Spring 5-12-2022

Implementing Universal Depression Screening in a College Health Clinic

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May 12, 2022

Submitted in Partial Fulfillment of the Requirements for the Doctor of Nursing Practice Degree

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Abstract

BACKGROUND: College students are at high risk for depression, and this carries a considerable burden. The American College Health Association supports depression screening on college campuses recognizing that early identification leads to better outcomes.

LOCAL PROBLEM: The project site is a public university located in New England. The college campus health center incorporates medical and counseling services. From August 2019 to December of 2019, 67% of students seen in the counseling center described depressed mood as the presenting concern. Currently there is no routine depression screening in place.

METHODS: This QI project implemented universal depression screening at the student health clinic. A two-tiered approach to universal depression screening was utilized with the PHQ-2 and PHQ-9 depression screening tools. Quantitative methods were utilized to organize and summarize the data.

RESULTS: Participants (N=96) comprised a diverse group of students with demographics that reflected the student body. Overall, 22% reported a history of depression. A total of 96 participants were screened over an 8-week period. There was a positivity rate of 27% on the PHQ-2 and a completion rate of 96% on the PHQ-9. 91% of students having a positive score were referred for follow up.

CONCLUSIONS: This project demonstrated that it is possible to introduce universal depression screening into a college health clinic using existing resources and without being time prohibitive. This project also found that the prevalence of depression among students exceeded anticipated levels reinforcing the importance of a more comprehensive approach to mental health.

Keywords: screening, depression, college students

Implementing Universal Depression Screening in a College Health Clinic

Introduction

Problem Description

Depression, classified as a mental health disorder, is associated with increased morbidity and mortality, and has become a national public health priority. The National Institute of Mental Health (2019) reports a 13.1% prevalence in young adults. College age students are at particularly high risk for depression and The American College Health Association (2019) estimates depression rates in college students at 20%. Moreover, college students suffering with this disorder are less apt to seek or obtain proper treatment increasing the risk for suicide, substance abuse, and other sequelae (Forbes et al., 2019). In addition, retention, academic performance, physical health, and relationship development are also negatively impacted (Downs et al., 2013). Finally, complicating the myriad stresses college students encounter, the COVID-19 pandemic has impacted the college experience dramatically. This has heightened the psychological effects on this vulnerable population and further impacted their mental health (Browning et al., 2021). Unfortunately, despite the known prevalence and increased risk in college students, depression remains underrecognized, screening is not routinely conducted, and depression is poorly managed in this setting (English et al., 2019).

College campus health centers are an ideal setting to screen students for depression for several reasons. College clinics are typically staffed with advanced practice providers, often have counseling services on site, and are more accessible to students due to location, affordability, and convenience. More importantly, college health centers understand their unique campus community and the needs and stressors of the students to whom they provide services. Finally, the U. S. Prevention Services Task Force recommends screening adults for depression,

acknowledging that early identification leads to improved outcomes (USPSTF, 2016). The American College Health Association (2021) supports this recommendation citing mental health disorders are detrimental to learning and deleterious to student overall success and wellness.

Local Problem

The University where this improvement project was conducted recognized the mental health challenges among college students nationally and has made the mental health of the students a priority. The executive administration responded by forming a Mental Health Task Force (MHTF) to assess the burden of mental health disorders at the local level. The aim of the task force was to examine the needs and experiences of students regarding their mental health, compare the University's mental health statistics to national trends, examine available resources, and identify possible barriers to access and utilization of those services. Data retrieved from the counseling services from August to December of 2019, revealed that 67% of students evaluated in the counseling center described depressed mood as the presenting concern. In addition, the Healthy Mind Survey, a web-based survey that examines the mental health and utilization of services in graduate and undergraduate students, was conducted in the spring of 2021 (Healthy Minds Network, 2021). Data retrieved from the final report revealed that 25% of the 1565 respondents had a positive screen for depression, suggesting that students at the project's site suffer from depressive symptoms at a more elevated percentages than has been estimated nationally.

Currently, at this University there is no screening process in place for depression. Students present to the Wellness Center requesting an appointment with the counseling staff or may present with psychosomatic complaints and be referred by a medical provider. The staff has become interested in providing a more proactive approach to depression due to a rising

awareness in the mental health needs of college students, concerns over a rise in mental health complaints, and the additional strain from the recent pandemic. Universal depression screening is seen as a valuable opportunity for early identification and intervention for students who are suffering with this disorder.

Available Knowledge

In November of 2020, guided by the PRISMA guidelines (Page et al., 2021), a systematic review of the literature was undertaken to examine effective strategies and interventions for detecting depression in a college age population. The review of the literature included PubMed, CINAHL, Psych INFO, and Academic Search Complete. Key words were screening, depression, and college students. Inclusion criteria were peer-reviewed journals, written in English and dating from 2010-2021. Thirteen quantitative, observational studies and one doctoral dissertation were included in this review. These studies were conducted on college campuses across the world with locations in the United States (n= 6), Macedonia (n=1), Columbia (n=1), China (n=1), Iran (n=2), and Hungary (n=1). There were a total number of 8,884 graduate and undergraduate students and demographics in all studies included age, (m= 21.82 years), and gender (68% female). The samples were diverse and included 760 Asian/Americans (9.7%), 487 Blacks (6.1%), and 505 Latino/Hispanic (6.4%), with most students identifying as white (48.6%). This multicultural, multiracial research increases the confidence in the literature review findings and the appropriateness of the recommended depression screening instruments as it relates to the demographics of the project site.

As illustrated by the Evidence Synthesis Table (Appendix A), six different screening instruments emerged from the research and all were found to be reliable and effective in the University setting (Biro, 2019, Down, 2013, & Ghazisaeedi, 2021). Guazisaeedi and colleagues

(2021) investigated the Well-being index (WHO-5), Patient Health Questionnaire-2 (PHQ-2), Patient Health Questionnaire -9 (PHQ-9), and the Beck Depression Inventory (BDI-13) in Iranian college students for reliability and validity with mild depression. The PHQ-9 was recommended by the authors for depression screening and follow up assessment (Guazisaeedi, 2021). Vasegh et al. (2014) found the BDI II showed a good fit with relative ease of use and was the first study to identify cut-off points for severity of depression. Limitations of the Symptoms and Assets Screening Scale (SASS) include generalizability to other college populations as the sample was predominantly white and female (Downs et al., 2013). The Patient Health Questionnaire-4 (PHQ-4) showed high reliability, validity, and efficiency as a screening tool with college students. This four question instrument screens for both depression and anxiety.

Most studies (n=9) utilized the Patient Health Questionnaire-9 (PHQ-9) screening tool with one study using a two-tiered approach starting with the Patient Health Questionnaire-2 (PHQ-2). The PHQ-2 is a two-item questionnaire which appears suitable for screening in a university setting, as it is brief, completed by the student, and has been recommended as a first step when screening for depression (Manea et al., 2016). A cut-off point of greater than 2 has a sensitivity and specificity of .91 and .70 respectively with a caveat that there may be a higher false positive rate due to the modest specificity in a low prevalence population (Manea et al., 2016). Although this may be problematic in other settings, based on the high prevalence of depression in the college population, sensitivity will be favored over specificity to ensure capturing students experiencing depression.

The PHQ-9 is a nine-item, self-reported tool developed to assess depressive symptoms and monitor the severity of depression (Du et al., 2017). This evidence-based instrument is based on the DSM-IV diagnostic criteria for major depressive disorder (MDD). The DSM-IV

has been updated to the DSM-V; however, this tool is still viable as the nine items and time period of two weeks has not changed (APA, 2013). The PHQ-9 has been widely adopted in primary care and non-psychiatric settings and has demonstrated good validity and reliability for depression assessment, depression severity, and usefulness as a tool to measure treatment response (Shepardson et al., 2014). Research revealed that the PHQ-9 also demonstrated good reliability and validity in the college population. Du and colleagues (2017) found a sensitivity of .74, specificity of .85, and internal consistency of 0.8 in Chinese college students. Klein (2011) relayed a sensitivity of .77 and a specificity of .94 in a sample of undergraduate and graduate law and dental students. Ghazisaeedi and colleagues (2021) found the PHQ-9 to be faster than other questionnaires due to the brief time it took students to answer the questions and the ease of scoring by clinicians. The questionnaire has shown high feasibility, reliability in multiracial and ethnic groups, a higher level of discrimination in mild depression, and high satisfaction with students (Keum, 2018, Klein, 2011, Ghazisaeedi, 2021, Williams, 2014). The PHQ-9 also allows for evaluation of severity of depression (mild, moderate, severe) based on recommended cut-off points cut of 5, 10, 15, and 20, representing a severity range from mild to severe **(**Kroenke, 2001**,** Miranda, 2018). A cut-off point of 10 is commonly used to signify the difference between mild symptomatology and moderate to severe depressive symptoms including identification of MDD (Klein et al., 2011, Miranda et al., 2018, Williams et al., 2014).

