clinic or usual care)

1135 • Model: proportional odds model

1136 • Number of observations included in this analysis: 335

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Group Assignment (Bridge Clinic vs Usual Care)	1	2		-0.47	0.22	-0.90	-0.04	1
Odds Ratio	1	2		0.62		0.41	0.96	2

1137   The unadjusted OR (95% CI) for the number of hospital and ED free days being greater for a

1138   subject in Bridge Clinic vs Usual Care is 0.623 (0.405-0.959).

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1140

1141   Adjusted

1142   •   Proportional odds model

1143   •   Single imputation was used to impute missing data for race and ethnicity

1144   •   Outcome: hospital and ED free days

1145   •   Predictor: Group assignment (Bridge Clinic or usual care)

1146   •   Adjusted for age, race, ethnicity, area deprivation index (quartiles)

1147   –   Restricted cubic splines are used for continuous covariates (with 3 knots)

1148   •   Age

1149   •   Number of observations included in this analysis: 335

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	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Age	31.93	45.72	13.79	-0.37	0.19	-0.74	0.01	1
Odds Ratio	31.93	45.72	13.79	0.69		0.48	1.01	2
Group Assignment (Bridge Clinic vs Usual Care)	1.00	2.00		-0.50	0.22	-0.93	-0.06	1
Odds Ratio	1.00	2.00		0.61		0.39	0.95	2
Race (Black or African American vs White)	1.00	2.00		-0.17	0.35	-0.85	0.52	1
Odds Ratio	1.00	2.00		0.85		0.43	1.68	2
Race (Other vs White)	1.00	3.00		1.01	1.20	-1.34	3.36	1
Odds Ratio	1.00	3.00		2.74		0.26	28.76	2
Ethnicity (Hispanic/Latino vs Non-Hispanic/Latino)	2.00	1.00		1.45	1.16	-0.83	3.73	1
Odds Ratio	2.00	1.00		4.26		0.43	41.70	2

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
ADI Quartile (2 vs 1)	1.00	2.00		-0.18	0.29	-0.75	0.40	1
Odds Ratio	1.00	2.00		0.84		0.47	1.49	2
ADI Quartile (3 vs 1)	1.00	3.00		0.73	0.34	0.07	1.39	1
Odds Ratio	1.00	3.00		2.08		1.07	4.02	2
ADI Quartile (4 vs 1)	1.00	4.00		0.15	0.30	-0.43	0.73	1
Odds Ratio	1.00	4.00		1.16		0.65	2.08	2

1151   The adjusted OR (95% CI) for the number of hospital and ED free days being greater for a
1152   subject in Bridge Clinic vs Usual Care is 0.609 (0.393-0.945).

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Number of buprenorphine refills

Unadjusted
1165   •   Outcome: Number of buprenorphine refills

1166   •   Predictor: Group assignment (Bridge Clinic or usual care)

1167   •   Model: proportional odds model

1168   •   Number of observations included in this analysis: 77

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Group Assignment (Bridge Clinic vs Usual Care)	1	2		1.66	0.44	0.80	2.53	1
Odds Ratio	1	2		5.28		2.22	12.58	2

1169 The unadjusted OR (95% CI) for the number of buprenorphine refills being greater for a subject
1170 in Bridge Clinic vs Usual Care is 5.28 (2.216-12.582).

Adjusted
1174   •   Proportional odds model

1175   •   Single imputation was used to impute missing data for race and ethnicity

1176   •   Outcome: Number of buprenorphine refills

1177   •   Predictor: Group assignment (Bridge Clinic or usual care)

1178   •   Adjusted for age, race, ethnicity, area deprivation index (quartiles)

1179   –   Restricted cubic splines are used for continuous covariates (with 3 knots)

1180   •   Age

1181   •   Number of observations included in this analysis: 77

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Age	31.93	45.72	13.79	0.69	0.49	-0.26	1.65	1
Odds Ratio	31.93	45.72	13.79	2.00		0.77	5.19	2
Group Assignment (Bridge Clinic vs Usual Care)	1.00	2.00		1.93	0.50	0.94	2.91	1
Odds Ratio	1.00	2.00		6.87		2.56	18.42	2
Race (Black or African American vs White)	1.00	2.00		-1.52	0.69	-2.87	-0.17	1

