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Standardizing Behavioral Health Triage: Using the HEADS-ED Tool

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Standardizing Behavioral Health Triage: Using the HEADS-ED Tool

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Table of Contents

Abstract5

Introduction6

 Background8

 Problem Statement9

 Analysis of Project Site9

Review of the Literature10

 Gaps in Care for Behavioral Health11

 Implications of Delayed Treatment12

 Benefits of Standardizing Care13

 Interventions Proposed in the Literature13

 Barriers to Standardized Care15

 Using the HEADS-ED Tool16

Theoretical Framework/Evidence Based Practice Model16

Goals, Objectives & Expected Outcomes17

 Goals & Objectives17

 Expected Outcomes18

 Table 1: DNP Goals, Objectives, Outcomes18

Methods19

 Project Site and Population19

 Clinical Care Pathways21

 Compilation of Resources22

 Community Coordination22

Clinical Implementation.....	23
Measurement Instrument(s)	24
Ethical Considerations/Protection of Human Subjects Results	24
Timeline	26
Results.....	27
Data Overview	27
Table 3: Patients Stratified by HEADS-ED Risk	27
Nursing Education	28
Staff Response to Intervention.....	28
Table 4 Staff Reflections	29
Resources Provided and Care Pathway Used	30
Table 5: Care Pathways Used based on HEADS-ED Risk.....	30
Table 6: HEADS-ED Score and Resources Provided.....	31
Analysis of Length of Stay	32
Table 7: Behavioral Health Volume and Length of Stay.....	33
Figure 7: Graph of ED Length of Stay.....	34
Figure 8: Percent of Behavioral Health Boarders Greater Than 24 Hours ...	35
Statistical Analysis of HEADS-ED Variables	36
Discussion.....	37
ED Length of Stay	38
Figure 14: Graph of Length of stay for 2020 and 2021	40
Staff Feedback	41
Facilitators.....	43

Barriers.....	43
Cost-Benefit Analysis	46
Intervention Improvements.....	46
Estimated Cost-Savings	47
Future Studies	49
Conclusion	50
References.....	52
Appendix.....	60
Appendix A: Table 2 Timeline for Implementation	60
Appendix B: Table 8 Cost for Project.....	62
Appendix C: Figure 1 Knowledge to Action Framework.....	63
Appendix D: Figure 2 HEADS-ED Triage Tool	64
Appendix E: Figure 3: HEADS-ED Clinical Care Pathways Based on Acuity	65
Appendix F: Figure 4: Education for Staff on HEADS-ED tool	66
Appendix G: Figure 5 Post Presentation Education Quiz.....	70
Appendix H: Figure 6 ED Behavioral Health Definition	71
Appendix I: Figure 9 HEADS-ED Score Distribution	72
Appendix J: Figure 10 HEADS-ED Screen Age Distribution	73
Appendix K: Figure 11 HEADS-ED Distribution of Gender Identity	74
Appendix L: Figure 12 HEADS-ED Associated Risk Levels	75
Appendix M: Figure 13 Patient Highest Level Referral	76
Appendix N: Figure 14 Pie Charts of HEADS-ED Assessed Domains	77
Appendix O: Figure 15 Bar Graph of Patients Provided with Resources.....	81

Abstract

Background: In the past two years emergency departments across the country have experienced an increase in pediatric patients requiring behavioral health care. It is essential to provide efficient, early intervention to these vulnerable patients. The use of a standardized tool can improve management of pediatric patients and allow access to resources in a timely manner.

Purpose: To evaluate the implementation of the HEADS-ED in a community hospital ED, to provide rapid behavioral health assessment.

Methods: Education for staff was provided through various platforms and involved regular support for staff throughout the intervention. It was hypothesized that implementation of this tool would improve efficiency and ability to manage behavioral health patient needs and decrease the behavioral health length of stay.

Results: While the length of stay decrease did not meet the project goal of 25%, there was a 15% decrease in the median length of stay. The screen was completed on 77 patients, 20.31% of all behavioral health patients and 1.97% of all pediatric ED patients, from age four to twenty. Of the patients screened, 61 patients or 79.2% screened were provided with a recommended resource.

There was positive response from staff and there were found to be multiple statistically significant relationships between multiple different variables assessed with the HEADS-ED tool, highlighting areas for future study.

Conclusion: This project outlines the steps required to implement a standardized tool for ED behavioral health triage, which staff reported as a positive intervention to provide rapid assessment and disposition planning.

Keywords: *emergency department, screening tools, quality improvement, mental health, behavioral health, HEADS-ED*

Introduction

The World Health Organization has identified a gap in health services causing significant global burden due to mental illness with approximately 20% of the world's children and adolescents having an underlying mental health condition (2020). This burden is felt in various areas including school, family and social relationships, and ability to participate in one's community (WHO, 2020).

Since April 2020, Emergency Department (ED) visits for children seeking mental health treatment have increased (Leeb et al., 2020). When compared with data from 2019, the visits for patients ages 5 years old to 11 years old increased 24%, and 12 years old to 17 years old increased 31%, from the year prior (Leeb et al., 2020). Pediatric patients with mental health treatment needs have twice the duration of stay time in the ED when compared with other comorbidities (Jabbour et al., 2018).

It is estimated that 75% of mental health disorders have first onset symptoms before 25 years of age (Malla et al., 2018). Mental health disorders have significant health, social, and economic impacts, on patients and their families (Malla et al., 2018). It has been well established that early intervention is effective and delayed treatment can contribute to substance use disorder, functional deficits, and worsening mental health symptoms (Malla et al., 2018).

Despite the knowledge that early intervention improves prognosis, the estimated delays in first intervention treatment include: one to two years for psychosis, nine to twenty-three years for anxiety disorders and six to eight years for mood disorders (Malla et al., 2018). Early emotional and social difficulties have been shown to have negative impacts in adulthood (Molnar et al., 2018). Delayed treatment can also have immediate

effects upon patients including increased suicide risk, increased risk for traffic accidents, difficulty with employment, increased risk for engagement with the legal system, and risk for overall decline in physical health (Malla et al., 2018).

Currently, there is no standard recommended mental health screening tool for pediatric patients in the ED, an issue which has been identified as a gap in care. While questions regarding suicide risk are regularly asked, if patients do not present as high risk with imminent safety concerns, they likely will not receive an emergent crisis evaluation. The resources provided and care offered for low to moderate risk patients with behavioral health treatment needs varies based on individual provider. Low and moderate risk patients, who may present with anxiety or signs of declining ability to engage in school, are not consistently screened or offered referral to treatment. The ED misses the opportunity to intervene early and places patients at risk for poorer outcomes when signs of underlying mental illness are present, yet not addressed (Winokur et al., 2018).

This is a particularly timely issue as the COVID pandemic has caused increased pediatric anxiety, decreased peer interaction, and limited extracurricular activities that historically have provided outlets for pediatric stress management (Fegert et al., 2020). This pandemic has also caused increased pediatric exposure to home environments filled with parental mental illness, domestic violence, and, at times, child neglect (Fegert et al., 2020). There will likely be significant mental health impacts from the COVID pandemic upon the youth for years to come. Innovative interventions are needed to address the emerging mental health epidemic.

COVID has impacted not only increasing mental health issues but has also contributed to what has been coined as the “Great Resignation” causing significant

healthcare staffing challenges across the country (Molle & Allegra, 2021). There has been estimated to be 70.6% of chief nursing officers across the country expressing difficulty with nursing turnover during the pandemic (Molle & Allegra, 2021). This highlights the urgent need to provide nursing with tools to improve efficiency in patient care with the limited resources and staff available.

Background

The ED uses a multidisciplinary treatment team to manage behavioral health patients, however, there is often significant role confusion and lack of clarity in the process of how to coordinate care (Lelonek et al., 2018). This gap in care contributes to longer ED lengths of stay and places patients at an increased risk for poorer outcomes; a process that also contributes to caregiver burnout (Winokur et al., 2018). This gap in care caused by impaired ability to coordinate between team members, has been identified as an opportunity for quality improvement (Stricker et al., 2018).

Research from the literature supports the use of a standardized integrated model (Reiss-Brennan et al., 2016). When implemented in healthcare settings, standardized integrated care has been observed to yield improved quality of care, increased efficiency, and reduced cost of care (Reiss- Brennan et al., 2010). In a retrospective analysis of a national database of ED visits, from 2002-2011, it was found that psychiatric patient's ED lengths of stay were longer than those of other patients (Zhu et al., 2016).

In a study implementing a standardized screening process for behavioral health patients, with the goal of decreasing length of stay, researchers found the evaluation time for behavioral health patients decreased from an average of 113 minutes to 73 minutes (Castellucci, 2020). While there have been limited randomized control studies of research

completed in the ED; it is theorized that a quality improvement project targeting the implementation of a standardized ED process will similarly improve patient care and decrease patient length of stay in the ED.