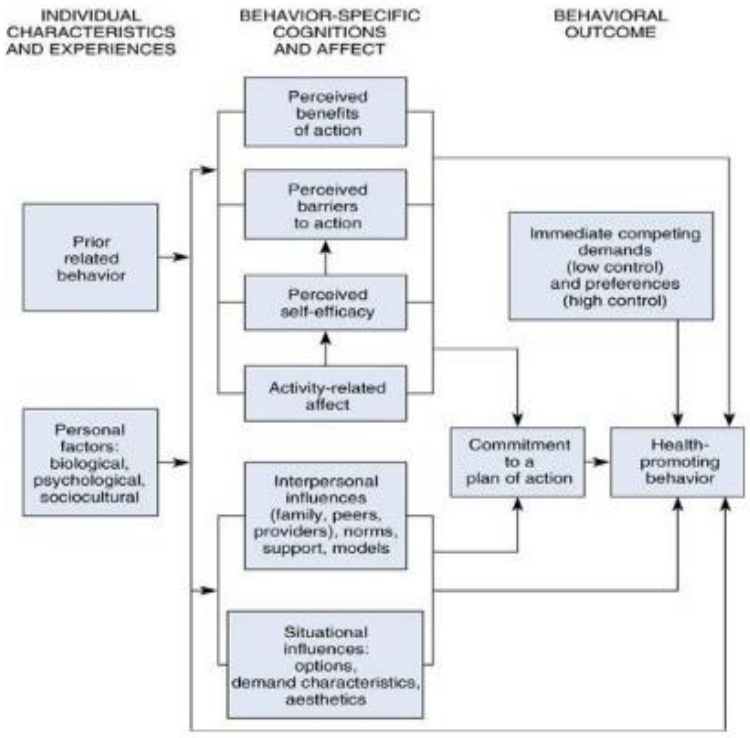
Evidence of satisfaction by providers with universal depression screening or a particular instrument was scarce, however, one quality improvement project reported that providers were highly satisfied with the ease of the PHQ-9 screening tool (Tomlinson, 2020). Overall, the brevity of the PHQ-2 and PHQ-9 are a good fit for use in screening college students who are less inclined to fill out long forms (Ghazisaeedi et al., 2021). The ease of scoring, free public

availability, and high reliability and validity made implementing these tools the clear choice for this project site where cost and time constraints are considerable and goodness of fit desirable.

Rationale

To guide this project's intervention, Nola Pender's Health Promotion Model (HPM) provided a theoretical framework. Pender's middle range theory describes and predicts how the intricate relationship between environment and individuals' perceptions affect the choices they make about their health (Figure 1). Central to the model is the prevention of chronic disease and improved quality of life (Pender et al., 2015). Promoting healthy lifestyles is fundamental to the role of a college health clinic, and screening for depression promotes mental health wellbeing by early identification and treatment. Screening is an opportunity for identifying not only mild, moderate, and severe depression, but also symptoms stemming from adverse coping mechanisms, unhealthy lifestyle choices, and increased stress, all regularly seen in the college population. According to Pender and colleagues (2015), nursing, a key concept in the HPM, is influential in creating conditions for optimal well-being through collaboration and

Figure 1 Health Promotion Model (revised)



education with patients. This is particularly important for college-age students who are often seeking care for the first time independent of parental supervision and require more comprehensive counseling on multiple health issues including mental health. Applying Nola Pender's model as a guide strengthened and facilitated the universal depression screening intervention while also extending the health promotion role into the realm of mental health.

Quality improvement initiatives strive to make systems and processes more effective, provide safe, equitable care, and improve patient outcomes. Implementing improvements involves change which can be difficult and frequently met with resistance even by the most conscientious staff members. The Change Theory by Kurt Lewin (1947) was chosen to provide a framework for implementation. Lewin's Change Theory manages and sustains change by using a three-step process of Unfreezing, Movement/Change, and Refreezing. This model has been applied in clinical settings to guide the improvement team in engaging stakeholders, influencing behaviors, and fostering change that is accepted and lasting (Manchester et al., 2014). A dual approach toward the unfreezing stage for this project concentrated on increasing the forces that move behavior towards a change and decreasing the restraining forces that keep the status quo. Key components utilized were early collaboration with counseling, shared decision making, and education on depression for medical staff. The movement/change step concentrated on continued support and encouragement of staff and providers, frequent feedback opportunities, and monitoring process and outcome measures. The refreezing step is acknowledging the new norm. Integrating the process into the day-to-day functioning allows for continued sustainability. Continuing to have open dialogue and opportunities for feedback with all stakeholders will be imperative to safeguard the ongoing success of depression screening

within this setting. In addition, acknowledging the challenges seen with universal depression screening will aid is future PDSA cycles.

Specific aims

The purpose of this improvement project was to improve identification of depression, and ensure students are aware of treatment options. The overarching aim was to implement universal depression screening for students presenting to the University's Health Clinic.

Objectives

- 90% of students who present for asymptomatic STI visits will be screened for depression using the PHQ-2/PHQ-9 two-tiered approach during the two-month implementation period.
- 90% of students who have a PHQ-9 score between 4-9 will be offered resources for symptom management and self-help tools.
- 90% of students who have a PHQ-9 score of 10 or greater will be offered resources for symptom management, an appointment with an APRN for evaluation of MDD, and options for treatment.

Methods

Rapid Cycle Improvement or the Plan, Do, Study, Act (PDSA) model was utilized for developing, implementing, and evaluating this process change. The four distinct stages allowed for developing and planning the change, observing the process, learning from feedback by providers, staff, and students, and making necessary adjustments (Langley et al., 2009). Linking measurement strategies to the improvement process was necessitated to monitor change and evaluating outcomes.

Context

A public university located in New England is the setting for this project. Most students commute (n=8500), however, 3300 students live in residential facilities on campus. The student body is racially and ethnically diverse with 25% students of color, 9% Asian, 1% Native American, and 1% international. Twenty five percent of undergraduates live on campus and 59% of students are women. In addition, many students are the first in their family to attend college, potentially creating a cascade of challenges for these first-generation students.

This quality improvement project was conducted in the Wellness Center which is conveniently located amid seven residence halls and adjacent to the commuter parking garage. The Center incorporates medical services, counseling, and outreach education. The medical services offers both sick and well visits. Well visits include birth control consults, sports physicals, and asymptomatic sexually transmitted infection (STI) screening visits. Asymptomatic STI visits make up the bulk of well visits. The Center evaluates approximately 3500 students a semester. Mental health services have predominantly been the responsibility of the counseling staff, largely missing those students who do not self-identify with symptoms of depression or present with a depressive symptomatology to the medical service. To fully explore the unique characteristics of this microsystem in relation to this project an external mapping tool was completed (Appendix B). Important contributors to implementing universal depression screening were identified and include the front-end staff, the RN, and the APRNs. Moreover, proximity and availability of counseling and mental health clinicians allowed for convenience, ease of referral, and follow up for patients identified with depression.

Undiagnosed depression in college students is known to be prevalent, however, multiple factors existed which have impeded implementation of a more robust approach to students

experiencing depression. Historically, the counseling staff have advocated for depression screening but have met resistance from the clinicians in the medical clinic. A cause-and-effect diagram (Appendix C) was initiated to better understand root causes of the suboptimal depression identification rates. Staff-related barriers stemmed from concerns about liability, knowledge deficits, little experience with depression screening tools, and concerns about facilitating treatment with mental health workers. These barriers were mitigated by education regarding the compelling evidence from the literature, proper training for providers, early collaboration with the counseling staff, and ease of using the PHQ-2 and PHQ-9 screening tools. Conflicts that are were not as easily corrected included the stigma associated with mental health, social determinants of health, and the tendency of college students to self-manage and or the belief that treatment is not helpful**.** Strategies to overcome these challenges included normalizing depression by including depression screening in every visit, and empowering clinicians with the tools and communication skills to discuss and treat depression. These strategies and mitigation efforts were incorporated into the project's interventions and implementation plan.

