# Increasing Access to Laboratory Services at a Community Mental Health Clinic for Patient's Experiencing First Episode Psychosis: A Quality Improvement Project

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NRS 703B: DNP Final Project Paper

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## Abstract

**Background:** Adherence to laboratory testing was challenging for patients at an outpatient community mental health clinic (OC), in part due to a lack of access to onsite laboratory services, lack of access to third-party laboratory services, and subsequent reliance on PCPs to obtain laboratory testing, resulting in delayed results and increased patient burden. The aim of this QI project was to establish laboratory testing services that OC providers could order electronically through the OC's electronic health record (EHR). This project was conducted in an urban community mental health clinic that provides services for patients experiencing first episode psychosis. Participants included the two OC providers, the staff RN, the OC Clinical Cupervisor, a county official, and the Senior Director of a local community mental health clinic.

**Methods:** The IHI Model for Improvement (MFI) was used for this project. Baseline assessment was conducted via chart review and staff interviews prior to the intervention. Documentation of laboratory testing recommendations, number of ordered laboratory tests, number of completed laboratory tests, and the percentage of laboratory tests ordered electronically through the OC EHR was assessed before the intervention. A literature review was conducted to identify best practices for improving OC's access to laboratory testing services, and improving adherence rates.

**Intervention:** Interviews were conducted with OC staff and county official to evaluate the barriers to laboratory access, and the effect this has on patient care. Based on these interviews, a list of third-party laboratories meeting criteria was generated, and recommendations for establishing laboratory services was formalized.

# Introduction

## Problem Description

Laboratory testing is a critical component of comprehensive mental health care, providing important diagnostic and monitoring information that guides clinical decision-making and treatment planning (Barnes et al., 2015; American Diabetes Association, 2004). However, many outpatient community mental health clinics lack the infrastructure and resources to perform on-site laboratory testing, and often rely on primary care providers (PCPs) to order and obtain laboratory tests. The Outpatient Clinic (OC) described here is one such community mental health clinic in Oregon that provides treatment to transition age youths (ages 15-25) experiencing first episode psychosis, and does not have access to onsite laboratory services. The reliance on PCP's for laboratory testing creates a fragmented care experience for patients, and poses several challenges to effective community-based mental health treatment.

One significant issue is the delay in obtaining laboratory results, which can impede timely management of side effects and metabolic risks (Soda et al., 2022; Gerriyt et al, 2014). In particular, mental health conditions requiring treatment with antipsychotics or mood stabilizers, such as bipolar disorder and schizophrenia, often require regular monitoring of blood serum levels and metabolic markers to manage medication efficacy and side effects (ADA, 2004). The current system, which generally relies on referral to PCPs for laboratory testing, introduces delays that can lead to suboptimal management of these conditions, potentially exacerbating symptoms and reducing the overall quality of care (Cunningham et al, 2013).

Moreover, the additional step of coordinating with PCPs places a burden on patients, many of whom may face barriers such as transportation issues, work schedule conflicts, or financial constraints. These barriers can result in missed appointments and non-compliance with

recommended lab tests, further complicating the management of mental health conditions (Soda et al., 2021; Gerrity et al., 2016). For patients in underserved communities, these challenges are often more pronounced, contributing to health disparities (Soda et al, 2022; Gerrity et al., 2016).

**Available Knowledge**

The PubMed engine was utilized with the following MeSH searches: “outpatient mental health AND laboratory testing", "outpatient mental health clinics AND primary care providers", "mental health AND metabolic monitoring", "barriers AND laboratory testing AND mental health", and "metabolic testing rates AND mental health". Inclusion criteria included peer-reviewed studies published within the last 10 years, written in English, and which specifically addressed access to laboratory services in the community mental health setting.

The literature identified here revealed a stark lack of research that examined barriers to obtaining laboratory testing within the community mental health setting, particularly within the US. There was also little evidence found that would identify potential interventions to improve laboratory access for these clinics. Therefore, the focus of this literature search was widened to include both potential interventions *and* barriers to laboratory testing, in order to best capture the data that is available.

The literature does suggest low rates of recommended laboratory testing in patients receiving mental health treatment in the community, representing a significant disparity in care. The National Health Service in the UK reported that only 32.3% of psychiatric outpatients are receiving the recommended laboratory screenings (NHS, 2020). No similar data was identified describing rates of testing in the US, though metabolic testing rates of children and adults in the US have been consistently low, despite warnings from the Food and Drug Administration (Barnett et al., 2010; Morrato et al., 2010; Wakefield et al, 2020). While the literature does not

offer clear consensus as to the primary cause(s) of low adherence to laboratory screening guidelines in psychiatric patient population, several interventions to increase adherence have been examined.