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Odds Ratio	1.00	2.00		0.22		0.06	0.85	2
Race (Other vs White)	1.00	3.00		-0.94	1.43	-3.75	1.86	1
Odds Ratio	1.00	3.00		0.39		0.02	6.43	2
Ethnicity (Hispanic/Latino vs Non-Hispanic/Latino)	2.00	1.00		-0.58	1.83	-4.15	3.00	1
Odds Ratio	2.00	1.00		0.56		0.02	20.15	2
ADI Quartile (2 vs 1)	1.00	2.00		0.68	0.66	-0.60	1.97	1
Odds Ratio	1.00	2.00		1.98		0.55	7.15	2
ADI Quartile (3 vs 1)	1.00	3.00		0.11	0.61	-1.08	1.30	1
Odds Ratio	1.00	3.00		1.12		0.34	3.68	2
ADI Quartile (4 vs 1)	1.00	4.00		0.12	0.55	-0.96	1.20	1
Odds Ratio	1.00	4.00		1.13		0.38	3.33	2

1183   The adjusted OR (95% CI) for the number of buprenorphine refills being greater for a subject in
1184   Bridge Clinic vs Usual Care is 6.872 (2.564-18.416).

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Implementation Outcome Analysis

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- Binary endpoint: will use a logit link function

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- Missing data for covariates will be imputed using single imputation

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  - Modes will be imputed for categorical variables
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  - Means will be imputed for continuous variables

Acceptance of Bridge Clinic as a bridging provider

1191

Unadjusted

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- Outcome: Acceptance of Bridge Clinic as a bridging provider - attended at least one visit during
1194
  follow up (yes/no)

1195
- Predictor: Group assignment (Bridge Clinic or usual care)

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- Model: binary logistic regression model

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- Number of observations included in this analysis: 335

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Group Assignment (Bridge Clinic vs Usual Care)	1	2		5.44	1.02	3.45	7.43	1
Odds Ratio	1	2		231.41		31.64	1,692.42	2

1198 The unadjusted OR (95% CI) for a subject in Bridge Clinic to attend at least one Bridge Clinic visit
1199 during the 16-week follow up vs a subject in usual care is 231.414 (31.642-1692.424).

1200

Adjusted

1201

1202
- Binary logistic regression model
1203
- Single imputation was used to impute missing data for race and ethnicity
1204
- Outcome: Acceptance of Bridge Clinic as a bridging provider - attended at least one visit
1205
  during follow up (yes/no)
1206
- Predictor: Group assignment (Bridge Clinic or usual care)
1207
- Adjusted for age, race, ethnicity, area deprivation index (quartiles)
1208
  - Restricted cubic splines are used for continuous covariates (with 3 knots)
1209
    - Age
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- Number of observations included in this analysis: 335

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Age	31.93	45.72	13.79	0.51	0.28	-0.05	1.06	1

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Odds Ratio	31.93	45.72	13.79	1.66		0.95	2.90	2
Group Assignment (Bridge Clinic vs Usual Care)	1.00	2.00		5.66	1.05	3.60	7.72	1
Odds Ratio	1.00	2.00		287.16		36.69	2,247.69	2
Race (Black or African American vs White)	1.00	2.00		-1.18	0.59	-2.34	-0.03	1
Odds Ratio	1.00	2.00		0.31		0.10	0.97	2
Race (Other vs White)	1.00	3.00		3.20	2.30	-1.31	7.71	1
Odds Ratio	1.00	3.00		24.53		0.27	2,221.45	2
Ethnicity (Hispanic/Latino vs Non-Hispanic/Latino)	2.00	1.00		-4.44	2.43	-9.20	0.33	1
Odds Ratio	2.00	1.00		0.01		0.00	1.39	2
ADI Quartile (2 vs 1)	1.00	2.00		-0.46	0.46	-1.36	0.44	1
Odds Ratio	1.00	2.00		0.63		0.26	1.55	2
ADI Quartile (3 vs 1)	1.00	3.00		-0.25	0.46	-1.15	0.65	1
Odds Ratio	1.00	3.00		0.78		0.32	1.91	2
ADI Quartile (4 vs 1)	1.00	4.00		0.19	0.44	-0.67	1.05	1
Odds Ratio	1.00	4.00		1.21		0.51	2.86	2

1211   The adjusted OR (95% CI) for a subject in Bridge Clinic to attend at least one Bridge Clinic visit
1212   during the 16-week follow up vs a subject in usual care is 287.163 (36.688-2247.691).