Several contextual elements in the Wellness Center had implications for successful implementation. Driving forces (facilitators of success) are highlighted in a force field diagram (Appendix D). The most compelling of these being student success and improved prognosis with early identification. Another substantial factor driving this project is the direct alignment with leadership goals at the executive level to optimize the mental health of the student body.

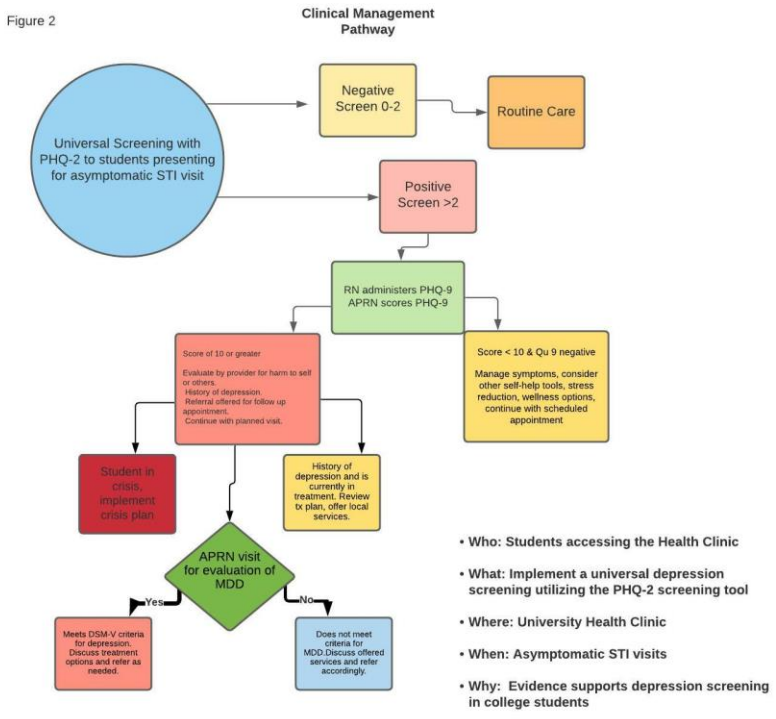
Despite the supportive environment and improved outcomes from early identification and treatment, limited resources remained a threat to the project's advancement. Concerns that demand will exceed resources, lack of an electronic health record (EHR), limited staff during

summer recess, and the looming threat of a shrinking budget all were factors hindering successful implementation. In spite of challenges, the timing for depression screening could not have been more opportune. The COVID-19 pandemic has intensified the mental health burden on college students making a proactive approach such as universal depression screening crucial to improving the wellbeing of this high-risk population. This urgency had not gone unnoticed by team members and early group meetings between the medical and counseling staff commenced early on creating the much-needed collaborative atmosphere necessary to get the project underway.

Intervention

The project's intervention of universal depression screening is illustrated by the clinical management pathway (Figure 2) and was initiated with the PHQ-2 screening tool. (Full scale figure is in Appendix E). This intervention was designed to screen all students who presented for a well visit, specifically an asymptomatic STI screening visit. The PHQ-2 was given to students upon arrival for their scheduled appointment by the front-end staff. The PHQ-2 was completed by the student and the RN in the clinic scored the PHQ-2 flagging a

Figure 2



positive screen using a cut-off point of greater than 2. Those students with a negative screen continued with their scheduled visit without further intervention. Students with a positive screen of 2 or greater were invited to complete the PHQ-9 by the RN, which was then scored and interpreted by the APRN. A score of less than 10 on the PHQ-9 and a "no" answer on question 9 (suicide risk measurement) was considered a negative screen (Klein, 2011 & Shepardson, 2014). This triggered a conversation about symptom management, education about self-help tools, stress reduction, wellness options, counseling, and referral as needed. A QR code was designed for students to scan and have easier access to resources (Appendix F). A positive score of 10 or greater on the PHQ-9 signaled a need for referral for evaluation of possible depression. Dialogue included evaluation of harm to self or others and options for evaluation and treatment. Patients who met the DSM-V criteria for major depression disorder after the evaluation appointment were advised of treatment options, available services, and a plan of care was determined. Conversely, if the patient did not meet criteria for depression, a conversation on services, symptom management, opportunity for follow up, and referrals were presented to the student.

Implementation of the Intervention

The project implementation took place over a 2-month period. For the purposes of project planning and implementation, relationships between site resources, activities planned, and desired outcomes were explored by constructing a logic model (Appendix G). This implementation applied Lewin's Change Model. According to Lewin's Change Theory, the unfreezing stage calls for early collaboration and engagement of stakeholders to allow for shared decision making and investment in the change. In the planning stage (prior to the start of the intervention), medical and counseling staff, two key resources to the project's success, met in focus groups. Collectively it was decided to screen only a limited group of students who

presented to the clinic to ensure consistency, evaluate volume, and being mindful of time and resources. Asymptomatic STI screen visits make up the majority of the well visits in the clinic, and therefore was a logically first choice due to the likelihood of providing adequate participants for the project. Additionally, focus groups concentrated on reviewing aims of the project, providing opportunity for feedback, cementing timelines, and finalizing project protocols. Preparedness is also important in the unfreezing stage; therefore, trainings were provided to ensure staff and clinicians have the necessary tools to implement depression screening. The project leader held a brief in-service for the front-end staff consisting of an overview of the project and introduction of the new paperwork. Lewin's movement/change step stresses the importance of continued support and encouragement. To ensure continued motivation of stakeholders, informal huddles were held weekly during the implementation of the intervention to keep lines of communication open and ensure quality and process adherence.

Upper-level management was fully engaged in this evidence-based project allowing the time for staff to coordinate and attend training and extend appointment times needed for the addition of depression screening and evaluation. The team recognized that the timing for this project was propitious and were ready to examine new ways to care for the mental health needs of students. An added incentive is that the intervention was cost neutral, although this has the potential to be revenue generating if the Wellness Center moves to a billing model. Therefore, the assumption was that with the resources available, completion of the activities mentioned, the outcomes for this project would be satisfactorily achieved. The long-term aspirational goal was to adopt a holistic approach that addressed both physical and mental health by integrating depression screening into medical visits and thereby creating a more comprehensive visit. The medical staff incorporated screening, identification, and treatment of depression into their scope

of practice (Lewin's re-freezing step) while collaborating more inclusively with counseling, providing a more comprehensive approach to the medical services provided to students.

Evaluation of the Intervention

The evaluation of the intervention was guided by the aims and objectives of the project. Underpinning the evaluation process is the model of improvement which logically and collectively facilitates next steps. Focus groups and weekly huddles enabled the project manager to continuously obtain feedback from stakeholders over the course of the implementation period.

Variation in data was considered in the context of this unique environment as it has long been suspected that there are periods of fluctuation in the mental health of the student body. The academic calendar as well as University status may influence the variation of the data collected. For example, there may be an increase in frequency of students experiencing increased stress during midterms and finals, freshman transitioning from high school, and seniors preparing for graduation. Therefore, weekly totals were tallied to assist in determining improvement versus variation. In addition, weekly numbers allowed for comparison of data and contributed information for future cycles.

Measures

The objectives for this project and how they were operationalized are depicted in Table 1. A tracking tool assisted the project leader when collecting quantitative data from the health record. A more detailed table on measurement and analysis can be found in Appendix H.

Objective 1: *During the two-month implementation period, 90% of students who present for asymptomatic STI visits will be screened for depression using the PHQ-2/PHQ-9 two-tiered approach.* The project leader measured this objective by reviewing approximately 3-6 medical

records a day for students who had an asymptomatic STI visit and abstracted the information utilizing a tracking tool. A proportion was calculated weekly by dividing the number of students screened with the PHQ-2 by the number of STI visits scheduled for that week. To facilitate further depression screening with the PHQ-9 students who score positive on the PHQ-2 and elected to complete the PHQ-9 were also tracked. Data reflecting the proportion of students completing the PHQ-9 relative to the number scoring >2 on the PHQ-2 was calculated and tracked. Percentages were charted weekly over the project period providing comparison data and weekly numbers for staff to review.