The literature reviewed here describes interventions aimed to increase the rates of routine metabolic screenings for patient's taking high-risk psychiatric drugs, both in the inpatient and outpatient setting, but does not frequently examine how to increase laboratory *access* for community mental health clinics. The interventions found to increase laboratory testing rates for community mental health patients when laboratory services were readily available included care management (Abdallah et al., 2016; Bressington et al., 2014; Castillo et al., 2015; Druss et al., 2010; Kioko et al., 2016; Lamontagne-Godwin et al., 2018; Millar et al., 2010, Osborn et al., 2010;), staff training and education on metabolic screening guidelines (Wiechers et al., 2012; Wilson et al., 2014), computerized or paper prompting (DelMonte et al., 2012), invitation and reminder letters sent to patients to encourage attendance of PCP appointments for lab testing (Hardy et al., 2012), and staff accompaniment to appointments (Thompson et al., 2011). These studies also identified common barriers to increasing rates of laboratory monitoring, including inadequate links to primary care, patient difficulty with adherence to lab appointments, low perceived importance of metabolic screening among patients and staff, geographic distance from laboratory services, and challenges to obtaining fasting blood work (Castillo et al., 2015; Cunningham et al., 2013; Druss et al., 2010; Lamontagne-Godwin et al., 2018; Osborn et al., 2010; Kioko et al., 2016; Pang et al., 1995; Soda et al., 2022).

With regard to access to laboratory services, the literature does reveal that most community mental health clinics rely on third party testing services and PCPs to obtain metabolic labs, where establishing and maintaining onsite laboratory services within a

community mental health clinic has not generally been found to be financially feasible (Gerrity et al., 2014; Garrity et al., 2016). The literature does suggest that point of care testing (POCT) could provide increased access to laboratory monitoring, where third party testing services are unavailable or inaccessible, and is generally cost effective (Butler et al., 2021). Further, combining primary care and mental health services into a single clinic has been examined to increase laboratory monitoring rates and improve access, but is generally difficult to implement due to financial and administrative barriers (Garrity et al., 2014; Kioko et al., 2016)

**Rational**

The IHI Model for Improvement (MFI), developed by Thomas Nolan, Ph.D., and Lloyd Provost, M.S., was used to guide this QI project (Langley et al., 2009). The Associates in Process Improvement (API) published the MFI in 1996 as a framework to help healthcare organizations improve processes and outcomes (Langley et al., 2009). The model drew on quality improvement methods that were used effectively in manufacturing and various other industries, and adapted them specifically for use in healthcare settings. It emphasized the importance of small, rapid change and assessment cycles to quickly identify efficacious interventions. These cycles are referred to as “Plan-Do-Study-Act” (PDSA) cycles, through which new effective interventions can be identified and implemented quickly and with real-time feedback (Langley et al., 2009). The IHI MFI model has a well-established track record of success in busy primary care settings, and was easily extrapolated to the community mental health setting to support the aims of this QI project (Courtlandt et al., 2009).

During the root cause analysis for this QI project, it was found that the OC was unable to utilize county labs due to administrative siloing within the county health department, and lacked a standardized process for ordering third-party laboratory testing of any kind, including serum

drug levels. This frequently resulted in a reliance on the client's own initiative to obtain testing through their PCP. Through the above review of the literature, it was determined that establishing contracts with third-party laboratories and integrating lab order form sets into the EHR was the best and most evidence-based approach to improving laboratory access for OC clients.

### Specific Aims

By January 2025, the two OC providers will be enabled to order laboratory tests electronically through the OC's EHR, and will report a reduced reliance on PCPs for laboratory testing.

## Methods

### Context

The OC is a comprehensive community-based mental health care model that is derived from the work of the Early Psychosis Prevention and Intervention Center in Melbourne, Australia. The treatment program is designed to last two years after the first onset of psychotic symptoms and includes a comprehensive team of medical providers, nurses, occupational therapists, vocational rehab services, housing support, and mental health therapists. A hallmark of the OC program is that clients are not required to begin or remain on medications to access OC services. In 2001, the Mid-Valley Behavioral Care Network (MVBCN) started OCs in Marion, Polk, Linn, Yamhill, and Tillamook Counties, with the hope of improving outpatient community care of young adults experiencing first-episode psychosis, and reducing rates of hospitalizations for mental health crises. After OC's initial success, in 2008, the Oregon Health Authority took responsibility for OCs and ultimately funded a statewide expansion that resulted in the establishment of an OC programs in each county.