Problem Statement

Pediatric patients presenting to the ED are not routinely screened for early signs of behavioral health treatment needs, creating a missed opportunity for early intervention. There is a risk of poorer health outcomes for patients when behavioral health treatment is delayed. Not having a standardized process to triage and support behavioral health treatment needs in the ED results in limited referral to services, poorer health outcomes, increased staff burnout and frustration and prolonged ED patient stays.

Analysis of Project Site

In the ED, patients with underlying behavioral health issues can present with a variety of symptoms, at times presenting with seemingly unrelated clinical presentations with decompensation of medical comorbidities. This creates a unique challenge requiring complex treatment and coordination of interdisciplinary care providers to adequately address the patient's full medical and behavioral health treatment needs. With a medically complex patient population, research has shown that standardized integrated models of care provide improved quality of care and can increase efficiency and reduce cost (Reiss-Brennan et al., 2010).

Utilizing current Evidence Based Practice guidelines, this project implemented a standardized tool, the HEADS-ED screen, which was integrated into the medical model of care in the ED to improve current clinical practice. This tool helps provide a standardized early intervention and screening method when assessing pediatric patients

presenting to the ED for care. This tool supports brief screening clearly outlining team roles including when to refer patients to: primary care, outpatient resources or ED social work. The tool allows all team members to practice to the full extent of their education, training and experience.

Review of the Literature

A search of APA PsychInfo, Complementary Index, and Supplemental Index, was completed using the terms “*heads-ed or assessment tool or triage tool*” and “*innovative*” and “*mental health disorder or psychiatric*” and “*primary care or emergency department or emergency room or emergency service or ED or ER.*” Search results were limited to articles in English, that were scholarly peer reviewed and published between 2016-2022. This yielded thirteen results, three of which were removed due to lack of applicability and one of which was removed due to being a duplicate, resulting in nine remaining articles.

A further search to gain more information about the HEADS-ED tool was completed using the Academic Search Premier, Gale Academic OneFile, Social Sciences Citation Index, Science Citation Index, CINAHL Complete, and APA PsychInfo using the terms “*emergency department or emergency room*” and “*psychiatry or behavioral health or mental health*” and “*screening tool or assessment tool*” and “*heads-ed*” which yielded twelve results. These were limited to scholarly peer reviewed articles, published between 2016-2022, in English which decreased the results to five after duplicates were removed. This literature review then included a further search of the literature with six additional articles found that were relevant. The literature review then used the combination of the aforementioned searches resulting in the review of twenty studies.

Using the John Hopkins Nursing Evidence-Based Practice Rating Scale by Newhouse et al., the twenty research studies were sorted based on their strength and quality of evidence (2005). Eight articles were rated with a strength of evidence as that of a level I, seven were rated as evidence of a level II, and five were rated as that of a level III (Newhouse et al., 2005). Using this quality rating-scale the quality of evidence was classified as high-quality in thirteen of the studies, and in seven of the studies the quality of evidence was classified as good quality, no studies of low-quality evidence were used for this literature review (Newhouse et al., 2005).

Gaps in Care for Behavioral Health

The literature identified that many organizations do not have a standardized method for screening behavioral health patients, which was identified as a gap in care (Fernandes et al., 2020). The literature identified frequent ED use as being costly and indicative of patients receiving inadequate care in the community, making this gap in care one of high priority (Gabet et al., 2020). Lack of community care was identified as causing worsened patient outcomes, which contributed to patient dissatisfaction with care, and in turn contributed to staff burnout (Gabet et al., 2020). It has been estimated that 60-70% of patients with psychiatric concerns leave their medical treatment without receiving appropriate behavioral health services or referral to services and are subsequently less likely to be able to manage their physical treatment needs (Sattler et al., 2019).

Further complicating the challenge of accessing mental health care is the ongoing confusion and poor understanding among the ED and community agencies regarding what service each organization is able to provide; this often results in problematic

transitions between outpatient and acute levels of care (Jabbour et al., 2018). Going forward there is opportunity to better clarify care pathways for patients seeking behavioral health services. To successfully close this identified gap in care, there is a need to engage both acute care and community-based resources to better coordinate how to meet expanding pediatric behavioral health treatment needs.

Most evidence-based screening tools used for mental illness are illness specific and many health systems do not use any formalized broad screening tool to assess mental health (Hume et al., 2021). This puts patients with signs of mental illness who do not fit specific diagnostic criteria at risk of being missed when screening tools like the PHQ-9 or GAD-7 are used. The Joint Commission's national patient safety goal number fifteen outlines that hospitals need to identify and address emotional and behavioral health needs across specialties (Agency for Health Care Research, 2018). Despite this national goal, there continues to be a gap in care for patients with behavioral health whom are not accessing screening or receiving timely behavioral health care through the medical health system (Sattler et al., 2019). This provides opportunity for innovative interventions to standardize care and help close this observed gap.

Implications of Delayed Treatment

Many individuals often wait over a decade between when they first experience symptoms of mental illness and when they begin treatment (Hume et al., 2021). Early identification and treatment of mental health symptoms has been linked to better treatment outcomes for patients (Hume et al., 2021). Patients have identified factors contributing to delayed treatment, the primary one of which was as lack of awareness of mental health treatment being needed. This provides an opportunity for valuable added

care to be provided through early intervention screening programs and increased education for staff and patients regarding emerging mental health signs and symptoms (Hume et al., 2021).

Benefits of Standardizing Care

The literature supports the use of a standardized tool in assessment of patients and found the use of a standard tool improved patient quality of mental health care when implemented in practice (Polihronis et al., 2016). Standardized tools were found to facilitate decision making and provide guidelines for disposition planning (Clark et al., 2019).

Interventions Proposed in the Literature

The literature identified several different methods to standardize management of care through a variety of different tools. One study used a readmission predictor tool in combination with a nurse case manager to help facilitate contact post discharge to reduce rates of patient hospital readmission (Ramsbottom et al., 2018). This study found a 29.5% reduction of 30-day readmissions after implementing the intervention in a one-year pilot (Ramsbottom et al., 2018).

Additional recommendations for improving care included: standardized clinical pathways for ED care, increasing access to evidence based care in the community for children, youth, and families, establishing alternative treatment centers from the ED, and expanding efforts to coordinate and follow up with community-based resources for children and youth who are discharged from the ED (Hoge et al., 2021).

Intervention through early screening and referral to treatment were also found to improve quality of care (Molnar et al., 2018). Specific improvements were identified

when programs used embedded clinicians to provide the interventions (Molnar et al., 2018). Use of an integrated trained family partner and mental health clinician was found to improve patient and caregiver social and emotional health (Molnar et al., 2018).

Throughout the literature there was consensus that integration of mental health assessment through a standardized model, improved patient outcomes (Jayaram et al., 2019; Molnar et al., 2018; Sanchez et al., 2017). Alternative integrated interventions proposed included: the use of a case manager to provide telephone follow up for mental health patients identified as high to moderate risk, ED interventions to train and supervise peer support staff with mental health professionals, and use of psychiatry and brief psychosocial interventions to improve ED care (Gabet et al., 2020; Remsbottom et al 2018).

There was found to be value added by providing training of the ED workforce in how to assess and treat children and youth with behavioral health treatment needs (Hoge et al., 2021). Providing formalized training of the ED workforce in how to assess and treat children and youth with behavioral health treatment needs was also found to provide benefit; as was providing education to parents and guardians about the ED services and alternative community-based resources (Hoge et al., 2021). A novel approach used in one ED study included the use of a community based behavioral health evaluation prior to presenting to the ED which was found to improve triage of patients and reduce wait time boarding in the ED (Jewell et al., 2022).

Innovative tools proposed throughout the literature to improve care included: genetic testing to help with narrowing treatment recommendations, implementation of a body mind approach to enhance mindfulness practice, and standardized interventions

aimed at promoting shared decision-making with patients on treatment planning (Herbert et al., 2018; Payne & Brooks, 2016; Samalin et al., 2018). All of these interventions were found to provide novel approaches to improve care and reduce ED visits, but not all of these tools were able to provide a generalized assessment of behavioral health patient risk level or provide guidance on disposition planning, which the HEADS-ED tools offers (Herbert et al., 2018; Payne & Brooks, 2016; Samalin et al., 2018).

Barriers to Standardized Care

While the literature identified benefits to standardizing care, it also identified many barriers to implementing standardized processes for the management of behavioral health treatment. These barriers were identified to include: lack of funding, organizational barriers, lack of quality assessment methods, lack of structured referral process, lack of inter-professional collaboration and the ongoing stigma surrounding mental health (Gabet et al., 2020; Payne & Brooks, 2016). The literature identifies many medical providers as feeling uncomfortable with management of complex behavioral health treatment needs (Ozkara et al., 2019). There have also been increased health inequities with patients with behavioral health issues being treated differently than those with non-mental health issues, this is layered by additional racial and ethnic disparities observed in health care. Further compounding the issue includes variations in behavioral health care that are offered to patients with insurance and those without (Hoge et al., 2021). One solution proposed, was offering a standardized patient simulation, to support developing culturally competent clinicians while combating health disparities and stigma around vulnerable populations (Ozkara et al., 2019).