Table 1

Measurement Framework

Aims/Objectives	Operationalized/ Measured
For the two-month implementation period, students who present for asymptomatic STI visits will be screened for depression.	90% of students will be screened with the two-tiered approach using the PHQ-2 and the PHQ-9.
For the two-month implementation period, students who have a PHQ-9 score between 4-10 will receive guidance from the APRN.	90% of students will be offered resources, self-help tools, and symptomatic management.
For the two-month implementation period, students who have a PHQ-9 score of 10 or greater will be provided with an appointment with the APRN for evaluation of depression.	90% of the students will be evaluated for MDD and given options for treatment.

Objective two: S*tudents with a score of between 4-9 on the PHQ-9 will be offered resources on symptom management and self-help and wellness tools.* Students scoring between 4-9 were tracked utilizing the tracking tool and accessing the medical record by the project leader. Frequencies were tabulated daily. Percentages were calculated weekly over the project period to provide comparison data and monitor volume with respect to counseling referrals.

Objective three: *Students with a score of 10 or greater on the PHQ-9 will be offered referral for evaluation of depression with an APRN.* Data for students scoring 10 or greater on the PHQ-9 was collected in a similar method as described above. Data was extracted from the medical record and analyzed. Frequencies were tabulated daily. Percentages were calculated

weekly to track variation. Comparisons were available after the first two weeks of data collection. Barriers to treatment exist and many college students do not seek treatment for depression, therefore, students who refused a referral (follow up appointment for evaluation of possible MDD) and scored positive on the PHQ-9 were contacted once by phone or email. All information gleaned from this follow up contact was documented in the mental health progress note. This information will be used in future PDSA cycles. The expectation is that 90% of these students will have a follow up attempt.

These measures were directed toward monitoring process, assessing outcomes, and guiding future cycles, with the goal of causing the least disruption to the daily routine while delivering safe and effective mental health care to students.

Analysis

For this project quantitative methods were used to organize and summarize the data collected. Demographic data were collected from an intake form filled out by the student. PHQ-2/PHQ-9 scores were extracted from the medical record and then recorded daily in an Excel spreadsheet. Descriptive statistics described and summarized specific data on the project's objectives and the demographics of the participants. Quantitative methods regarding the number of students screened, treated, and referred are expressed as frequencies, proportions, and percentages. Rates were calculated for number of students screened with the PHQ-2 and the PHQ-9. Additional data on students diagnosed with depression, referred to counseling, and students lost to follow up were also calculated.

Ethical Considerations

Ethical issues concerning this project were considered and there were no conflict of interest for either the author or any team member involved in the project. Team member feedback and concerns were strongly encouraged and willingness to participate was completely voluntary with no punitive action attached. The Health Clinic is HIPAA compliant and all health information on students is private and securely protected. Quality Improvement projects conducted at this site need no formal applications, reviews, or additional documentation. The Executive Director of the Wellness Center is an advocate and proponent of implementing universal depression screening and this improvement project had full clearance and approval to implement.

To ensure further ethical integrity the UMB Clinical Quality Improvement Checklist was completed to determine exclusion from IRB review (Appendix I). Based on this document this project meets all criteria required for a quality improvement project. The quality improvement project does not meet the definition of human subject's research because it is not designed to generate generalizable findings but rather to provide immediate and continuous improvement feedback in the local setting in which the project is carried out. The University of Massachusetts Boston IRB has determined that quality improvement projects do not need to be reviewed by the IRB.

Results

During the two-month implementation period, all 96 students presenting for their scheduled asymptomatic STI screening visit were given the PHQ-2 depression screen by the administrative assistant. We had no client refuse to partake in the screening. Table 2 illustrates

Table 2

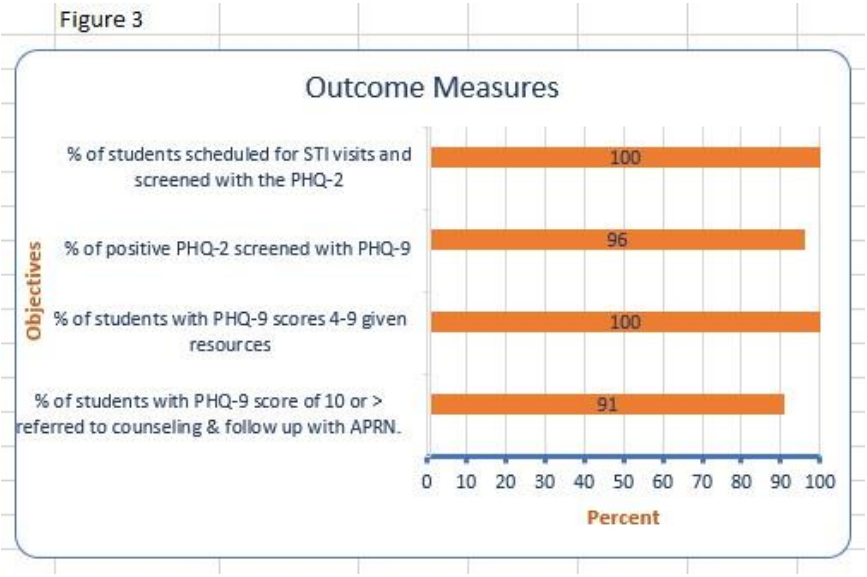
Demographics of Participants (N=96)

Variable	*n*	%	*M*	*SD*
Sex				
Female	49	51%		
Male	46	48%		
Trans	1	1%		
Race				
White	51	53%		
Black	27	28%		
Hispanic/Latino	14	15%		
Asian	2	2%		
Unknown	2	2%		
Age				
18-20	62	65%	19	1.00
21-25	31	32%	21.78	1.18
>25	3	3%	30.00	3.46
Living arrangement				
Resident	65	68%		
Commuter	31	32%		
History of depression	21	22%		

the demographics and characteristics of the participants screened with the PHQ-2. The majority of students were female (51%, n=49) and younger age (18-20 years of age: 65%, n=62). Although most of the participants were white (53%, n=51), blacks (28%, n=27), Hispanics (16%, n=14), and Asians were well represented and surpassed the University's current enrollment of 25% students of color. Overall, the project's participants mirrored the university's demographics of a younger, diverse, mostly female student body. In addition, students participating in this project had a 22% history of depression (n=21) correlating with previous estimates of the prevalence of depression in this population.

As shown in figure 3, there were a total of 96 PHQ-2 completed by all 96 participants with a positivity rate (score greater than 2) of 27% (n=26). Of those 26 positive screens, all but one student completed the PHQ-9 (n=25) for a screening completion rate of 96%. Of those who completed the PHQ-9, 11 (44%) scored 10 or greater, indicating the need for referral to counseling services and the APRN. Thirteen (54%) scored between four and nine triaging them to the APRN for depression symptom education. Of the 25 PHQ-9 screens completed all but one was positive for depression or depressive

Figure 3



symptoms exhibiting how sensitive and specific the PHQ-2 is for depression screening. All students (n=13) scoring between four and nine on the PHQ-9 were offered on site resources resulting in 100% return for this outcome measure. Self-help tools included the Well Track interactive therapy app, Togetherall, which is an anonymous online platform that offers support to improve mental health and wellbeing, and a consult to our counseling services if needed or desired by the student. Resources were communicated at that appointment by the APRN, and students could scan the prementioned QR code for more information. Of the participants scoring 10 or greater, four declined follow up, two students were in therapy currently, and four students followed up in the college clinic with the APRN and counseling. One student was offered resources however was not offered follow up with the APRN resulting in a 91% outcome measure for objective three. To ensure students had adequate support, all four students who had a positive screen and declined services were contacted once by phone or email exceeding the expectation of 90%.

Discussion

Summary

This quality improvement project was designed to implement universal depression screening during a well visit (asymptomatic STI visit) in a college health clinic. Underpinning the intervention and implementation was Nola Pender's Health Promotion Model and Kurt Lewin's Change Theory. This quality improvement project demonstrated that it is possible to introduce depression screening into a visit with the two-tiered approach using the PHQ-2/PHQ-9 screening tools. Moreover, the PHQ-2's high reliability and validity was further supported in this project with only one student scoring positive on the PHQ-2 and then having a negative PHQ-9 screen, highlighting the high sensitivity and specificity of this first step screening tool.

Furthermore, in addition to identifying students with depression or depressive symptoms, it was also possible to introduce depression counseling within that appointment time and refer as needed to the counseling center without being time prohibitive. Finally, it was also the intent of this project to capture those students who may be experiencing depressive symptoms related to adverse coping mechanisms, increased stress, and unhealthy lifestyle choices in order to direct individuals to campus resources. This was accomplished by the aid of a QR code which was well received by both students and staff and effectively relayed the resources in an efficient manner. Interestingly, no students declined to partake in the screening implying that the students at this University maybe beginning to feel more comfortable thinking and talking about their mental well-being. Stigma in and around mental health, at least in this quality improvement project, appeared to be diminishing and discussing mental health seemed to be normalizing.