This QI project took place in a county OC program. The clinic was staffed with two physicians, one adult psychiatrist and one pediatric psychiatrist, one registered nurse, three mental health therapists, one occupational therapist, one vocational rehabilitation specialist, and one housing specialist. Patients were seen either remotely or in person, depending on their preference, although all intakes were conducted in person. During the first phase of this project, interviews were conducted with OC staff, including the physicians, staff nurse, and the OC program supervisor. Based on these interviews, it was found that the OC was unable to utilize county laboratories for blood work, and did not have relationships with third-party labs, forcing a reliance on PCPs outside the OC to obtain laboratory testing. This contributed to inconsistent patient adherence to recommended labs, and delays in receiving results, including for serum drug levels (e.g. Li+ and valproate), metabolic markers (e.g. HbA1c and triglycerides), and prolactin where hyperprolactinemia was suspected.

**Interventions**

This QI project was initially conceptualized in three phases. Phase I involved fact finding, identification of key players, and root cause analysis through interviews and chart review (see *Appendix 3*). Phase II would establish laboratory access for the OC, based on the findings of the first phase. The final phase, Phase III, would assess the efficacy of the intervention, using post-intervention chart review and interviews. Due to the time constraints of this project, Phase II was partially completed. Consequently, Phase III will need to be completed in the future to assess the efficacy of the intervention.

During Phase I, a chart review was conducted to determine the baseline frequency of successful completion of laboratory testing at the OC (see *Appendix 2*). A meeting with the OC supervisor was held to better understand the funding structure of the clinic, historical lab access,

and to identify key players. Following this, a meeting was held with the OC supervisor, staff psychiatrist, and a county official who oversaw the administrative divisions of the State Health Department that were responsible for the OC. Finally, a meeting was held with the Senior Director of another local community mental health clinic, who was also working to establish laboratory access (see *Appendix 1*).

Phase II involved action to improve OC's access to laboratory services, and was guided by the information gained during the first stage. To accomplish this, a list of authorized laboratories was obtained via the OHP patient portal. Next, authorized laboratories located within Multnomah County were identified, and a list was generated. This list was sorted based on distance from the OC. Beginning with the first laboratory on the list, information regarding establishing services and the process for electronic ordering was obtained via the laboratory's online provider portal, and through direct messaging with customer service. Laboratories which could accommodate electronic ordering from the OC's EHR were identified. This intervention did *not* include a system of prompting providers through the EHR to order labs, while providers *would* be alerted through the EHR when labs have resulted.

**Study of the Intervention**

Once laboratory access is established, to assess the efficacy of the interventions, semi-structured interviews of OC prescribers should be utilized. The interviews will establish whether providers experienced greater access to laboratory testing, a greater ability to order laboratory testing generally, and whether they feel likely to increase the frequency of routine laboratory testing for metabolic monitoring as a result. The interviews will also gather information assessing whether the providers believe that the interventions themselves increased their access to laboratory testing services.

During the interventions, all related internal or external initiatives (county, state, etc.) aimed at increasing adherence to metabolic screening guidelines within community mental health agencies was monitored, in order to assess their impact on the OC's access to laboratory testing services and the rate of completed metabolic screenings. Ongoing feedback was elicited from OC staff through informal interviews to monitor for unexpected outcomes of the interventions, and to determine if the interventions could generalize to other OC clinics.

**Measures**

The primary outcome measure for this QI project was the change in percentage of appointments documenting successful completion of recommended laboratory testing after the intervention, which will need to be measured in the future during completion of Phase III. In Phase I, quantitative data on this outcome was collected via chart review, where a baseline percentage of patients completing recommended labs before the intervention was determined. Qualitative data on this outcome was gathered through formal interviews with clinic staff, to establish baseline comfortability with ordering and obtaining laboratory tests. Taken together, this outcome measure will allow for a future evaluation of whether the interventions succeed in increasing laboratory access for OC clients, which is the primary aim of this QI project.

Process measures for this QI project would be collected during Phase III, and include the percentage of electronic lab orders placed through the EHR after the intervention (vs through PCP), which will assess the adoption and utilization of the new electronic form sets, and the average time from lab order to lab completion. This will evaluate whether the interventions have reduced delays in lab testing.

Finally, with regard to balancing measures, provider satisfaction and feedback regarding the direction of the project was elicited via formal and informal interviews throughout the

project. This allowed for an ongoing monitoring of the impact the interventions had on provider workflow, and identified barriers to full adoption of the project's recommendations in real time.