While behavioral health treatment needs for patients can be challenging to navigate and assess, a standardized tool can help facilitate rapid assessment and help arm non-specialist clinicians to accurately identify patient behavioral health treatment needs in a timely manner.

Using the HEADS-ED Tool

The literature identified increased pediatric mental health treatment needs in the ED as a gap in system care, with five of the reviewed articles supporting the use of the HEADS-ED tool to facilitate rapid triage and referral to behavioral health services (Fernandes et al., 2020; Gray, 2019; Jabbour et al., 2018; Newton et al., 2017; Polihronis et al., 2016). The HEADS-ED tool provided high inter-rater reliability when compared with different ED clinicians and was found to provide high sensitivity (0.82) and high specificity (0.87) for determining if patients needed emergent mental health consultation or discharge (Gray, 2019; Newton et al., 2017). Surveyed respondents who received a tailored referral from the HEADS-ED tool, expressed feeling the recommendations were more useful than reports from patients who received generic referrals (Polihronis et al., 2016). There was consensus within the literature that the HEADS-ED tool supported rapid pediatric patient assessment and guided clinical decision-making in patient care.

Theoretical Framework or Evidence Based Practice Model

In implementing this quality improvement project, the knowledge-to-action theoretical framework was used. This framework uses research to create knowledge, which is then used to drive change (Luskin-Saxby & Paynter, 2018). Refer to Figure 1, for further details on the knowledge-to-action cycle (Graham et al., 2006).

For this project the knowledge was from research relating to standardized triage tools improving efficiency and decreasing variation in care, along with, the HEADS-ED tool, which is reliable, and evidence based. This knowledge was used to implement change. The change that was hoped to be gained from this project was that of providing clinicians with a tool to standardize rapid assessment of mental health in the ED. This knowledge will be put into action as the HEADS-ED tool is implemented into daily clinical practice to improve patient quality of care in the ED. This intervention is being done to bridge an identified gap in care between known evidence based best practice and current clinical behaviors (Field et al., 2014).

Goals, Objectives & Expected Outcomes

The goals of this intervention were to standardize and expand the screening process for behavioral health in the pediatric ED. A primary goal was to provide medical providers and nursing with education regarding the use of a standardized tool for behavioral health assessment of patients and providing staff with local resources to refer patients. This project's goal was to achieve a 95% education of nursing staff and 75% screening of patients presenting through the ED with the HEADS-ED tool during the pilot period from October 2021 to December 2021.

The objectives of this intervention were to improve early screening and referral to services for patients using the HEADS-ED tool. The first objective of this project was to offer an educational program to 100% of the pediatric emergency department nursing staff regarding the use of the HEADS-ED tool and engage at least 95% of staff in the educational offerings. Additional objectives included the use of the tool in clinical

practice and use of the recommended care pathway for patients who screen positive on the tool. See Table 1. for a summary.

Table 1:

DNP Goals, Objectives, and Outcomes

Goal	Objective(s)	Outcome(s)
<i>-The implementation of the standardized HEADS-ED tool will provide a method to consistently triage behavioral health patients and offer early intervention resources to patients at risk who score positively on the HEADS-ED tool.</i>	<ul style="list-style-type: none"> <i>-Education of 100% of staff on the HEADS-ED tool for triage</i> <i>-Support of the pediatric emergency department by providing resources for staff for pediatric behavioral health patients and use of these resources 95% of the time when patients score positively with the HEADS-ED tool.</i> 	<ul style="list-style-type: none"> <i>-At least 75% use of this tool for pediatric patients presenting to the ED during the pilot period.</i> <i>-25% decreased in median behavioral health patient length of stay in the emergency department.</i> <i>- 95% staff use of at least one resource for patients who score positively with the HEADS-ED tool</i> <i>-Positive staff perceptive of HEADS-ED intervention</i>

The expected outcome of this intervention was for the HEADS-ED tool to be used by staff to assess all pediatric patients who present to the pediatric ED during the intervention pilot period. The goal was for there to be at least 95% staff engagement in education and 75% use of this standardized tool on patients presenting to the ED during the project. This was measured through assessing the number of screens that were completed by nursing staff during the intervention compared with the number of patients

who presented to the ED during that period. A secondary outcome measure was the percentage of patients who screen positive and were provided with resources. The target was to achieve 95% use of at least one resource for patients who score positively on the HEADS-ED screening tool.

An additional outcome measure for this project was behavioral health patient length of stay. It was proposed that the use of the screening tool would decrease behavioral health patient length of stay in the ED. The benchmark used for this was the average length of stay for behavioral health patients in the ED for the month prior to the implementation of the standardized tool with an anticipated 25% decrease in the median behavioral health patient length of stay in the ED after the intervention.

The last outcome measure that was evaluated was that of staff response to education and use of the HEADS-ED tool. It was proposed that there would be a positive response to the use of a standardized method of triaging patients. This was evaluated from staff survey through an anonymous survey along with in person focus group interviews post intervention.

Methods

Project Site and Population

This quality improvement project was implemented in the pediatric emergency department in a suburban hospital in Massachusetts. This is a community-based hospital with limited on-site behavioral health resources. Mental health clinicians are embedded from local community behavioral health and substance use treatment organizations to provide patient access to specialty treatment needs from the ED. While ongoing

collaborative partnerships with community organizations continue to be developed, there has not yet been an intervention targeting role clarity and standardized process for integrating these services. This was an aim of this quality improvement initiative.

This project targeted male, female, and non-binary patients, aged four to seventeen who presented to the ED between October 2021-December 2021. This screening was initially recommended to be performed on all patients presenting to the emergency department within the four to seventeen age range. Due to staffing shortages, and COVID pandemic limitations, the tool ended up being used primarily for screening of moderate to low risk behavioral health patients to help the ED team assess patient safety for discharge. It was not routinely offered to patients who were not already identified as behavioral health and was not offered to all behavioral health patients presenting to the ED, despite these being pre-implementation goals. The intervention was also offered to patients above the seventeen year upper age limit on the tool as the pediatric emergency department within the implementation hospital cares for patients from infancy to twenty-two.

The patient population served within this community is predominately white middle to upper class families with smaller populations presenting from rural neighboring towns. The nursing staff completed the standardized evaluation as part of nursing triage assessment. The tool was then collected for review by the patient's medical provider who reviewed the patient risk level and then determined the disposition plan including options for discharge from the ED with resources or holding the patient in the ED for further social work evaluation.

Clinical Care Pathways

For the use of the HEADS-ED clinical tool there were clearly outlined clinical pathways that were recommended based on patient acuity assessment from the HEADS-ED tool, (see Figure 2 for the HEADS-ED tool and Figure 3 for the outlined different pathways). The recommended clinical pathways were included on the paper HEADS-ED screen used by staff, to help support the ED team with their clinical decision making.

There was coordination with the community based mental health organization that provides the social work services for the emergency department. It was through discussion with hospital leadership, community mental health leadership and review of the literature review that low, moderate, and high care pathways were created.

The clinical pathway for low acuity, included those assessed to have a score between zero and four on the HEADS-ED. Low acuity patients were recommended to be provided targeted resources from the resource folder, and it was recommended that their family member be notified of their being in the ED.

Moderate acuity patients, who score four to eight on the HEADS-ED tool, were recommended to provide the following: targeted resources, family was notified and staff encouraged to contact the primary regarding the patient's ED visit and resultant identification as behavioral screening being moderate acuity. With moderate acuity patients, if needed, there was an additional option to schedule a next day crisis team follow up in the community for further evaluation and support. This was a new referral option for the pediatric emergency department team to divert moderate risk patients to the community for behavioral health support. There was support from the ED leadership and

the community mental health partner to implement this new clinical resource through the pilot program using the HEADS-ED screen as a triage tool.

For high acuity patients scoring eight or more or a two on the suicide risk assessment on the HEADS-ED tool, they were recommended to have an emergent crisis evaluation in the ED. It was also recommended that they be provided resources, family be notified, and primary care also be notified of patients ED visit.

Compilation of Resources

There was a resource manual that was created for the pediatric emergency department. This included resources on outpatient services along with handouts on specific illnesses including anxiety, depression, and psychosis. There were additional resources on: how to manage home stressors, how to navigate stressors at school and information on how to access educational supports, and resources for substance use. There were also resources for specialized populations including patients with eating disorders, self-injurious behaviors and learning disabilities. The outpatient provider list was updated with calls placed to all providers on the list and age ranges verified as to if the clinics were accepting pediatric patients at the time of the pilot intervention.