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Post Hoc Analyses

Binary logistic regression for readmissions, ED visits, and readmission or ED visit

Readmission: yes/no within 16 week follow up

Unadjusted
- Outcome: Readmission (yes/no)
- Predictor: Group assignment (Bridge Clinic or usual care)
- Model: binary logistic regression
- Number of observations included in this analysis: 335

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Group Assignment (Bridge Clinic vs Usual Care)	1	2		0.75	0.28	0.20	1.29	1
Odds Ratio	1	2		2.11		1.22	3.64	2

The unadjusted OR (95% CI) for a subject in Bridge Clinic to have a readmission within the 16 week follow up period vs a subject in usual care is 2.11 (1.223-3.64).

Adjusted - Proportional odds model
- Binary logistic regression model
- Single imputation was used to impute missing data for race and ethnicity
- Outcome: Readmission (yes/no)
- Predictor: Group assignment (Bridge Clinic or usual care)
- Adjusted for age, race, ethnicity, area deprivation index (quartiles)
  - Restricted cubic splines are used for continuous covariates (with 3 knots)
    - Age
- Number of observations included in this analysis: 335

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Age	31.93	45.72	13.79	0.27	0.24	-0.21	0.74	1
Odds Ratio	31.93	45.72	13.79	1.30		0.81	2.09	2
Group Assignment (Bridge Clinic vs Usual Care)	1.00	2.00		0.74	0.28	0.19	1.30	1
Odds Ratio	1.00	2.00		2.10		1.21	3.67	2
Race (Black or African American vs White)	1.00	2.00		-0.63	0.52	-1.65	0.38	1

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Odds Ratio	1.00	2.00		0.53		0.19	1.47	2
Race (Other vs White)	1.00	3.00		-7.21	33.33	-72.55	58.12	1
Odds Ratio	1.00	3.00		0.00		0.00	1.743e+25	2
Ethnicity (Hispanic/Latino vs Non-Hispanic/Latino)	2.00	1.00		-7.38	31.33	-68.80	54.03	1
Odds Ratio	2.00	1.00		0.00		0.00	2.918e+23	2
ADI Quartile (2 vs 1)	1.00	2.00		0.21	0.37	-0.53	0.94	1
Odds Ratio	1.00	2.00		1.23		0.59	2.56	2
ADI Quartile (3 vs 1)	1.00	3.00		-0.59	0.42	-1.41	0.23	1
Odds Ratio	1.00	3.00		0.56		0.24	1.26	2
ADI Quartile (4 vs 1)	1.00	4.00		-0.06	0.36	-0.77	0.64	1
Odds Ratio	1.00	4.00		0.94		0.46	1.90	2

1234 The adjusted OR (95% CI) for a subject in Bridge Clinic to have a readmission within the 16 week
1235 follow up period vs a subject in usual care is 2.102 (1.205-3.666).

1236 ED visits: yes/no within 16 week follow up

1237 *Unadjusted*
1238 • Outcome: ED Visits (yes/no)

1239 • Predictor: Group assignment (Bridge Clinic or usual care)

1240 • Model: binary logistic regression

1241 • Number of observations included in this analysis: 335

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Group Assignment (Bridge Clinic vs Usual Care)	1	2		0.14	0.26	-0.37	0.66	1
Odds Ratio	1	2		1.15		0.69	1.93	2

1242 The unadjusted OR (95% CI) for a subject in Bridge Clinic to have an ED visit within the 16 week
1243 follow up period vs a subject in usual care is 1.155 (0.692-1.927).

1244 *Adjusted - Proportional odds model*

1245 • Binary logistic regression model

1246 • Single imputation was used to impute missing data for race and ethnicity

1247 • Outcome: ED Visit (yes/no)

1248 • Predictor: Group assignment (Bridge Clinic or usual care)

1249 • Adjusted for age, race, ethnicity, area deprivation index (quartiles)

1250 – Restricted cubic splines are used for continuous covariates (with 3 knots)

1251 • Age

1252 • Number of observations included in this analysis: 335

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Age	31.93	45.72	13.79	0.42	0.24	-0.04	0.88	1
Odds Ratio	31.93	45.72	13.79	1.52		0.96	2.40	2
Group Assignment (Bridge Clinic vs Usual Care)	1.00	2.00		0.15	0.27	-0.37	0.68	1
Odds Ratio	1.00	2.00		1.16		0.69	1.97	2
Race (Black or African American vs White)	1.00	2.00		0.53	0.40	-0.26	1.31	1
Odds Ratio	1.00	2.00		1.69		0.77	3.72	2
Race (Other vs White)	1.00	3.00		-0.37	1.22	-2.77	2.02	1
Odds Ratio	1.00	3.00		0.69		0.06	7.57	2
Ethnicity (Hispanic/Latino vs Non-Hispanic/Latino)	2.00	1.00		-0.86	1.20	-3.21	1.48	1
Odds Ratio	2.00	1.00		0.42		0.04	4.41	2
ADI Quartile (2 vs 1)	1.00	2.00		0.14	0.35	-0.54	0.83	1
Odds Ratio	1.00	2.00		1.15		0.58	2.28	2
ADI Quartile (3 vs 1)	1.00	3.00		-0.66	0.40	-1.44	0.12	1
Odds Ratio	1.00	3.00		0.52		0.24	1.13	2
ADI Quartile (4 vs 1)	1.00	4.00		-0.45	0.37	-1.17	0.27	1
Odds Ratio	1.00	4.00		0.64		0.31	1.31	2