**Analysis**

Quantitative data collected from chart review was analyzed as a percentage of patient visits that included evidence of completed recommend laboratory tests (see *Appendix 2*). Qualitative data was gathered through formal and informal interviews of OC providers throughout all completed phases of this project (see *Appendix 1*). These data revealed the anticipated impact of the interventions on client care, and captured any changes in workflow as a result of the interventions. In the future, responses given during post-intervention semi-structured interviews of providers would need to be analyzed to provide a formal qualitative assessment of the effect of the interventions on the primary outcome.

**Ethical Considerations**

Implementing a QI project that both studied and intervened at the level of direct patient care required careful ethical consideration to ensure patient care was not negatively impacted during the course of the project. To minimize potential disruptions to clinical workflow that could impact patient care, interviews were kept brief and scheduled during a time that was most convenient for providers and staff. Additionally, disruption to patient care during the course of the project was continually assessed through ongoing communication with OC clinical staff.

Moreover, discrete data gathered via formal interviews was collected anonymously, to protect patient and provider anonymity. No protected health information was collected or utilized for the purposes of this project. Finally, a project proposal was submitted to the host University's Institutional Review Board, and was given a determination of "Not Human Research" (see *Appendix 4*).

## Results

In July 2024, a pre-intervention meeting took place with the OC's staff RN (*see Appendix 1*). From this meeting it was determined that lack of access to designated laboratory services created significant barriers to patients completing laboratory testing, and was contributing to documented metabolic parameters being frequently absent from patient charts. Data collected from chart review supported this view, where only 9.7% of unique patient visits meeting inclusion criteria were found to contain evidence of completed laboratory testing, where such testing was explicitly requested or otherwise indicated based on established clinical guidelines (N= 31, see *Appendix 2*) (ADA, 2004). A subsequent meeting with the OC's staff psychiatrist offered further support, suggesting that a reliance on PCPs to obtain laboratory services often led to delays in laboratory testing and gaps in the OC's documentation, where the results of laboratory tests had to be specifically requested and faxed to the OC before being entered manually in the patient's chart. It was also revealed that the OC historically had access to county laboratory facilities, but had since been administratively siloed and could no longer utilize county laboratory facilities. In September, a meeting was held with the OC's supervisor, who explained that the OC had lost access to county laboratory services when the county's Behavioral Health Division was separated from the Health Division, and become a stand-alone department within the county. In this meeting, key players were identified, including the director of the county health clinic, as well as a senior county official. In November, a meeting was held with the OC supervisor, staff psychiatrist, the county health director, and the county official. In this meeting, it was clarified that the OC had lost access to country laboratory services after the State had removed the OC from the county's FQHC, in order to place it under the purview of the

newly created Behavioral Health Division. It was determined that restoring the OC's access to county laboratories would not be financially feasible, or even desirable, as it would require the OC to rejoin the FQHC and fundamentally alter its funding structure. It was also determined that POCT would not meet all the needs of the OC, and so, it was decided to pursue third party laboratory services. The staff psychiatrist identified physical proximity of the laboratory collection site to the OC, as well as in-network status with Medicaid, as the most important factors in selecting potential lab servicers. To this end, the Senior Director of another local community mental health clinic that was also attempting to establish laboratory testing services was identified as a contact. In December, a meeting was held with this Senior Director, who explained that their clinic was having difficulty establishing onsite laboratory services due to variabilities in insurance reimbursement rates for labs ordered in the context of mental health visits vs primary care appointments. The Senior Director of this clinic indicated that they had been pursuing mobile laboratory testing services, and suggested investigating this option.

Through December and January, two local laboratory companies were identified that were in-network with Medicaid, but neither of them had locations within walking distance from the OC. One company offered mobile testing services, though it was unclear whether Medicaid would reimburse for these services in the context of mental health appointments. A small primary care practice was found roughly 0.3 miles away from the OC, which had onsite lab testing established through one of the identified lab companies, and was identified as a potential site for laboratory testing.

Additionally, it was determined that when laboratory testing services were established for the OC, integrated lab orders and the ability to received lab results through the OC's EHR would not be practical. Discussions with EHR customer support and the IT team revealed that such

services would have to be built into the EHR from scratch, and would likely be cost prohibitive. However, both identified laboratory testing companies offered electronic results viewing through their own provider portals, and this was suggested as an alternative.