College students have an elevated risk for depression and this project revealed that a significant proportion of students (26%, n=25) screened positive for depression or depressive symptoms despite not presenting with that complaint. The prevalence of depression among students presenting for an asymptomatic STI visit exceeded anticipated levels and was above the national estimated rates for college students. This reinforced the importance of depression screening in this population and specifically at this University. The literature suggests that the current COVID-19 pandemic may be associated with the higher prevalence of depression witnessed in this project. The pandemic has caused major lifestyle changes for many, and fear and anxiety caused by this may have attributed to the high percentage of positive screens seen in the data. As COVID-19 transitions from pandemic to endemic and campus' return to pre-pandemic status, percentages in future PDSA cycles may return to numbers that are more consistent with the literature.

Another factor effecting the higher rates of depression noted in this project may be the large number of first-generation students as the University. First generation college students (FGCS) have multiple challenges that may create a higher risk for depression (social support from family and socioeconomic barriers) and these struggles may have been exacerbated by the current pandemic (Jeong, H. J., Kim, S., & Lee, J., 2021). According to Jeong et al. (2021), FGCS's are less likely to seek support or help for mental health distress and Jenkins and colleagues (2013) found that FGCS's may also suffer with higher levels of depression and PTSD.

Informal weekly huddles were important to assess successes and challenges in real time as the project was implemented. The huddles provided an opportunity for team collaboration, sharing and problem solving. One challenge that was identified was concern from the Counseling staff that demand would exceed resources. Several strategies were implemented to address this concern. A referral list that included providers outside the campus was created, ensuring that students needing referrals could be evaluated by mental health professionals in a timely manner. The caveat however was that traveling off campus required transportation, and this could be a barrier to receiving services for some students.

The second challenge that emerged was the continued emphasis on the need for an electronic medical record (EMR). Paper charting required that all data be collected manually, and the depression screening tool had to be manually handed to the student, hand scored, and then added to the chart. During weekly huddles this was often brought up as an obstacle especially by the front-end staff. Although the lack of an EMR did not hinder meeting all objectives it may become more problematic moving forward and expanding depression screening to other well visits, i.e., birth control consults and physicals. Fortunately, the University is

currently in the initial stages of integrating an EMR with the goal to be live by September of 2022. It is the hope that with an EMR depression screening can be completed before an appointment thereby eliminating this potential barrier in the future.

Finally, students with depression are at an increased risk of attrition, (Auerbach et al., 2016) and Lee and colleagues (2009) found that in both high, medium, and low-income countries, students with an onset of a mental disorder or one or more prior mental health conditions were much more likely to terminate their education. Although not the primary goal, a secondary interest was to determine the GPA of those students scoring 10 or greater on the PHQ-9. It was noted that of those 11 students scoring 10 or greater on the PHQ-9, one student did not finish the semester and three were on academic warning with a GPA under 2.0. However, seven of the eleven were not in danger of academic failure and GPAs ranged from 2.6 to 3.9. This suggests that the students with depression seen in this setting during this quality improvement project encompassed the spectrum of academic performance and success.

Conducting universal depression screening into a well visit allowed clinicians an opportunity to create a more comprehensive holistic visit in accordance with Pender's model of prevention of chronic disease and improvement of quality of life. Providers were able to address personal issues of coping and lifestyle, disseminate resources, and offer appropriate counseling during a visit without compromising workflow. This project showed that the added screening did not overburden staff or clinicians from maintaining productivity within the clinic and that students were not opposed to being screened, thereby showing the feasibility of this proactive approach to mental health.

Limitations

Limitations of the project were identified that will need consideration for future improvement measures. One important limitation was the impact of the pandemic. Most of the providers were involved with COVID-19 testing, follow up, contact tracing, and sick visits. As a result, appointments for well visits and specifically asymptomatic STI testing were limited to two days per week instead of five. The project manager was assigned the majority of those time frames with a per-diem provider in once weekly and taking a small percentage of these clients. High motivation for the project's success by the project manager may be reflected in the high percentages achieved in the outcome objectives. The pandemic may also be considered a strength because of the high percentages reached in the outcome objectives; however, this will need to be considered in future as other staff may not have the same "buy in" and therefore be less impactful. Additional limitations may reside in the participants themselves. This project only screened students requesting asymptomatic STI checks excluding other well visits. This limited the participants to only one subset and may be prone to potential bias when examining the results. Both factors should be considered when planning future PDSA cycles.

Conclusions

Overall, depression rates on college campuses are higher than in the general public and this project revealed the high rates of positive depression screens at this University. This shines a light on the importance of a more comprehensive approach to mental health. Universal depression screening allowed for early identification and treatment of depression potentially improving student outcomes and academic performance. In addition, screening for depression also revealed other stresses and issues occurring in this population offering an opportunity to educate students on available campus resources. Finally, this quality improvement project

revealed that implementing universal depression screening is feasible due to the ease of the PHQ-2/PHQ-9 screening tools and the time saving utilization of a QR code.

Challenges disclosed revealed that counseling services can become inundated and unable to serve all students requiring treatment. Even without universal depression screening it is not uncommon for there to be a wait list by mid semester for counseling and this will continue to be a challenge for sustainability moving forward. Moreover, a more aggressive follow up system may be necessary and beneficial to capture those students who refused treatment, failed to secure an appointment, or failed to return for appointments to ensure adequate management. Finally, the need for an EMR to maximize services became evident with this project and firmly solidified the necessity of sooner rather than later action to bring the clinic online. Once the EMR becomes live, suggested next steps may be to utilize the PHQ-4 instead of the PHQ-2 as the initial screening tool. The PHQ-4 incorporates the questions from the PHQ-2, and two questions about anxiety symptoms. The GAD-7 can be added to the second tier with the PHQ-9. This would allow screening for both depression and anxiety, both prevalent in this vulnerable population. Incorporating this type of initiative has the potential to significantly improve the mental health of students suffering from both depression and other mental health symptoms and is not time prohibitive for a college health clinic. College students are burdened with mental health issues disproportionately to their peers; therefore, universities have a responsibility to support mental health for students to promote a successful college education and overall wellbeing. Universal depression screening provides a viable intervention and opportunity to assist in this endeavor.