1253 The adjusted OR (95% CI) for a subject in Bridge Clinic to have an ED visit within the 16 week

1254 follow up period vs a subject in usual care is 1.165 (0.687-1.974).

1255 Readmission or ED visit: yes/no within 16 week follow up

1256 *Unadjusted*

1257 • Outcome: Readmission or ED visit (yes/no)

1258 • Predictor: Group assignment (Bridge Clinic or usual care)

1259 • Model: binary logistic regression

1260 • Number of observations included in this analysis: 335

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Group Assignment (Bridge Clinic vs Usual Care)	1	2		0.45	0.23	0	0.90	1
Odds Ratio	1	2		1.57		1	2.46	2

1261 The unadjusted OR (95% CI) for a subject in Bridge Clinic to have a readmission or ED visit
1262 within the 16 week follow up period vs a subject in usual care is 1.571 (1.002-2.462).

1263 *Adjusted - Proportional odds model*

1264 • Binary logistic regression model

1265 • Single imputation was used to impute missing data for race and ethnicity

1266 • Outcome: Readmission or ED visit (yes/no)

1267 • Predictor: Group assignment (Bridge Clinic or usual care)

1268 • Adjusted for age, race, ethnicity, area deprivation index (quartiles)

1269 – Restricted cubic splines are used for continuous covariates (with 3 knots)

1270 • Age

1271 • Number of observations included in this analysis: 335

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Age	31.93	45.72	13.79	0.28	0.20	-0.11	0.67	1
Odds Ratio	31.93	45.72	13.79	1.32		0.89	1.95	2
Group Assignment (Bridge Clinic vs Usual Care)	1.00	2.00		0.48	0.24	0.01	0.94	1
Odds Ratio	1.00	2.00		1.61		1.01	2.57	2
Race (Black or African American vs White)	1.00	2.00		0.17	0.38	-0.58	0.91	1
Odds Ratio	1.00	2.00		1.18		0.56	2.49	2
Race (Other vs White)	1.00	3.00		-1.00	1.19	-3.33	1.33	1

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Odds Ratio	1.00	3.00		0.37		0.04	3.79	2
Ethnicity (Hispanic/Latino vs Non-Hispanic/Latino)	2.00	1.00		-1.47	1.16	-3.74	0.80	1
Odds Ratio	2.00	1.00		0.23		0.02	2.23	2
ADI Quartile (2 vs 1)	1.00	2.00		0.04	0.32	-0.58	0.66	1
Odds Ratio	1.00	2.00		1.04		0.56	1.94	2
ADI Quartile (3 vs 1)	1.00	3.00		-0.98	0.35	-1.67	-0.30	1
Odds Ratio	1.00	3.00		0.37		0.19	0.74	2
ADI Quartile (4 vs 1)	1.00	4.00		-0.50	0.31	-1.12	0.11	1
Odds Ratio	1.00	4.00		0.60		0.33	1.12	2

1272   The adjusted OR (95% CI) for a subject in Bridge Clinic to have a readmission or ED visit within

1273   the 16 week follow up period vs a subject in usual care is 1.611 (1.011-2.568).

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1284   Exploratory outcome: Index hospital length of stay from time of randomization

1285   Table 7: LOS from time of randomization

	Overall	Bridge Clinic	Usual Care
n	335	167	168
Length of stay from randomization (hours) (mean (SD))	125.8 (181.6)	120.8 (170.2)	130.7 (192.6)
Length of stay from randomization (hours) (median [IQR])	56.4 [27.5, 148.3]	56.4 [26.3, 145.7]	57.0 [28.2, 151.2]

1286   Figure 6: Index hospital length of stay from randomization, overall and by group

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1289   Analysis

1290   • Since the data are positive and skewed, a proportional odds model is used

1291   *Unadjusted*

1292   • Outcome: index hospital length of stay from time of randomization (hours)

1293 • Predictor: Group assignment (Bridge Clinic or usual care)

1294 • Number of observations included in this analysis: 335

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Group Assignment (Bridge Clinic vs Usual Care)	2	1		-0.09	0.19	-0.47	0.28	1
Odds Ratio	2	1		0.91		0.63	1.32	2

1295 The unadjusted OR (95% CI) for the index hospital length of stay being longer for a subject in
1296 Bridge Clinic vs Usual Care is 0.91 (0.628-1.319), p = 0.618.