## Discussion

### Summary

This QI project sought to improve rates of completed laboratory tests at an outpatient community mental health clinic through the establishment of direct laboratory services, with a secondary goal of reducing or eliminating reliance on PCPs to obtain lab testing. This project determined that establishing offsite testing would be the best way to meet the needs of the OC, and recommend pursing mobile testing services. This project found that integration of laboratory orders and the ability to receive results electronically through the OC EHR was not practical, and recommended that the OC pay to utilize the proprietary online portal provided by the identified third-party laboratory testing company to review results electronically. Because this project did not complete its stated aim, it will serve as an important starting point to guide potential future QI projects, which would assess the efficacy the interventions initiated here.

### Interpretation

Direct engagement with clinical and administrative OC staff and County officials, throughout this project, provided real-time qualitative data that allowed for identification of barriers to the interventions, and elucidated the particular needs of the OC. These data also allowed for the project to identify and overcome roadblocks as they emerged, in a way that best met the needs and desires of the OC staff. Additionally, this project was able to identify key stakeholders and actively involved them in the evolution and implementation of the project over time. The barriers encountered to establishing laboratory access the OC were consistent with

those identified in reviewing the literature, and suggested that future efforts to establish laboratory testing services at the OC should focus on establishing mobile or nearby offsite laboratory services, as was pursued here (Castillo et al., 2015; Cunningham et al., 2013; Druss et al., 2010; Lamontagne-Godwin et al., 2018; Osborn et al., 2010; Kioko et al., 2016; Pang et al., 1995; Soda et al., 2022). During the course of this QI project, no concurrent efforts to establish laboratory services at the OC, or through county health clinics more broadly, were identified.

Further the tangible impact of this QI project at its present stage is mostly preliminary. Though this project was not successful in establishing designated laboratory access for the OC, it laid an important foundation to facilitate laboratory access in the future and assess its impact on the rate of completed laboratory testing.

**Limitations**

This QI project contained several key limitations. The first was access to county members and county resources that may have more efficiently guided the direction of the project, avoiding time wasted pursuing dead ends. Second, the necessity of excluding patients under 18 from the chart review prevented a comprehensive understanding of baseline lab collection rates. Finally, due to accessibility issues, this project could not incorporate semi-structured interviews of patients and family members, which would have provided important guidance in effectively increasing patient access to laboratory testing at the OC.