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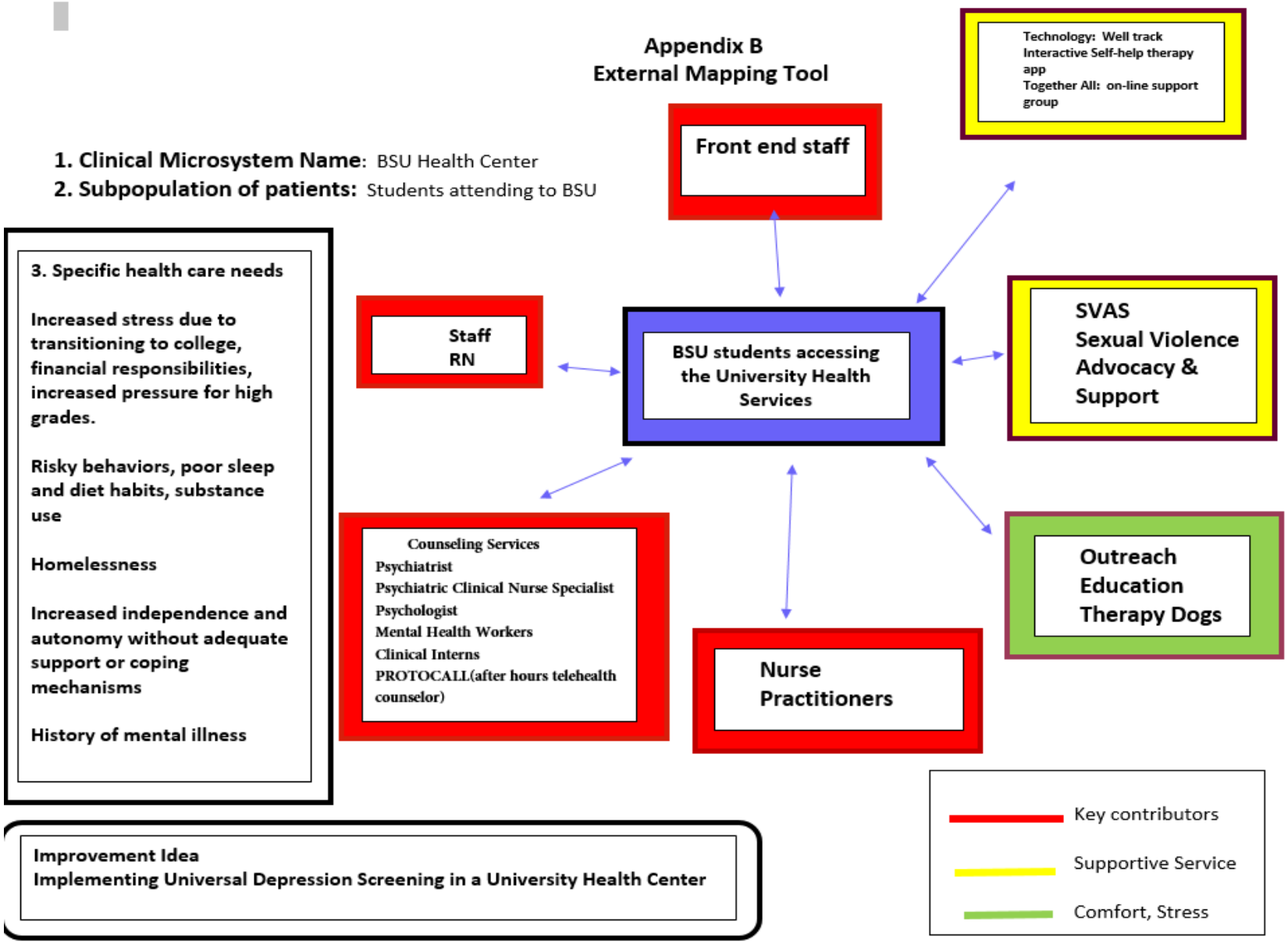
Appendix A
Evidence Synthesis Table

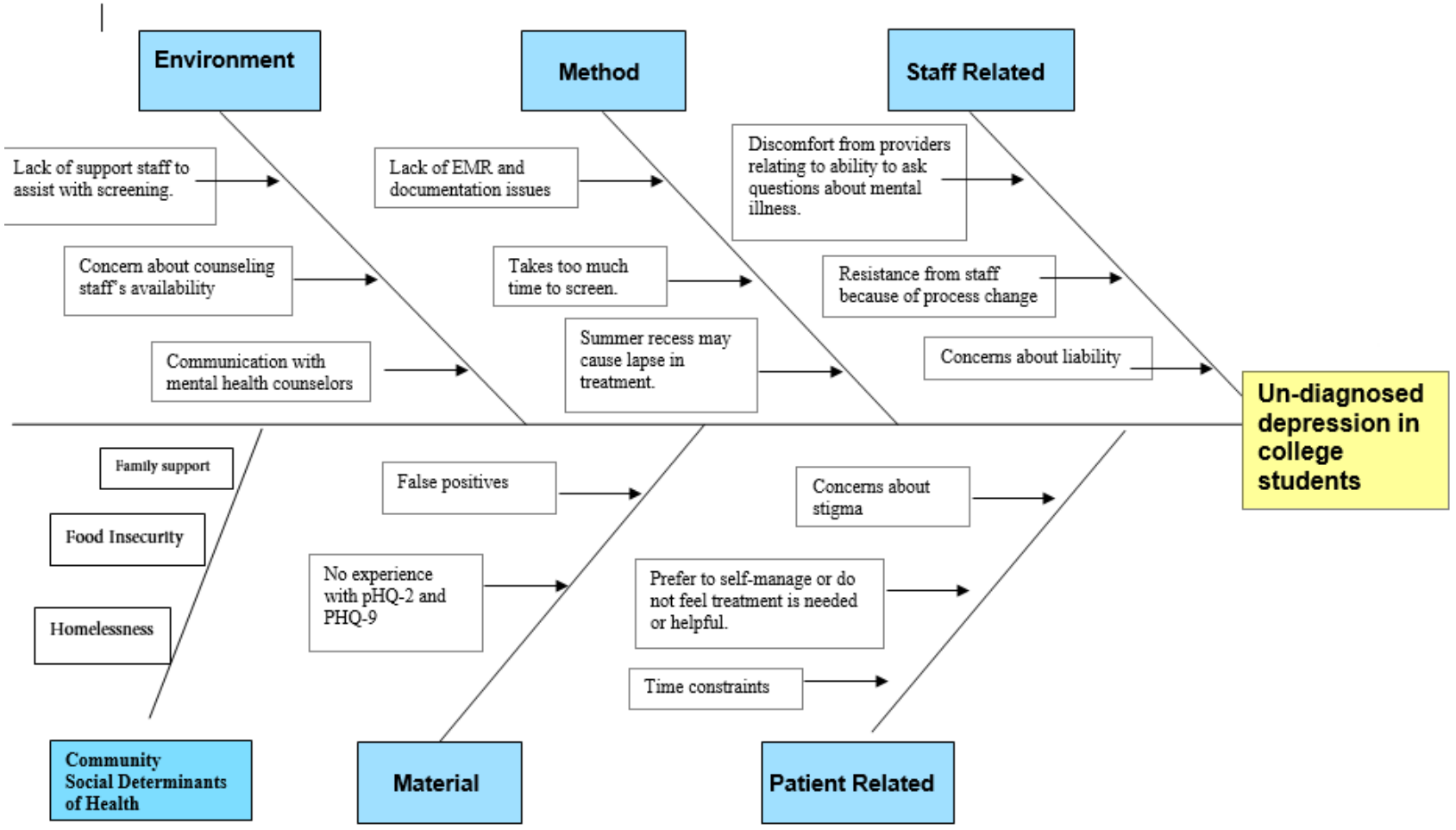
Number of Studies	Interventions	Significant Findings	Level of Evidence/Quality Sample Description
a) Keum et al. (2018) b) Miranda et al. (2018) c) Shepardson et al. (2014) d) Videnova (2016)	PHQ-9	Measures depressive symptoms equivalently across gender (a) Reliable measure in multiple racial and ethnic college students (a, b, d) Good fit for students (a- d)	a) III B (n=857, 35% white) b) III B (n=550, 35.6% male, college students in Columbia) c) III B (n=4126, 34.4% male) d) III B (n= 137, 63% male)
a) Klein (2011)	Two-tiered approach PHQ-2 initial screening tool, if positive, PHQ-9 was administered.	Effective and feasible tool for screening University students for depression	III B, (n=3713, 51% white)
a) Du et al. (2017) b) Williams et al. (2014) c) Youn et al. (2012)	PHQ-9 web-based	High feasibility (a, c) Patient satisfaction (a, b) Value as a screening tool (a)	III B (n=758, Chinese University students)
a) Ghazisaeedi, et al. (2021)	WHO-5, PHQ-2, PHQ-9, BDI	PHQ-9 highly recommended for mild depression screening Iranian medical students because of high sens/spec	a) III B, (n=400, 51.5% male)
a)Khubchandani et al. (2016)	PHQ-4	High reliability, validity, and efficiency with college students	III B (n=934, 63%female, 80%white)
a)Tomlinson (2021)	PHQ-4 if positive GAD 7/ PHQ-9	High satisfaction with staff Provides early identification improving quality of life	V B (n=59)
a) Biro et al. (2019) b) Vasegh et al. (2014)	Beck Depression Scale	High reliability of predicting vulnerable mental health status (a) Suitable for differentiating between mild and major depression using cut off points (b)	a)III B (n=412, 90.9% female, Hungarian college students) b) III B (n= 400, 34.7% male)
a)Downs et al. (2013)	SASS	Instrument is easily interpreted, reliable, and valid in college populations to identify students with common mental health disorders.	III B (n=758, 65.4% female, 82.5% white)