1297 *Adjusted*

1298 **Multiple Imputation**

1299 • Multiple imputation was used to impute missing data for race and ethnicity

1300 **Proportional Odds Model**

1301 • Outcome: index hospital length of stay (hours)
1302 • Predictor: Group assignment (Bridge Clinic or usual care)
1303 • Adjusted for age, race, ethnicity, area deprivation index (quartiles)
1304 – Restricted cubic splines are used for continuous covariates (with 3 knots)
1305 • Age
1306 • Number of observations included in this analysis: 335
1307

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Age	31.93	45.72	13.79	0.26	0.16	-0.05	0.58	1
Odds Ratio	31.93	45.72	13.79	1.30		0.95	1.79	2
Group Assignment (Bridge Clinic vs Usual Care)	2.00	1.00		-0.06	0.19	-0.44	0.31	1
Odds Ratio	2.00	1.00		0.94		0.65	1.36	2
Race (Black or African American vs White)	1.00	2.00		-0.13	0.31	-0.75	0.48	1
Odds Ratio	1.00	2.00		0.88		0.47	1.62	2
Race (Other vs White)	1.00	3.00		-0.44	0.72	-1.84	0.96	1
Odds Ratio	1.00	3.00		0.64		0.16	2.62	2

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Ethnicity (Hispanic/Latino vs Non-Hispanic/Latino)	2.00	1.00		0.75	0.66	-0.55	2.05	1
Odds Ratio	2.00	1.00		2.13		0.58	7.80	2
ADI Quartile (2 vs 1)	1.00	2.00		0.15	0.26	-0.37	0.66	1
Odds Ratio	1.00	2.00		1.16		0.69	1.94	2
ADI Quartile (3 vs 1)	1.00	3.00		0.12	0.26	-0.39	0.63	1
Odds Ratio	1.00	3.00		1.12		0.67	1.88	2
ADI Quartile (4 vs 1)	1.00	4.00		0.08	0.26	-0.42	0.59	1
Odds Ratio	1.00	4.00		1.09		0.66	1.80	2

1308   The adjusted OR (95% CI) for the index hospital length of stay being longer for a subject in
1309   Bridge Clinic vs Usual Care is 0.938 (0.646-1.364), p = 0.739.

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Propensity Score Analysis

- 16-week follow up for secondary outcomes has a poor response rate

- We see a difference in rates of follow up between treatment arms (subjects in Bridge Clinic had a better response rate)

- Estimate the propensity score using IPTW for the probability of following up

  - Include age, race, ethnicity, deprivation index (same variables used in adjusted models)
- 16-week follow up (yes/no):
  - Considered not to have followed up if they are missing all of the following:
    - Linkage to MOUD provider: yes/no
    - Recurrent opioid use: yes/no
    - Opioid use in the last 30 days
    - Self-reported buprenorphine-naloxone (or naltrexone) prescriptions filled
    - Overdose: yes/no
    - Quality of Life
- N = 247 with no 16-week follow up

SMDs between groups

```
##                                         Stratified by follow_up
##                                         No              Yes
SMD
##   n                                     333.91          335.30
##   AGE (mean (SD))                        39.91 (9.96)   39.81 (10.54)
0.009
##   RACE_2 (%)
0.023
##      White                              289.2 (86.6)   289.4 (86.3)
##      Black or African American           36.2 (10.9)    36.0 (10.8)
##      Other                                8.5 ( 2.6)     9.8 ( 2.9)
##   ETHNICITY = Non-Hispanic/Latino (%)  320.9 (96.1)   323.2 (96.4)
0.016
##   quartile_grp (%)
0.032
##      Quartile 1                         107.6 (32.2)   111.5 (33.2)
##      Quartile 2                          73.5 (22.0)    73.2 (21.8)
##      Quartile 3                          75.0 (22.5)    71.4 (21.3)
##      Quartile 4                          77.7 (23.3)    79.3 (23.6)
```