Community Coordination

To help close the gap in care provided between the emergency department and the community; prior to implementing the pilot there was communication with the local primary care offices regarding the HEADS-ED pilot. The local pediatric primary care offices were called to notify them of the pilot being implemented in the ED. The offices, when contacted, were engaged in discussing how they manage behavioral health treatment needs for their patients. A few of the local offices, expressed having integrated

behavioral health services for their patients, yet most expressed having outsourced their behavioral health supports to an offsite organization.

The offsite organizations were also coordinated with. An open-line of communication was created to discuss program developments along with community-based issues or concerns to help improve transitions of care for patients. The local offices during this process were educated on the HEADS-ED tool and were informed that if their patients were sent to the ED for evaluation their patient may be screened for behavioral health services treatment needs.

This process of communication with local community resources, aimed to help build local community connections and help educate the community primary care providers regarding the pilot program occurring in the ED. Many of the pediatric offices expressed having difficulty managing their behavioral health patient's treatment needs and were enthusiastic about the implementation of a pilot program to better screen and refer patients to behavioral health services.

Clinical Implementation

Implementation of the screening tool began with education of clinical staff which was completed through a variety of methods. These included: the use of an online educational presentation (Figure 4 and 5), email campaigns with associated survey to collect staff concerns related to the pilot and a quiz on the material covered in the emailed education. Additional education was provided through one-on-one nursing and in person education in real time throughout the pilot. Education of pediatricians was completed through educational emails as well as an overview presentation provided during the pediatric staff meeting. Providers also received hands on support during the pilot

implementation. Additional support provided to staff included handouts, email reminders and embedded clinical HEADS-ED lead clinicians which included an ED pediatric nurse and ED pediatrician to help assist with clinical questions.

Measurement Instruments

This quality improvement project measured the staff use of the HEADS-ED tool on all pediatric patients screened through the pediatric ED. The number of patients that staff screened using the HEADS-ED tool, patient responses, and staff care offered after being screened; were all collected data that was analyzed for this project. Results from the HEADS-ED tool, including patient screening scores and the associated domains on the HEADS-ED scores where points were scored were also assessed. An excel data sheet was used to monitor and share results of the quality indicators and this was managed and analyzed using the SPSS software.

The quality metric of screenings offered was measured using the number of patients screened compared with the number of patients who presented to the ED and were identified as a behavioral health patient (refer to Figure 6 for behavioral health patient definition). The number of patients presenting to the ED during this period was limited to patients that presented within the age range that were offered the screen.

Ethical Considerations/Protection of Human Subjects

As with any project involving human subjects, there was clear identification of ethical considerations surrounding the proposal. Precautions for patient privacy were taken throughout this project, including the project being screened and deemed non-human subjects research by both the hospital's IRB and University of Massachusetts, Amherst's IRB. This quality improvement project involved data on patient's presenting

to the ED and required provisions to protect subject privacy and maintain confidentiality of data (Walch-Patterson, 2020). In an effort to promote confidentiality, patient direct identifiers including names, medical record numbers, and home addresses, were not included in the data collected.

For additional safeguarding, each case was de-identified and labeled with a different patient number. Once patient information was collected from the paper screens, data was stored on an encrypted secure server at the hospital. The data was password protected accessible by log in, only by specific clinicians involved in the quality improvement project. Data analysis was then completed using the de-identified patient information and was completed using SPSS software to assess frequencies and statistical significance.

In this quality improvement intervention participants were protected by the Health Insurance Portability and Accountability Act of 1996 (HIPAA) guaranteeing the protection of patient privacy regarding their health information and care (Department of Health and Human Services, 2013). All individuals involved in this quality improvement intervention were required to follow South Shore Hospital's standards of care and were required to complete the South Shore Hospital HIPPA training requirement. All information and data collected for this quality improvement intervention was aggregated and collected without patient identifiers.

Involvement in this quality improvement project was deemed to provide no different risks than those incurred through standard care through South Shore Hospital. Confidentiality was maintained throughout the project by de-identifying patient data and

using separate numerical identifiers to code collected data. Throughout the project patient privacy and protection of patient health information was maintained.

Timeline

This quality improvement project required implementation discussions with hospital leadership which began over the summer of 2021. During the initial meetings team members and key stake holders were convened to outline steps needed to implement the standardized triage tool. In September 2021, once a clear patient care process had been established, staff were educated on the tool and the recommended process of use in the ED to help with behavioral health screening. The tool was then implemented for use in the pediatric emergency department in early October. This was delayed for two weeks due to a pending Joint Commission Survey which ultimately occurred during the second week of the project implementation. Throughout the intervention, regular check-ins occurred with nursing staff in the pediatric emergency department. There was also “on demand” support for staff who reached out, as needed, to the lead psychiatric nurse practitioner for support.

Throughout the project, weekly behavioral health meetings with key stakeholders occurred on Friday mornings and provided opportunity to identify any points of concern and areas for improvement in real time with ED leaders. There was a predetermined clinical point of contact in the pediatric emergency department, to raise any concerns from staff regarding clinical care when using the HEADS-ED tool. This included a primary nurse and primary pediatrician. The initial volunteer for the primary nurse had to take medical leave the week prior to implementation and subsequently an alternative nursing leader volunteered to act as the nursing project lead. Throughout the

implementation of this quality improvement project, there was staff support from a psychiatric nurse practitioner, on site in the ED. Refer to Table 2, for a more detailed outline of the project timeline.

Results

During the pilot period from October 2021 to December 2021 there were 77 HEADS-ED screens completed in the pediatric emergency department. The surveys were completed by hand by nursing and collected after completion by the unit coordinator. Refer to the Table 3 below, for further statistics on the surveys collected.

Table 3

Patients Stratified by HEADS-ED Risk

Gender Identity	Male			Female			Non-Binary				
	Total #	Total %	Mean Age	N	% within Risk level	Mean Age	N	% within Risk level	Mean Age	N	% within Risk level
Low	21	27%	16	7	35.0%	13	13	65.0%		0	0%
Moderate	34	54%	16	15	44.1%	15	19	55.9%		0	0%
High	22	28%	16	4	18.2%	15	17	77.3%	12	1	6.3%

Note. This table shows stratified data from the intervention showing the number and percent of patients screened based on HEADS-ED risk and gender with average age based on risk level.

The surveys completed were found to include eight completed on patients ages 18-20 falling outside of the tools validated window. The screen was completed using a paper sheet during the project and the screen itself did not become part of the formal medical record but was collected and used for data analysis.

In the screens completed 49 or 64% of the patients identified as female, 26 or 34% identified as male and 1 or 2% identified as non-binary. Of the screens completed there were 21 patients who scored low risk or 27%, 34 patients who scored moderate risk or 44%, and 22 patients who scored high risk or 29%.

Nursing Education

Education was offered to 100% of the nurses by an email campaign. There was engagement by 15 of the 25 pediatric nurses in 1:1 training education in the ED, and engagement from 4 nurses who partook in a survey virtual tutorial resulting in 76% of nursing engagement with training offered.

The tool was completed on 77 patients, equating to 20.31% of all behavioral health patients and 1.97% of all pediatric ED patients ages four to twenty years of age who presented to the ED over the three-month pilot period. Of the 77 patients who screened positive 61 patients or 79.2% were provided with a resource of which may have included: referral to outpatient resources, follow-up with primary care, an evaluation the next day in the community or a social work evaluation in the ED.

Staff Response to Intervention

Interviews with staff to review feedback from the pilot were conducted to assess staff response. Interview quotes were summarized below in table 4.

Table 4*Staff Reflections on Use of Heads up Tool*

Staff Member	Reflection
Pediatric MD	<p><i>“I really like the discharge and follow up for those with low scores”</i></p> <p><i>“The one thing I think needs to be highlighted/big bold letters is the part about if you score low but are SI you need to stay. Also, maybe some more resources that are useful for aggressive children”</i></p>
Pediatric MD	<i>“For the right situation, great resource/option”</i>
Director of Pediatric Emergency Services/Pediatric MD	<p><i>“I think it’s great”</i></p> <p><i>“I might bold and underline the statement at the top that says if any plan or attempt then total score irrelevant and they must stay”</i></p> <p><i>“Overall, it’s done a lot of good”</i></p>
Pediatric MD	<i>“This is great that we are finding a way to expedite care for low-risk psych patients”</i>
Pediatric RN	<i>“Wonderful to see the direct impact this had on the patients. I loved sending kids home knowing they would be supported”</i>
Pediatric RN	<p><i>“Providers love it”</i></p> <p><i>“It’s great for kids who don’t meet the criteria for inpatient”</i></p> <p><i>“Parents like it too”</i></p>
Pediatric MD	<i>“LOVE IT!!! Send most patients home with it”</i>

Note. This table shows the reflections from ED staff members who have used the HEADS-ED tool.

Resources Provided and Care Pathway Used

Of the patients screened with the HEADS-ED tool, 54% were provided with the recommended care pathway based on their HEADS-ED score. Data on the care pathways and HEADS-ED screening risk is outlined below in Table 5.