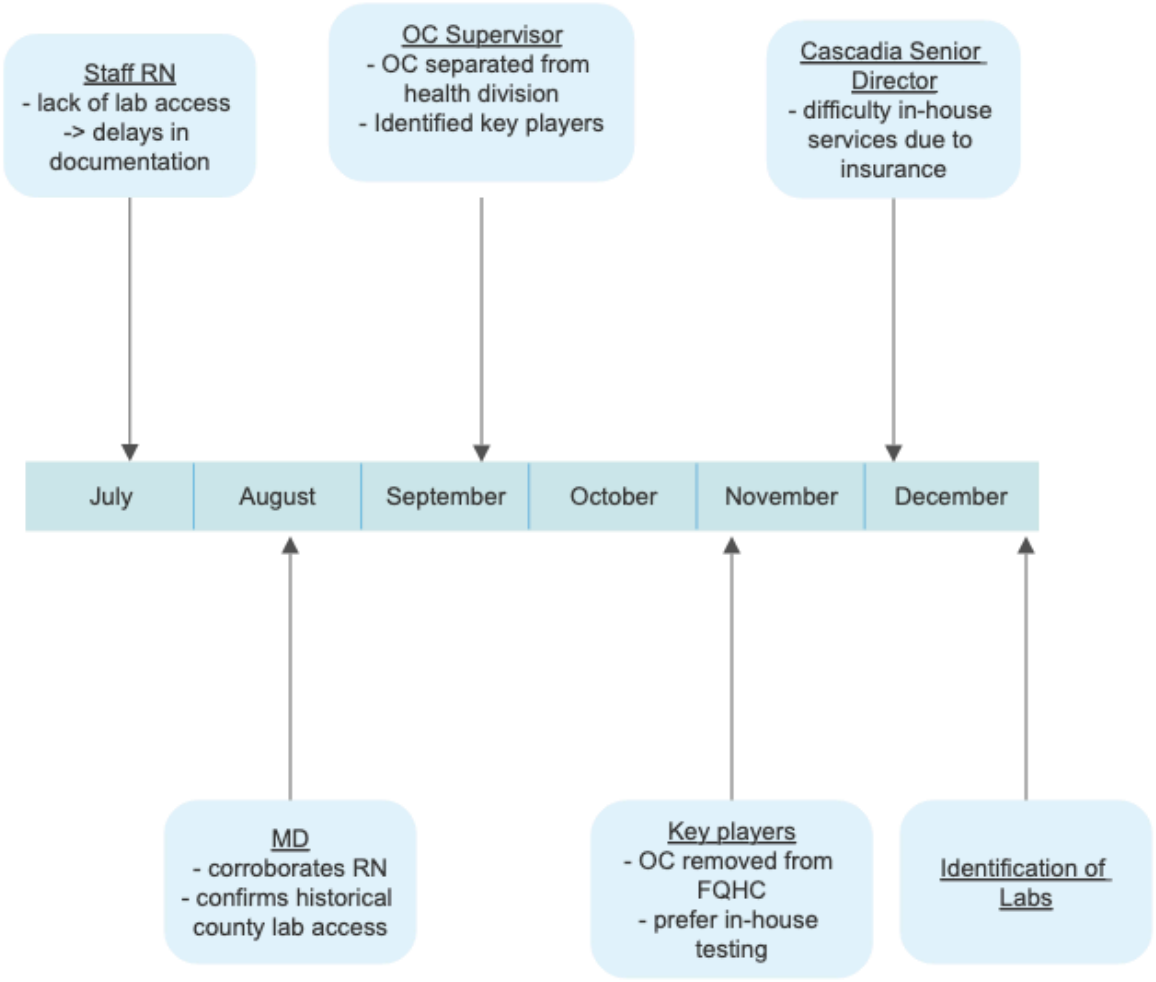
**Conclusion**

This QI project established a critical foundation for future efforts to improve the rates of completed laboratory testing at the OC, and made key recommendations on how laboratory testing services could be established efficiently and effectively. Given the unique funding structure of the OC, it is unlikely that the specific findings and recommendations of this QI

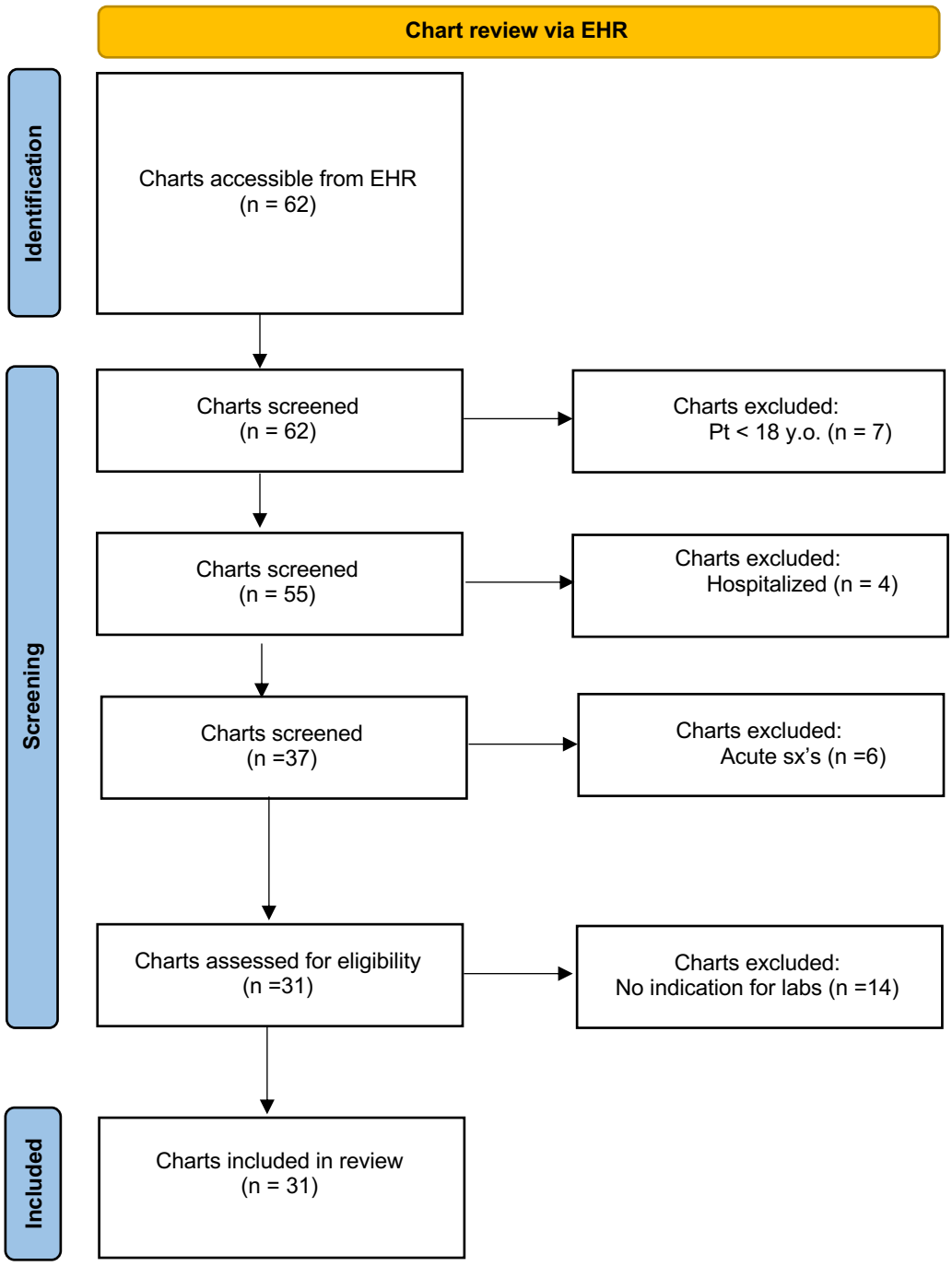
project could generalize broadly to other community mental health clinics. Next steps for this project include establishing designated testing services, developing an effective workflow for documented lab results, and establishing the efficacy of the interventions through chart review and semi-structured interviews.