1359   Linkage to MOUD Provider

1360   •   Binary logistic regression model

1361   •   Single imputation was used to impute missing data for race and ethnicity

1362   •   Outcome: Linkage to MOUD provider (yes/no)

1363   •   Predictor: Group assignment (Bridge Clinic or usual care)

1364   •   Adjusted for age, race, ethnicity, area deprivation index (quartiles)

1365   –   Restricted cubic splines are used for continuous covariates (with 3 knots)

1366   •   Age

1367   •   Adjusted for propensity score weights

1368   •   Number of observations included in this analysis: 88

1369

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Age	31.93	45.72	13.79	0.53	0.27	0.00	1.05	1
Odds Ratio	31.93	45.72	13.79	1.70		1.00	2.87	2
Group Assignment (Bridge Clinic vs Usual Care)	1.00	2.00		0.86	0.30	0.28	1.45	1
Odds Ratio	1.00	2.00		2.37		1.32	4.26	2
Race (Black or African American vs White)	1.00	2.00		-1.75	0.43	-2.58	-0.91	1
Odds Ratio	1.00	2.00		0.17		0.08	0.40	2
Race (Other vs White)	1.00	3.00		16.63	44.73	-71.03	104.29	1
Odds Ratio	1.00	3.00		1.667e+07		0.00	1.968e+45	2
Ethnicity (Hispanic/Latino vs Non-Hispanic/Latino)	2.00	1.00		-8.49	32.26	-71.71	54.73	1
Odds Ratio	2.00	1.00		0.00		0.00	5.882e+23	2
ADI Quartile (2 vs 1)	1.00	2.00		0.91	0.40	0.12	1.71	1
Odds Ratio	1.00	2.00		2.49		1.13	5.51	2
ADI Quartile (3 vs 1)	1.00	3.00		-0.51	0.37	-1.24	0.21	1
Odds Ratio	1.00	3.00		0.60		0.29	1.24	2

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
ADI Quartile (4 vs 1)	1.00	4.00		0.16	0.37	-0.55	0.88	1
Odds Ratio	1.00	4.00		1.18		0.57	2.42	2

1370   The adjusted OR (95% CI) for a subject in Bridge Clinic to attend at least one visit with a MOUD
1371   provider in the 16-week follow-up vs a subject in usual care is 2.371 (1.321-4.256).

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1393   Recurrent opioid use

1394   •   Binary logistic regression model

1395   •   Single imputation was used to impute missing data for race and ethnicity

1396   •   Outcome: recurrent opioid use (yes/no)

1397   •   Predictor: Group assignment (Bridge Clinic or usual care)

1398   •   Adjusted for age, race, ethnicity, area deprivation index (quartiles)

1399   –   Restricted cubic splines are used for continuous covariates (with 3 knots)

1400   •   Age

1401   •   Adjusted for propensity score weights

1402   •   Number of observations included in this analysis: 88

1403

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Age	31.93	45.72	13.79	0.04	0.23	-0.42	0.50	1
Odds Ratio	31.93	45.72	13.79	1.04		0.66	1.64	2
Group Assignment (Bridge Clinic vs Usual Care)	1.00	2.00		-0.36	0.27	-0.88	0.16	1
Odds Ratio	1.00	2.00		0.70		0.42	1.18	2
Race (Black or African American vs White)	1.00	2.00		1.16	0.40	0.38	1.95	1
Odds Ratio	1.00	2.00		3.20		1.46	7.03	2
Race (Other vs White)	1.00	3.00		1.86	0.95	-0.01	3.73	1
Odds Ratio	1.00	3.00		6.42		0.99	41.49	2
Ethnicity (Hispanic/Latino vs Non-Hispanic/Latino)	2.00	1.00		-1.45	0.87	-3.16	0.26	1
Odds Ratio	2.00	1.00		0.23		0.04	1.30	2
ADI Quartile (2 vs 1)	1.00	2.00		-0.27	0.33	-0.91	0.37	1
Odds Ratio	1.00	2.00		0.76		0.40	1.45	2
ADI Quartile (3 vs 1)	1.00	3.00		0.68	0.33	0.02	1.33	1
Odds Ratio	1.00	3.00		1.97		1.02	3.79	2

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
ADI Quartile (4 vs 1)	1.00	4.00		-0.62	0.33	-1.27	0.03	1
Odds Ratio	1.00	4.00		0.54		0.28	1.03	2

1404   The adjusted OR (95% CI) for a subject in Bridge Clinic to have recurrent opioid use in the 16-
1405   week follow-up vs a subject in usual care is 0.699 (0.416-1.175).