Table 5

Care Pathways Used Based on HEADS ED Risk

Care pathway used	Low Risk			Moderate Risk			High Risk		
	Mean score	# surveys	Row %	Mean score	# surveys	Row %	Mean score	# surveys	Row %
Followed care pathway	3	6	14%	5	18	43%	6	18	43%
Used less than recommended resources		0	0%	5	1	50%	8	1	50%
Used more than recommended resources	2	8	47%	5	8	47%	8	1	6%
Unclear pathways used	2	7	44%	5	7	44%	8	2	12%
	# Patients and associated % of all screened								
Received a resource from the ED regardless of pathway	Resources provided	61 patients out of 77 with positive screens = 79.2%							
	Unclear if Resources were provided	16 patients out of 77 patients with positive screens = 20.8%							

Note. This table shows stratified data from the intervention showing HEADS-ED average score per risk category and the associated care pathway that was used by staff.

Of the patients who were screened using the HEADS-ED tool, 44 of the patient's families were notified and 18 of the patient's PCPs were notified that they presented to

the ED and scored positively in their mental health screening. In this pilot period from October-December, 24 patients had a next day social work evaluation and 27 had an evaluation by social work while in the ED. Refer to Table 6 for a further detailed breakdown of the heads ED score and resources provided.

Table 6*HEADS-ED Score and Resources Provided*

BH Risk Level based on HEADS-ED Score			Heads ED Score												
			Low				Moderate				High				
Pathway and Resources		Score	N	Mean	Mode	Row %	N	Mean	Mode	Row %	N	Mean	Mode	Row %	
Followed Care Pathway	Resources from the ED	No	0			0%	3	6	5	100%	0			0%	
		Yes	5	2	3	20%	14	5	4	56%	6	5	4	24%	
	Family Notified	No	0			0%	0			0%	0			0%	
		Yes	6	3	3	19.4%	17	5	4	54.8%	8	6	4	25.8%	
	PCP	No	4	3	3	36.4%	4	5	5	36.4%	3	7	2	27.3%	
		Yes	0			0%	13	5	4	92.9%	1	4	4	7.1%	
	Next Day SW eval	No	5	2	3	50%	0			0%	5	6	8	50%	
		Yes	0			0%	17	5	4	100%	0			0%	
	ED SW eval	No	5	2		22.7%	17	5	4	77.3%	0			0%	
		Yes	0			0%	0			0%	18	6	4	100%	
	Used Less than Recommended	Resources from the ED	No	0			0%	0			0%	0			0%
			Yes	0			0%	1	5	5	50%	1	8	8	50%
Family Notified		No	0			0%	0			0%	0			0%	
		Yes	0			0%	1	5	5	100%	0			0%	
PCP		No	0			0%	0			0%	0			0%	
		Yes	0			0%	0			0%	0			0%	
Next Day SW eval		No	0			0%	0			0%	0			0%	
		Yes	0			0%	0			0%	0			0%	
ED SW eval		No	0			0%	0			0%	0			0%	
		Yes	0			0%	0			0%	0			0%	
Used More than Recommended		Resources from the ED	No	0			0%	0			0%	1	8	8	100%
			Yes	7	2	2	50%	7	5	5	50%	0			0%
	Family Notified	No	1	3	3	33.3%	1	7	7	33.3%	1	8	8	33.3%	
		Yes	6	2	2	50%	6	5	5	50%	0			0%	
	PCP	No	4	3	3	40%	5	6	5	50%	1	8	8	10%	
		Yes	4	2	2	100%	0			0%	0			0%	
	Next Day SW eval	No	1	2	2	14.3%	5	6	5	71.4%	1	8	8	14.3%	

	Yes	7	2	3	100%	0		0%	0		0%		
ED SW eval	No	8	2	3	100%	0		0%	0		0%		
	Yes	0			0%	8	5	5	88.9	1	8	8	11.1%
									%				

Note. This table shows the HEADS-ED scores and associated risk level along with the associated care pathway, greyed areas indicate areas without meaningful data. Risk was defined as follows, Low 0-3, Moderate 4-7, High 8+. Scores in the High risk also include patients who have scored a two on suicide risk, subsequently many of the Heads ED scores in the High category are below the High score range of 8+ as they qualify as High based on the suicide risk.

In review of the recommended pathways, 2 of the screened cases, 3% of those screened, used less resources than recommended, 17 of the patients, 22% of those screened, received more resources than recommended, and 42 of the patients, 54% of those screened, received care through the recommended care pathway based on their HEADS-ED score. There was incomplete data obtained from the screens with 16 of the patients who were screened resulting in 21% of those screened having an unclear care clinical pathway provided by nursing.

Analysis of Length of Stay

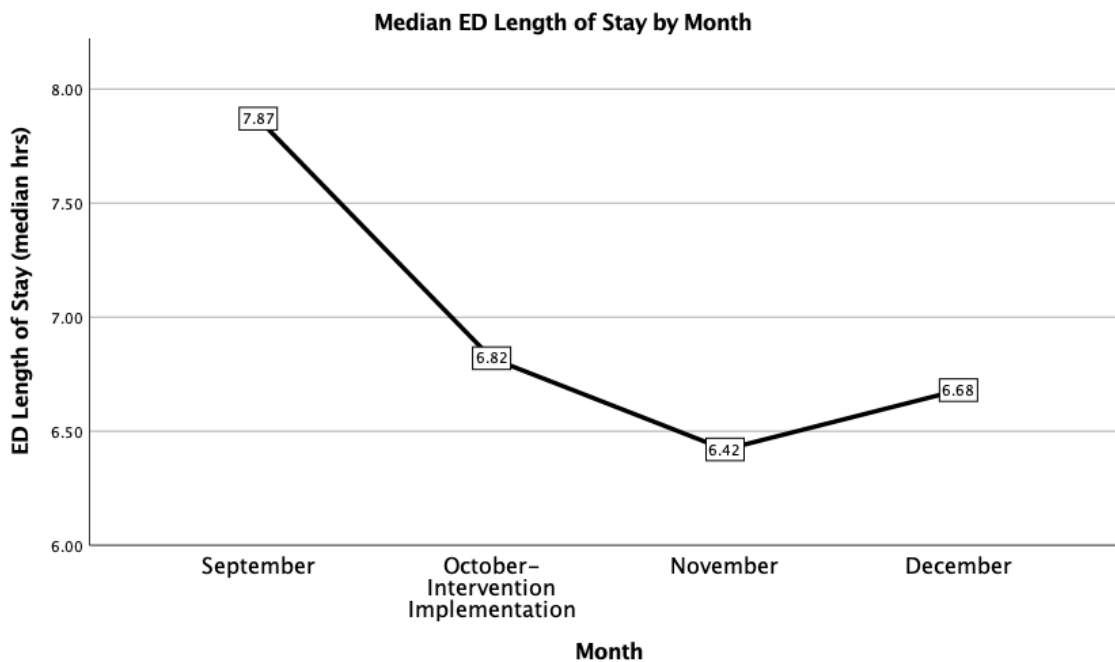
It was proposed that through the implementation of the standardized screening tool that the length of stay for behavioral health pediatric patients would decrease, refer to Table 7 for further outline of the length of stay data along with data reflective of the number of pediatric patients presenting to the ED.

Table 7*Behavioral Health Patient Volume and Length of Stay*

Month	BH pediatric volume (% of total Pedi ED volume)	Total pediatric ED volume	LOS for BH patients prior to DC	% BH volume with a LOS over 24 hrs
September	119 (9.76%)	1219	7.87 hrs	30.3%
October	138 (10.11%)	1365	6.82 hrs	21.7%
November	124 (9.53%)	1301	6.42 hrs	26.6%
December	117 (9.38%)	1247	6.68 hrs	28.2%
Total during Pilot Oct/Nov/Dec	379	3913		
% HEADS-ED Screened	20.31%	1.97%		

Note. This table shows data regarding the behavioral health (BH) pediatric patient volume during the pilot and shows percentage of BH compared to total pediatric ED volume, additionally shows length of stay (LOS) in the ED along with percentage of BH volume with a LOS over 24 hours in the department. Shaded month is pre-intervention.

The data collected regarding length of stay, as outlined above, is graphically organized using the SPSS software, in Figure 7.