Appendix B
External Mapping Tool

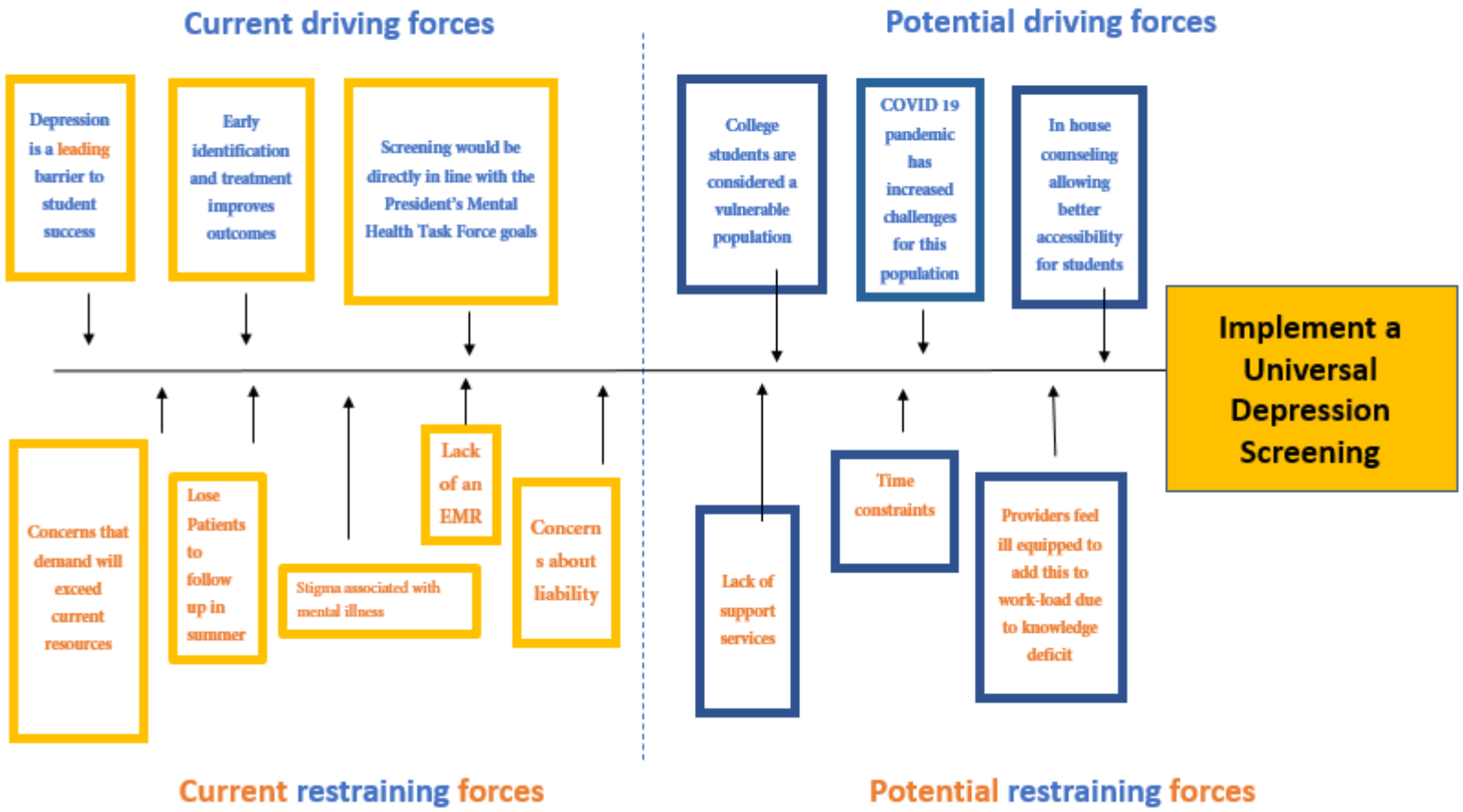
1. Clinical Microsystem Name: BSU Health Center
2. Subpopulation of patients: Students attending to BSU