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	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type

1428   Opioid use in last 30 days

1429   •   Proportional odds model

1430   •   Single imputation was used to impute missing data for race and ethnicity

1431   •   Outcome: opioid use in past 30 days (no use, single use, multiple use)

1432   •   Predictor: Group assignment (Bridge Clinic or usual care)

1433   •   Adjusted for age, race, ethnicity, area deprivation index (quartiles)

1434   –   Restricted cubic splines are used for continuous covariates (with 3 knots)

1435   •   Age

1436   •   Adjusted for propensity score weights

1437   –   This model was not adjusted for ethnicity because all subjects in this model (N =
1438   32) are Non-Hispanic/Latino

1439   •   Number of observations included in this analysis: 32

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	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Age	31.93	45.72	13.79	2.49	0.60	1.32	3.67	1
Odds Ratio	31.93	45.72	13.79	12.08		3.73	39.10	2
Group Assignment (Bridge Clinic vs Usual Care)	1.00	2.00		3.85	0.83	2.23	5.47	1
Odds Ratio	1.00	2.00		46.94		9.28	237.35	2
Race (Black or African American vs White)	1.00	2.00		3.30	1.04	1.26	5.34	1
Odds Ratio	1.00	2.00		27.22		3.54	209.44	2
Race (Other vs White)	1.00	3.00		10.33	47.89	-83.54	104.20	1
Odds Ratio	1.00	3.00		30,712.09		0.00	1.794e+45	2
ADI Quartile (2 vs 1)	1.00	2.00		0.33	0.80	-1.24	1.90	1
Odds Ratio	1.00	2.00		1.39		0.29	6.66	2
ADI Quartile (3 vs 1)	1.00	3.00		-1.18	0.87	-2.89	0.53	1
Odds Ratio	1.00	3.00		0.31		0.06	1.70	2

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
ADI Quartile (4 vs 1)	1.00	4.00		9.66	24.10	-37.59	56.90	1
Odds Ratio	1.00	4.00		15,605.84		0.00	5.132e+24	2

1442   The adjusted OR (95% CI) for a subject in Bridge Clinic to have more opioid uses in the past 30

1443   days vs a subject in usual care is 46.943 (9.284-237.351).

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1466   Overdose

1467   •   Binary logistic regression model

1468   •   Single imputation was used to impute missing data for race and ethnicity

1469   •   Outcome: Overdose (yes/no)

1470   •   Predictor: Group assignment (Bridge Clinic or usual care)

1471   •   Adjusted for age, race, ethnicity, area deprivation index (quartiles)

1472   –   Restricted cubic splines are used for continuous covariates (with 3 knots)

1473   •   Age

1474   •   Adjusted for propensity score weights

1475   •   Number of observations included in this analysis: 86

1476

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Age	31.93	45.72	13.79	-1.27	0.87	-2.97	0.44	1
Odds Ratio	31.93	45.72	13.79	0.28		0.05	1.55	2
Group Assignment (Bridge Clinic vs Usual Care)	1.00	2.00		-2.18	0.66	-3.48	-0.88	1
Odds Ratio	1.00	2.00		0.11		0.03	0.41	2
Race (Black or African American vs White)	1.00	2.00		-0.28	0.66	-1.57	1.01	1
Odds Ratio	1.00	2.00		0.76		0.21	2.74	2
Race (Other vs White)	1.00	3.00		-4.23	95.07	-190.57	182.10	1
Odds Ratio	1.00	3.00		0.01		0.00	1.219e+79	2
Ethnicity (Hispanic/Latino vs Non-Hispanic/Latino)	2.00	1.00		-9.78	90.11	-186.39	166.83	1
Odds Ratio	2.00	1.00		0.00		0.00	2.827e+72	2
ADI Quartile (2 vs 1)	1.00	2.00		0.88	0.71	-0.51	2.27	1
Odds Ratio	1.00	2.00		2.41		0.60	9.68	2
ADI Quartile (3 vs 1)	1.00	3.00		1.21	0.69	-0.14	2.57	1
Odds Ratio	1.00	3.00		3.37		0.87	13.12	2

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
ADI Quartile (4 vs 1)	1.00	4.00		-8.62	30.67	-68.73	51.49	1
Odds Ratio	1.00	4.00		0.00		0.00	2.309e+22	2

1477 The adjusted OR (95% CI) for a subject in Bridge Clinic to overdose during the 16-week follow-
1478 up vs a subject in usual care is 0.113 (0.031-0.414).