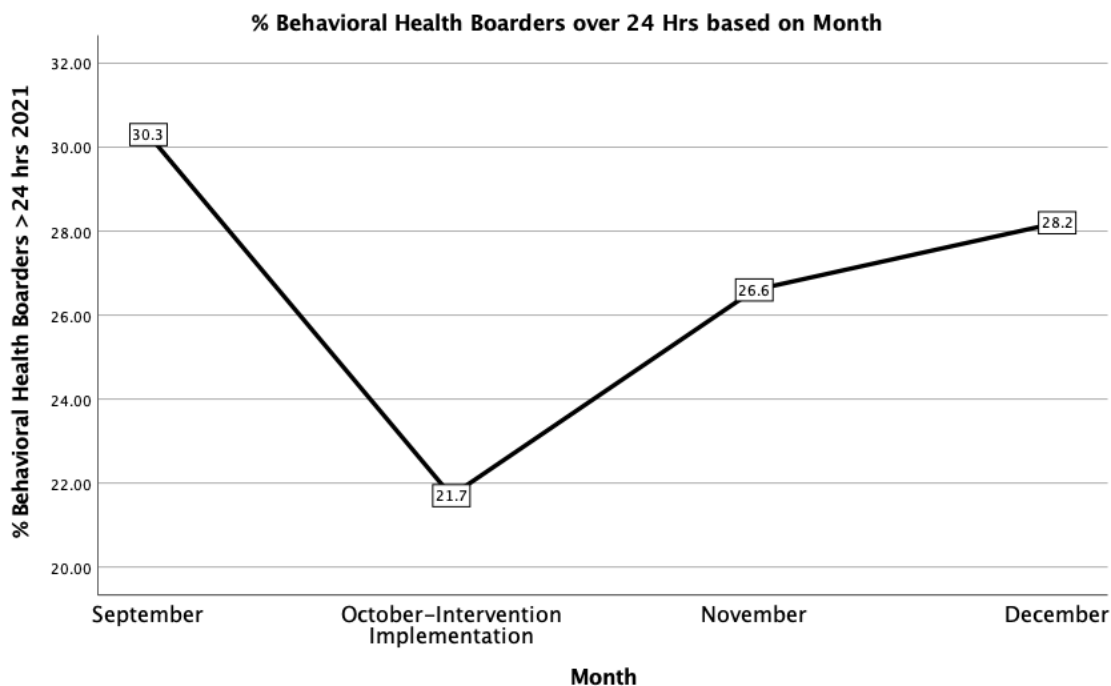
Figure 7*Graph of ED Length of Stay*

Note. This figure shows a graph of the length of stay over time based on intervention month.

The median length of stay decreased over the course of the pilot project, decreasing from 7.87 hours in September to 6.68 hours in December. This showed a 15% decrease in behavioral health patient length of stay over the course of the pilot program. Additional data reviewed included the percent of behavioral health boarders with a length of stay in the ED over 24 hours, see Figure 8.

Figure 8

Percent of Behavioral Health Boarders Greater Than 24 Hours



Note. This figure shows a graph of the percent of behavioral health boarders over 24 hours based on month.

The percentage of behavioral health boarders over 24 hours decreased significantly from September to October then appeared to increase from October to December. The percentage decreased from 30.3% in September, pre-intervention, to 21.7%, post intervention in October. The percentage increased from 21.7% in October, post intervention, to 28.2%, post intervention in December. As the HEADS-ED tool was not always completed upon patient initial presentation to the ED and staff reported it was occasionally used later in care when ED staff were told there would be prolonged wait times for the ED social worker; the tool may have contributed to decreasing the

prolonged behavioral health boarders that otherwise may have remained in the ED past the 24-hour mark.

Statistical Analysis of HEADS-ED Variables

A chi-squared test of independence was performed to examine the relationship between the different variables assessed for in the HEADS-ED tool along with the variables of patient gender and age. There were four primary associations found in the data. There was an association found in the relationship between age and the patients disposition plan. The relationship between these variables was found to be significant $\chi^2(30, N=61) = 80.510, p = <0.001$. This indicated that older patients screened had a higher likelihood of requiring a higher level of care from the ED.

There was an association found with individuals who scored high on their HEADS-ED screen on education and employment and higher scores on the domain assessing for emotions, behaviors and thought disturbance. This relationship was found to be significant $\chi^2(4, N= 77) = 17.908, p = 0.001$. This indicated that in the patients screened higher rates of difficulty in education and employment was associated with also having difficulty with emotional, behavioral, or thought disturbances.

There was association found with individuals who scored highly for having withdrawal from activities and peers as they were found to have associated higher scores on difficulty with emotions, behaviors and thought disturbance. The relationship was found to be significant $\chi^2(4, N= 77) = 12.923, p = 0.012$. Indicating individuals with difficulty with emotions, behaviors and thoughts were also more withdrawn from activities and peers.

Lastly, there was found to be a correlation between increased patient age and increased impairment with activities and peers; with the relationship being found to be significant $\chi^2 (22, N= 76) = 43.755, p = 0.004$. This indicates that older children screened with the tool were more likely show increased withdrawal from activities and their peers compared with the younger patients screened. Further graphical depiction of the data collected from the HEADS-ED scores can be found in Figures 9-14.

Discussion

The HEADS-ED tool has been validated for use on patients ages 4-17, yet the pediatric emergency department includes patients from infancy to 22 years of age. There were eight surveys completed on patients ages 18-20, as they were a part of the patient population at the site of interest, this data was included in the data analysis. The patient population that was used for reference was subsequently expanded to include patients presenting to the ED ages 4-20.

While the project's goal was to achieve 100% of staff being offered education and have 95% of staff engage with education offered, the intervention met the 100% staff being offered education but only met 76% of staff engaging with the education provided. The goal of 75% compliance with the use of the HEADS-ED tool was also not met, only 20.31% of behavioral health patients were screened and only 1.97 % of all pediatric patients were screened using the tool during the pilot period. For the secondary outcome measure of how many patients who screened positive were provided with resources, the data showed 79.2% of patients who screened positive were provided with resources, this was below the target goal of 95%.

There was a significant percentage of patients who were screened positive on the HEADS-ED tool, yet nursing did not clearly record the disposition and care offered to the patient. If the number of patients with incomplete data (16 patients) are removed from the analysis, that leaves 61 patients receiving resources out of 61 patients who scored positively on the tool, shifting the percentage of resources provided to positive screens to 100 % of patients who had a documented care plan and disposition. Figure 13 further illustrates the breakdown of resources provided.

The screen was initially proposed to be used for assessment of all patients, but due to staffing shortages and limitations during the COVID pandemic, the screening resulted in being used as a targeted tool for patients identified as behavioral health patients and the screen was used for patients the team felt may be able to explore community based treatment as opposed to waiting for a social work evaluation in the ED. Nursing reported many instances where the tool was not used upon initial triage but used later in care to help expedite patient discharge. Limitations with staff engagement in education was likely impacted by significant staffing shortages, and the pending hospital joint commission survey, along with overall staff burnout from the COVID pandemic.

ED Length of Stay

Long ED stays increase the risk of symptom exacerbation, patient agitation, elopement, and staff burnout. Exposure to stimuli from the busy ED environment can often worsen patient anxiety and agitation putting patients and staff at risk for adverse events during prolonged stays (Nicks & Manthey, 2012). Long ED stays often occur and

patients, regardless of their long ED stay, may fail to receive appropriate referral to treatment (Nicks & Manthey, 2012).

Providing early intervention and resources can improve patient clinical outcomes, decrease burden of disease, and improve patient quality of life (Malla et al., 2018). Shortening ED length of stay not only improves patient quality of care but can additionally improve system cost. The HEADS-ED intervention was aimed at providing benefits and value while improving the care provided to pediatric patients presenting with behavioral health treatment needs.