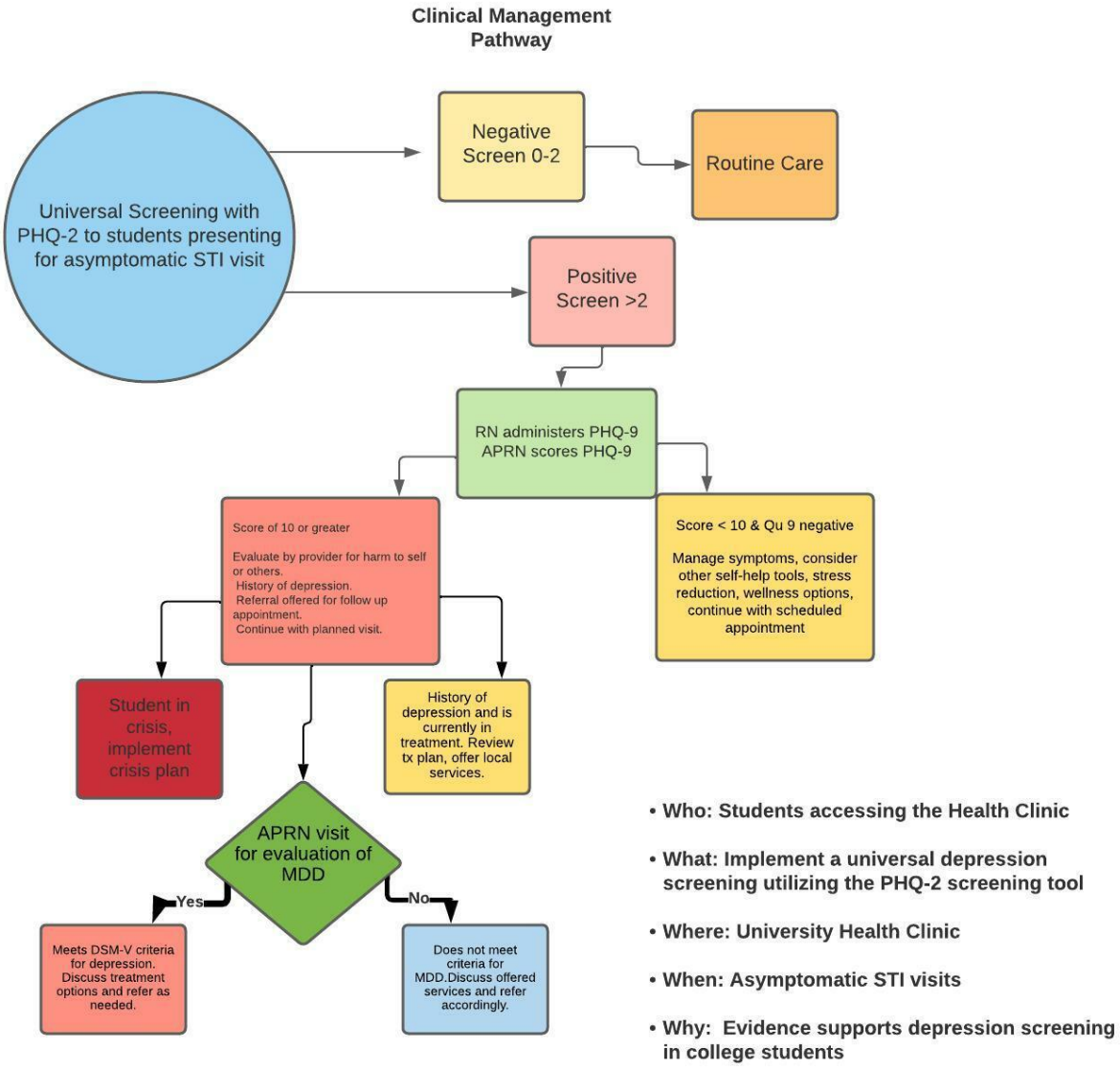
Appendix C
Cause and Effect Diagram



Appendix D
Force Field Analysis



Appendix E

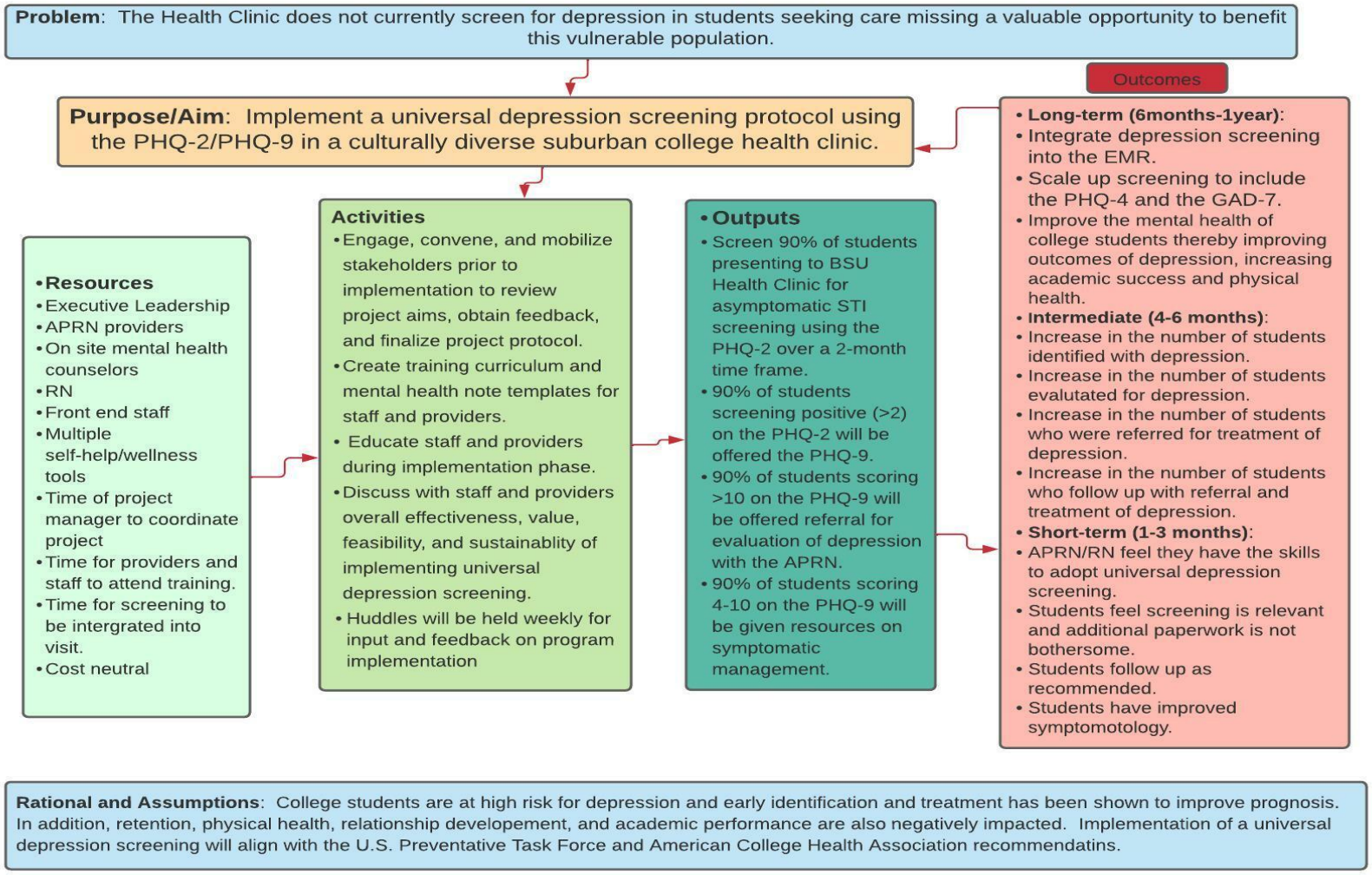

Clinical Management Pathway
Universal Screening with PHQ-2 to students presenting for asymptomatic STI visit
Negative Screen 0-2
Routine Care
Positive Screen >2
RN administers PHQ-9
APRN scores PHQ-9
Score of 10 or greater
Evaluate by provider for harm to self or others.
History of depression.
Referral offered for follow up appointment.
Continue with planned visit.
Score < 10 & Qu 9 negative
Manage symptoms, consider other self-help tools, stress reduction, wellness options, continue with scheduled appointment
Student in crisis, implement crisis plan
History of depression and is currently in treatment. Review tx plan, offer local services.
APRN visit for evaluation of MDD
Yes
No
Meets DSM-V criteria for depression. Discuss treatment options and refer as needed.
Does not meet criteria for MDD.Discuss offered services and refer accordingly.
• Who: Students accessing the Health Clinic
• What: Implement a universal depression screening utilizing the PHQ-2 screening tool
• Where: University Health Clinic
• When: Asymptomatic STI visits
• Why: Evidence supports depression screening in college students

Appendix F


BRIDGEWATER
STATE UNIVERSITY
WELLNESS CENTER
Thinking about Counseling support? Check out these resources:
Try one of our many online self-help resources or think about calling for an initial consultation!

Appendix G

Logic Model



Appendix H

Measurement and Analytic Strategy Table

Measures			
Objectives	How operationalize/measure	Information Source	Comparison
From September 15, 2021 to November15, 2021, students presenting to BSU health clinic for asymptomatic STI visits will be screened for depression using the PHQ-2.	90% of students seen for asymptomatic STI visits will be screened with the PHQ-2. Numerator: # students screened with the PHQ-2 / denominator total # of student seen for preventative care visits	Medical record Tracking tool Score 0---6	Yes
Students scoring between 2-6 on the PHQ-2 will be offered the PHQ-9	90 % of students that score 2 or greater on the PHQ-2 will complete the PHQ-9 and have a conversation with the APRN on the score. Numerator: # of students completing the PHQ-9 / Denominator # of students screening positive on the PHQ-2.	Medical record Tracking tool Score 0-27	Yes
Students with a score of 10 or greater on the PHQ-9 will be offered referral for evaluation of depression with an APRN	90% of students will follow up for referral and evaluation for MDD after scoring 10 or greater on the PHQ-9. Numerator: # of students who go on for referral and evaluation for MDD with APRN. Denominator: Number of students who scored + on the PHQ-9	Medical record Tracking tool	Yes
Students scoring between 4-9 on the PHQ-9 will be offered resources on symptomatic management and self-help tools	90% of students will receive resources (self-help tools, coping strategies, wellness tools) and symptomatic management if needed. Numerator # of students that received self-help information, resources, and symptomatic management. Denominator number of students that scored between 4-10 on the PHQ-9.	Medical record Tracking tool	Yes
Track number of students scoring 10 or greater on the PHQ-9 who do not return for referral and follow up with a phone call or email.	Track students who are lost to follow up for future PDSA cycles. 90% of those students receive a follow up phone call or email. Numerator: # of students who did not return for referral who scored >10 on the PHQ-9. Denominator: Total number of students who scored > 10 on the PHQ-9. 90% Follow up noted on the mental health note in chart	Medical record Tracking tool	Yes

Appendix I

Clinical Quality Checklist

CLINICAL QUALITY IMPROVEMENT CHECKLIST		
Date: April 1, 2021	**Project Leader: Marilyn J. Grabau FNP-C**	
Project Title: Implementing Universal Depression Screening in a College Health Clinic		
Institution where the project will be conducted:		
Instructions: Answer YES or NO to each of the following statements about QI projects.	**YES**	**NO**
The specific aim is to improve the process or deliver of care with established/ accepted practice standards, or to implement change according to mandates of the health facilities' Quality Improvement programs. There is no intention of using the data for research purposes.	**X**	
The project is **NOT** designed to answer a research question or test a hypothesis and is **NOT** intended to develop or contribute to generalizable knowledge.	**X**	
The project does **NOT** follow a research design (e.g. hypothesis testing or group comparison [randomization, control groups, prospective comparison groups, cross-sectional, case control]). The project does **NOT** follow a protocol that over-rides clinical decision-making.	**X**	
The project involves implementation of established and tested practice standards (evidence based practice) and/or systematic monitoring, assessment or evaluation of the organization to ensure that existing quality standards are being met. The project does **NOT** develop paradigms or untested methods or new untested standards.	**X**	
The project involves implementation or care practices and interventions that are consensus-based or evidence-based. The project does **NOT** seek to test an intervention that is beyond current science and experience.	**X**	
The project has been discussed with the QA/QI department where the project will be conducted and involves staff who are working at, or patients/clients/individuals who are seen at the facility where the project will be carried out.	**X**	
The project has **NO** funding from federal agencies or research-focused organizations, and is not receiving funding for implementation research.	**X**	
The clinical practice unit (hospital, clinic, division, or care group) agrees that this is a QI project that will be implemented to improve the process or delivery of care.	**X**	
The project leader/DNP student has discussed and reviewed the checklist with the project Course Faculty. The project leader/DNP student will **NOT** refer to the project as research in any written or oral presentations or publications.	**X**	
ANSWER KEY: If the answer to **ALL** of these questions is **YES**, the activity can be considered a Clinical Quality Improvement activity that does not meet the definition of human research. **UMB IRB review is not required**. **Keep a dated copy of the checklist in your files.** If the answer to ANY of these questions is NO, the project must be submitted to the IRB for review.		