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1500   **Number of buprenorphine refills**
1501   •   Proportional odds model

1502   •   Single imputation was used to impute missing data for race and ethnicity

1503   •   Outcome: Number of buprenorphine refills

1504   •   Predictor: Group assignment (Bridge Clinic or usual care)

1505   •   Adjusted for age, race, ethnicity, area deprivation index (quartiles)

1506   –   Restricted cubic splines are used for continuous covariates (with 3 knots)
1507   •   Age
1508   •   Adjusted for propensity score weights

1509   •   Number of observations included in this analysis: 77

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	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Age	31.93	45.72	13.79	0.62	0.23	0.17	1.07	1
Odds Ratio	31.93	45.72	13.79	1.86		1.18	2.92	2
Group Assignment (Bridge Clinic vs Usual Care)	1.00	2.00		1.82	0.26	1.31	2.33	1
Odds Ratio	1.00	2.00		6.16		3.69	10.30	2
Race (Black or African American vs White)	1.00	2.00		-1.57	0.35	-2.26	-0.89	1
Odds Ratio	1.00	2.00		0.21		0.10	0.41	2
Race (Other vs White)	1.00	3.00		-0.35	0.79	-1.90	1.21	1
Odds Ratio	1.00	3.00		0.71		0.15	3.35	2
Ethnicity (Hispanic/Latino vs Non-Hispanic/Latino)	2.00	1.00		-1.14	0.87	-2.85	0.58	1
Odds Ratio	2.00	1.00		0.32		0.06	1.78	2
ADI Quartile (2 vs 1)	1.00	2.00		0.73	0.32	0.11	1.35	1
Odds Ratio	1.00	2.00		2.07		1.11	3.85	2
ADI Quartile (3 vs 1)	1.00	3.00		0.17	0.32	-0.45	0.80	1
Odds Ratio	1.00	3.00		1.19		0.64	2.23	2

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
ADI Quartile (4 vs 1)	1.00	4.00		0.18	0.29	-0.40	0.75	1
Odds Ratio	1.00	4.00		1.19		0.67	2.12	2

1511   The adjusted OR (95% CI) for the number of buprenorphine refills being greater for a subject in
1512   Bridge Clinic vs Usual Care is 6.165 (3.69-10.299).

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	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type

1535 Quality of Life

1536 • Proportional odds model

1537 • Single imputation was used to impute missing data for race and ethnicity

1538 • Outcome: quality of life score

1539 • Predictor: Group assignment (Bridge Clinic or usual care)

1540 • Adjusted for age, race, ethnicity, area deprivation index (quartiles)

1541 – Restricted cubic splines are used for continuous covariates (with 3 knots)

1542 • Age

1543 • Adjusted for propensity score weights

1544 • Number of observations included in this analysis: 86

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	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
Age	31.93	45.72	13.79	-0.48	0.21	-0.89	-0.08	1
Odds Ratio	31.93	45.72	13.79	0.62		0.41	0.92	2
Group Assignment (Bridge Clinic vs Usual Care)	1.00	2.00		-0.11	0.22	-0.54	0.32	1
Odds Ratio	1.00	2.00		0.90		0.58	1.38	2
Race (Black or African American vs White)	1.00	2.00		-1.06	0.30	-1.64	-0.47	1
Odds Ratio	1.00	2.00		0.35		0.19	0.62	2
Race (Other vs White)	1.00	3.00		-1.98	0.64	-3.23	-0.73	1
Odds Ratio	1.00	3.00		0.14		0.04	0.48	2
Ethnicity (Hispanic/Latino vs Non-Hispanic/Latino)	2.00	1.00		0.66	0.63	-0.57	1.89	1
Odds Ratio	2.00	1.00		1.93		0.56	6.62	2
ADI Quartile (2 vs 1)	1.00	2.00		-0.66	0.28	-1.22	-0.11	1
Odds Ratio	1.00	2.00		0.51		0.30	0.89	2
ADI Quartile (3 vs 1)	1.00	3.00		-0.73	0.30	-1.32	-0.14	1
Odds Ratio	1.00	3.00		0.48		0.27	0.87	2

	Low	High	Diff.	Effect	S.E.	Lower 0.95	Upper 0.95	Type
ADI Quartile (4 vs 1)	1.00	4.00		-0.28	0.28	-0.82	0.26	1
Odds Ratio	1.00	4.00		0.76		0.44	1.30	2

1546   The adjusted OR (95% CI) for the quality of life score being greater for a subject in Bridge Clinic
1547   vs Usual Care is 0.896 (0.583-1.376).

1548

1549