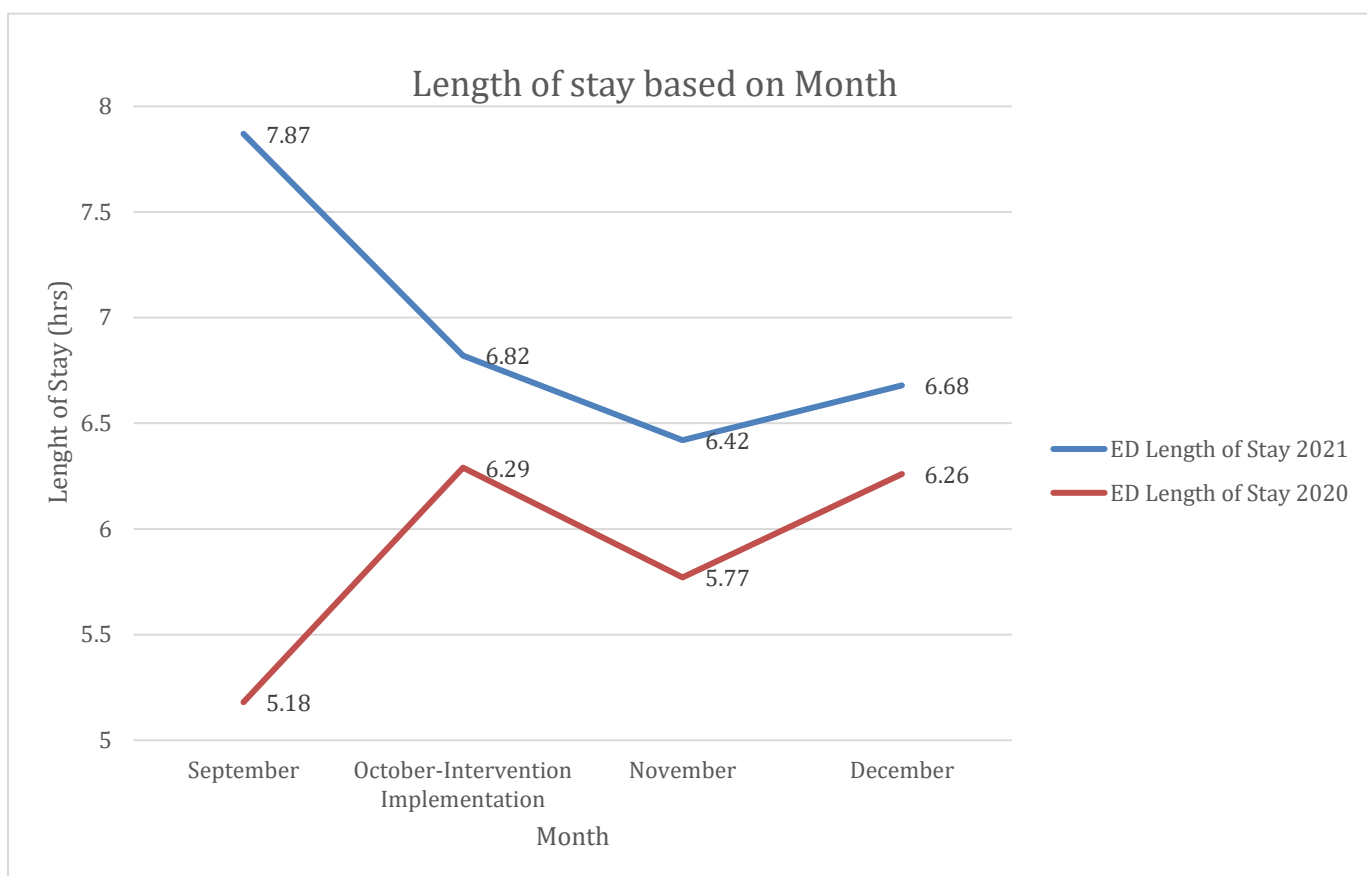
The hypothesis that patient length of stay in the ED would decrease, with the goal of a 25% decrease was not met. There was however a decrease in the median length of stay from 7.87 hours in September prior to intervention implementation to 6.68 hours in December, three months after the screening tool was implemented. This illustrated a 15.1% decrease in the average length of stay of pediatric behavioral health patients. The data was also notable for the percentage of behavioral health volume in the ED with a length of stay over 24 hours decreasing over the course of the pilot from 30.3% to 28.2 % in December.

Of note in this data, there was a significant decrease in the percentage length of stay from September 30.3% to October 21.7%. Questions remain if this decrease was related to increased engagement by staff after education on behavioral health patient management was provided. Additionally, the increased percentage of behavioral health boarding patients over 24 hours in the months following October may have been related to a decrease in staff use of the tool as the pilot progressed.

In review of the ED length of stay for behavioral health boarders, historically during the fall months length of stay increases as the pediatric volume typically increases as well. Figure 14 shows the length of stay in hours over the months of September- December, comparing data from this year, 2021 to the data from last year, 2020, during the same months.

Figure 14

Graph of ED Length of Stay for 2020 and 2021



Note. This figure shows a graph of the length of stay for ED behavioral health boarders comparing data from 2020 to data from 2021 during the intervention implementation.

As evidenced in Figure 14, while the length of stay over the 2020 length of stay was overall shorter, it trended upwards over the period from September to December by 20.85%. The length of stay in 2021, while 2021 started with a longer length of stay in September, over the months from September to December, instead of the length of stay increasing as it did in 2020, it decreased by 15%. It is hypothesized that the longer length of stay in 2021 was impacted by COVID staff shortages at the psychiatric facilities and with the hospital embedded behavioral health staff. All of which can contribute to prolonged ED stays.

While the length of stay decreased by 15 %, and did not meet the 25% reduction goal, any decrease in a patient's length of stay in the ED, which can be a triggering and emotionally costly event, provides positive impacts on overall patient care and experience.

Staff Feedback

In the literature review there was consensus that integration of mental health assessment into patient care through a standardized model improved patient outcomes (Jayaram et al., 2019; Molnar et al., 2018; Sanchez et al., 2017). After review of the data and after speaking with nursing staff and providers there was an agreement that utilization of a standardized screening tool provided help for moderate and low risk level patients.

Feedback from nursing staff was positive in response to the HEADS-ED tool providing clearly outlined pathways to manage moderate and low risk patients. The intervention provided a new pathway option that was not previously used a treatment option. This new treatment pathway was the use of a next day social work evaluation in the community, used as an alternative to waiting long periods of time in the emergency

department for a social worker to respond from the community for the evaluation to occur. This new resource was offered to moderate and low risk patients and was provided by the same social work organization that provided the emergency department-based evaluations. Staff noted this tool and use of a new treatment option was beneficial to patient care. Additionally, they felt it was helpful in decreasing patient length of stay in the emergency department and improving overall patient and staff satisfaction with care provided.

One nurse felt the tool was helpful to facilitate discharge and reported finding it especially helpful for “patients presenting with their first mental health visit who need resources or have situational stressors.” Nursing reported feeling “providers love it” and “it’s great for kids who don’t meet the criteria for inpatient.” Staff felt the tool was supported by providers and expressed “parents like it too” which was related to the benefit of being able to quickly triage patients and prevent long ED lengths of stay.

The primary limitation identified by staff regarding the HEADS-ED tool was the scoring of a two on the suicidality domain, automatically categorized the patient as a high-risk patient. In this case it was recommended the patient have an ED social work evaluation. While this was outlined in the education and was visible on the HEADS-ED tool used, going forward staff expressed interest in that being bolded or better reinforced as something not to be overlooked.

Considering limited hospital resources and nursing shortages, the HEADS-ED pilot was found by the nursing staff in the ED to provide great benefit in helping move patients presenting to the ED rapidly to the next appropriate level of care. Of the staff who engaged in the post-HEADS ED survey, 100% of the responses felt the tool helped

in screening for behavioral health patient treatment needs and helped improve their understanding of the clinical pathways available for caring for behavioral health patients. One response from a surveyed ED nurse in reflection of the pilot project included the comments “Wonderful to see the direct impact this had on the patients. I loved sending kids home knowing they would be supported.” Refer to Table 6 for further outline of staff reflections from the project.

Facilitators

Facilitators for this intervention included: the leadership team at the hospital and ED staff who were interested in improving care for behavioral health patients. Additional program facilitators included the two HEADS-ED leads who helped promote daily clinical care and use of the tool. The local primary care offices and integrated community mental health organization providing the ED with the social work support were also program facilitators. The local mental health organization was engaged and supportive of implementing the standardized tool to rapidly triage behavioral health patients and supported the implementation of the new care pathway for a next day evaluation in the community by their team.

Barriers

In the literature review various barriers to integration and standardized care were identified. These included: lack of funding, organizational barriers, lack of quality assessment, lack of structured referral process, lack of inter-professional collaboration and the ongoing stigma surrounding mental health (Gabet et al., 2020; Payne & Brooks, 2016).

One barrier specific to the HEADS-ED care pathways was related to the creation of the new pathway for the ED team to schedule a next social work evaluation to occur in the community. This was created initially for the community mental health family partner to schedule and arrange. The family partner who was initially trained to be involved in providing the next day community-based care left their role halfway through the pilot. This created a barrier to care as the individual who replaced them did not receive the same initial training on the HEADS-ED tool and associated care pathways. There were subsequent delays and difficulty scheduling next day appointments from the ED for a brief period of the pilot which delayed patient care. As this was not a hospital new hire, but was an employee of the hospital's clinical affiliate it was not till weeks after they had started that this barrier to care was identified by staff.

The ED staff managed to work around this barrier by having patient's family call to schedule the next day appointment, which was well received by families and the family partner as it did not create an additional workflow for the family partner as families calling for next day evaluations is typical in their role. This facilitated family engagement with the crisis team from the ED to provide seamless transition to community based care.

During the implementation of this project there were also organizational barriers including the social work support staff being employed by an off-site agency who were similarly experiencing staffing shortages. There were additionally limited community-based resources occurring in person due to the COVID pandemic limiting the options for community-based referral. Lastly there was the barrier of negative nursing attitudes

towards new interventions being implemented. All these barriers were challenging to overcome.

The COVID pandemic and associated nursing shortages made engagement in new educational information and interventions especially difficult. As the country witnessed the “Great Resignation” for nursing staff turnover, the pilot site hospital was not immune to this (Molle & Allegra, 2021). With increased stress from the pandemic, during the period of this project the pilot ED experienced significant shortages with the turnover rate in 2020 of 33%, increasing to a rate of 48% turnover in 2021. The hospital emergency department lost 78 nurses over the past year contributing significantly to the difficulty in training and educating nursing on the HEADS-ED pilot.