# Appendices

## *Appendix 1*: Prospective Timeline of Intervention Phases I and II



## *Appendix 2*: Chart Review of Unique Patient Encounters



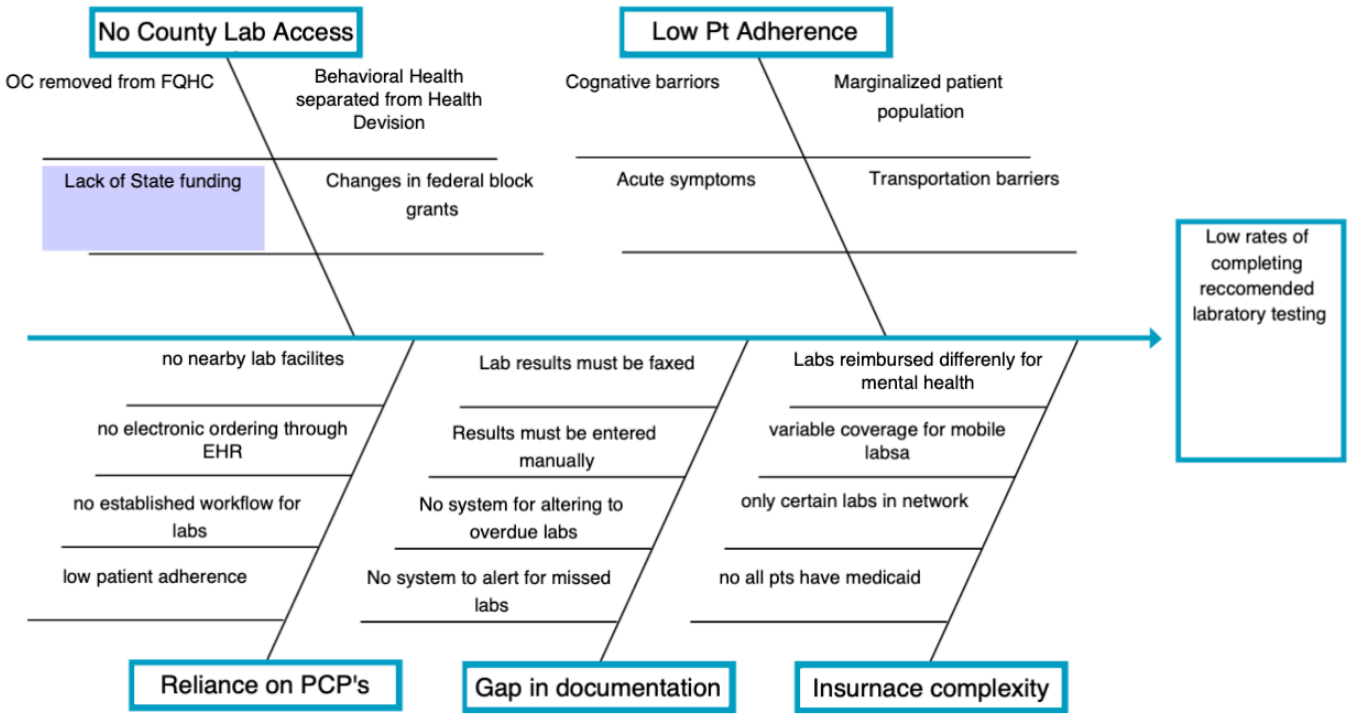

Source: Page MJ, et al. BMJ 2021;372:n71. doi: 10.1136/bmj.n71.

Here, a retrospective chart review was conducted to quantitively assess the adequacy of the OC's initial system for ordering laboratory testing and obtaining results. This review evaluated the frequency of documented completion of requested, or otherwise indicated, laboratory tests within the EHR during unique patient visits. The review spanned a continuous 12-week period from April 1, 2024, to June 24, 2024, which encompassed the investigator's uninterrupted clinical rotation as a student at the OC. Only those patients for whom the investigator provided direct clinical care were included, where routine access to the medical record was conducted in the course of standard care delivery.

Inclusion criteria for the review were clearly defined. Eligible patient visits included those patients aged 18 years and up,who had been prescribed medication(s) for which laboratory monitoring was indicated based on published clinical guidelines, or where there had been explicit documentation of a request to obtain laboratory testing within the 12-week review period (ADA, 2004). Exclusion criteria included documentation of acute symptoms during the appointment, or if the appointment occurred in the context of a recent hospital discharge within the review period. Ultimately, 31 unique patient visits that met all criteria were identified.

Evidence of laboratory monitoring, for the purpose of this review, was defined operationally as the presence of explicit documentation within the appointment progress note detailing laboratory values, documentation confirming that laboratory tests were obtained from primary care providers, explicit documentation of patient refusal of laboratory testing for reasons other than barriers to access, or documentation of laboratory results withing the EHR *media* or *results* sections with the review period.

***Appendix 3*: Root Cause Analysis**



*Appendix 4:* Letter of Determination


IRB MEMO

Research Integrity Office
3181 SW Sam Jackson Park Road - L106RI
Portland, OR 97239-3098
(503)494-7887 irb@ohsu.edu

NOT HUMAN RESEARCH

October 17, 2024

Dear Investigator:

On 10/17/2024, the IRB reviewed the following submission:

| | |
|---|---|
| Title of Study: | Increasing Access to Laboratory Services at a Community Mental Health Clinic for Patient's Experiencing First Episode Psychosis: A Quality Improvement Project |
| Investigator: | Kasey McCracken |
| IRB ID: | STUDY00027863 |
| Funding: | None |

The IRB determined that the proposed activity is not research involving human subjects. IRB review and approval is not required.

Certain changes to the research plan may affect this determination. Contact the IRB Office if your project changes and you have questions regarding the need for IRB oversight.

If this project involves the collection, use, or disclosure of Protected Health Information (PHI), you must comply with all applicable requirements under HIPAA. See the HIPAA and Research website and the Information Privacy and Security website for more information.

Sincerely,

The OHSU IRB Office

*Appendix 5*: Letter of Support

## Letter of Support from Clinical Agency

Date: 7/22/2024

Dear **Jordan Feist,**

This letter confirms that I, **Angela Petrjanos**, allow **Jordan Feist** (OHSU Doctor of Nursing Practice Student) access to complete his/her DNP Final Project at our clinical site. The project will take place from **7/22/24** approximately to **5/15/25**

This letter summarizes the core elements of the project proposal, already reviewed by the DNP Project Preceptor and clinical liaison (if applicable):

- **Project Site(s)**: Early Access and Support Alliance (EASA) – Multnomah County. 209 SW 4th Ave. Portland, OR 97204
- **Project Plan:**
    - Identified Clinical Problem: Lack of accessible laboratory services for EASA clients. EASA unable to access county labs sue to administrative siloing.
    - Rationale: Establishing 3rd party laboratory services, and/or gaining access to county labs is expected to increase the ease of which providers can order laboratory testing for EASA clients.
    - Specific Aims: An increase in the number of laboratories through which EASA can order labs through
    - Methods/Interventions/Measures: Interviews, and satisfaction surveys
    - Data Management: Evolv EHR will be accessed for the purpose of establishing order forms for 3rd party labs. No PHI will be removed or utilized. Survey responses from staff members will be collected and stored anonymously on an encrypted drive.
    - Site(s) Support: Access to EASA Evolv EHR. Any records or information regarding EASA's administrative classification within the county
    - Other: Potential to sit-in on meetings regarding EASA's access to county labs

During the project implementation and evaluation, **Jordan Feist** will provide regular updates and communicate any necessary changes to the DNP Project Preceptor.

Our organization looks forward to working with this student to complete their DNP project. If we have any concerns related to this project, we will contact **Jordan Feist** and **Kasey McCracken** (student's DNP Project Chairperson).

Regards,

Angela Petrjanos, EASA Program Supervisor, angela.petrjanos@multco.us, (503) 988-3272

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