An additional barrier to the HEADS-ED tool’s implementation was the ongoing stigma around mental health. The literature identifies many medical providers reporting feeling uncomfortable with management of complex behavioral health treatment needs (Ozkara et al., 2019). This was witnessed in the HEADS-ED project implementation. In this project, patients who screened with low or moderate risk were often offered more resources than recommended in the care pathways. With the increased use of resources, it appeared medical providers hesitated to explore lower level of care options despite patients having a low-risk HEADS-ED score. Additionally, staff reported variation between providers related to the resources used. Recommend future studies track provider use of resources and interventions with behavioral health patients to help identify variation in practice and allow for future targeted education.

ED pediatric providers have identified limited formal educational regarding behavioral health patient care during their medical school education and residency. There

was positive feedback from staff who reported having access to a standardized assessment tool for behavioral health helped increased staff confidence in managing behavioral health patient care.

Cost-Benefit Analysis

The costs for this health care quality project were primarily related to staff training and education of staff with the HEADS-ED tool. This project included a one-time cost for training and education. To continue to sustain this intervention going forward it will require an ongoing monthly cost for staff to update resources for patient referral pathways. There was no capital investment from the health system, as while the triage tool use had a material cost for printing and distribution, it did not have any associated cost for EMR build. Refer to Table 6 for an outline of the cost breakdown calculations.

Intervention Improvements

For ongoing intervention success, it would be recommended that the tool be built into the EMR to allow for the screening to be a part of the medical record and allow for the screen to be more routinely offered to all patients presenting to the ED as apart of standard ED care. Additional feedback from nursing surveyed post pilot implementation was that it was felt the HEADS-ED screen could be implemented by the lobby triage nurse upon patient arrival to increase screening of patients and expedite care.

The literature consistently identified that the ED provides a suboptimal setting for children and youth to seek behavioral health care. Emergency Departments offer a lack of privacy, over stimulation, exposure to psychiatric and medically ill patients and frequent absence of appropriate assessment and treatment for mental health needs (Hoge et al.,

2021). Increased education to parents and guardians about the ED behavioral health services and alternative community based behavioral health resources could help decrease ED patient presentations and improve the use of more appropriate behavioral health community-based supports (Hoge et al., 2021).

While the HEADS-ED tool helps triage low to moderate risk patients back to the community, there is opportunity in the future through community and hospital organizational efforts to improve community based standardized care pathways to promote use of local behavioral health crisis centers as alternative locations for patient assessment when experiencing behavioral health crisis.

Estimated Cost-Savings

Many pediatric behavioral health patients wait long periods prior to gaining access to behavioral assessment with a recent study estimating an average wait of 5.5 hours prior to the behavioral assessment occurring (Jewell et al., 2022). Each additional hour spent in the ED increases the probability of an adverse safety event (Jewell et al., 2022). Many behavioral health pediatric patients do not have concurrent nonbehavioral treatment needs and use of the emergency department for care exposes these patients to unnecessary harm that can include: psychological trauma from exposure to traumatic medical events, over stimulation and risk of patients requiring chemical or physical restraint during their treatment (Hoge et al., 2021; Jewell et al., 2022). There are additionally high monetary costs of care when seeking treatment from the ED.

The cost of caring for a behavioral health patient in a pediatric ED has been estimated to be \$219 per hour, with many of the received ED services providing little to no added value to the patient (Jewell et al., 2022). Studies have encouraged improved care could be provided in less regulated behavioral health treatment facilities. Environments such as community mental health centers have a more therapeutic environment specifically designed to care for patients with behavioral health treatment. These centers can provide care at a fraction of the cost (Jewell et al., 2022).

Prior studies have found that while the behavioral health assessment provided to patients seeking behavioral health care from the ED is the primary value-added portion of their ED visit, it is also often the shortest, least expensive stage of their overall care often costing \$351 and estimated to take only 1.3 hours of time (Jewell et al., 2022). One health system estimated that it would save \$3.85 million in costs a year if they eliminated boarding over 24 hours in the ED (Foley et al., 2011). The average hospital cost for a prolonged ED stay has been estimated to be approximately \$1,580 per patient per 24 hours or \$1.1 per minute (Foley et al., 2011). Studies using standardized triage assessment to decrease patient ED length of stay have estimated these programs can decrease length of stay by an average of 82 minutes per patient (Partovi et al., 2001).

This project saw a reduction in the median level of stay by 15% and a reduction in the percent of 24 hour stays for behavioral health patients; but going forward increased patient specific data could allow for improved understanding of where the delays in care are occurring. This could also allow for improved understanding of what the true cost benefit to the health system is from this intervention. It is proposed if the standardized

tool was used on a greater majority of the pediatric patients, there would be a greater observed impact on length of stay for the pediatric emergency department.

While this quality intervention aimed at redirecting patients seeking low and moderate behavioral risk assessment back to the community for non-emergent evaluations, future opportunity exists to provide improved diversion care pathways from the community to prevent patients from unnecessarily presenting to the ED.

Future Studies

For future studies it would be beneficial to explore obtaining increased specific data regarding length of stay for patients who the HEADS-ED tool is used versus those who were not offered the tool. Additionally, increased training and support for medical providers would be recommended. While there was education and regular access to support, much of the education was focused on nursing as they were completing the patient assessment. While nursing proficiency with the tool is crucial, the medical provider makes the ultimate clinical decisions regarding patient disposition. Increased education to providers on tool evidence and literature of tool efficacy could benefit future interventions.

Feedback from surveyed staff regarding the educational needs for future interventions included: 50% requesting hands-on support in the ED, 100% requesting in person education, 25% requesting virtual training, and 25% requesting access to more literature supporting the intervention. This pilot was implemented during the COVID pandemic when most in person trainings were canceled, subsequently education provided to staff was through virtual presentation and hands-on clinical application when the pilot

was being implemented. Recommended future quality improvement interventions include increased in person training options prior to their implementation to support staff educational needs.

Conclusion

When used in practice, clinical pathways have been observed to yield improved quality of care, increased efficiency, and reduced cost of care (Reiss- Brennan et al., 2016). The purpose of this systematic literature review and pilot program was to implement a standardized triage tool, specifically the HEADS-ED tool in the ED and educate staff on the tool, referral resources available, and recommended care pathways and monitor subsequent behavioral health patient length of stay throughout the intervention.

The literature review supported the use of a standardized process, specifically, the use of the HEADS-ED triage tool, to guide clinical referral pathways and standardize the process for assessing pediatric mental health treatment needs (Jabbour et al., 2018; Polihronis et al., 2016). When implemented in the community-based emergency department, the HEADS-ED tool was found to provide the medical team with a standardized method to rapidly assess pediatric patients presenting to the ED for behavioral issues. The associated care pathways for low, moderate, and high patients provided targeted referrals to care for rapid triage of behavioral health patients. This project also created a new referral pathway to offer moderate risk patients involving a next day follow up visit from the community mental health providers.

While this intervention did not meet the 25% goal of decreasing the behavioral health patient length of stay for patients, there was an observed decrease in the median length of stay for boarding pediatric behavioral health patients of 15% from 7.87 hrs in September to 6.68 hours in December. Additionally, there was an observed decrease in the percentage of behavioral health with lengths of stay over 24 hours, which also decreased over the course of the project starting at 30.3 % in September and decreasing to 28.2% in December.

It was felt that this project improved patient quality of care offering early screening and referral to behavioral health services. This program involved the collaboration with local primary care clinics and engaged the local community health organizations to help strengthen community-based care pathways. This quality improvement process can provide a framework for future organizations approaching quality improvement interventions targeting behavioral health care.

While more work needs to be done to improve the landscape of behavioral health services, this program has illustrated the importance of building community relationships. It has demonstrated the power of community collaboration in helping create new innovative care pathways to help begin building an integrated system of care that meets our patients expanding treatment needs. With the positive responses being observed at our small community-based hospital, a larger urban pediatric emergency department, where our pediatric doctors rotate, has begun discuss how to implement this triage tool into their emergency department in the coming months. This highlights the positive impact this pilot was found to have on pediatric behavioral health patient care.

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Table 2*Timeline for Implementation*

Estimated Date of intervention	Implementation Steps
July-August 2021	Met with key stakeholder and outlined steps and team members needed to implement the new standardized tool
End of August 2021	Coordinated with nursing staff and build education modules to train staff prior to rolling out the intervention. Established a plan for nursing implementation. Applied for IRB non-human subjects' approval.
September 2021	Provided education to nursing staff, continued meeting with Aspire Crisis leadership to establish plan for moderate level patient care pathway. Educated providers and coordinate with outpatient primary care to notify and educate related to the pilot.
Beginning of October 2021	Implemented the standardized triage HEADS-ED tool to the pediatric ED as a method to assess behavioral health treatment needs in a standardized method.
Middle/End of October 2021	Assessed data on compliance with tool and encouraged the use of the tool and provided resources by staff. Touched base with clinical staff leaders to identify any issues or questions with the tool, discuss with staff and provided

	further education for questions regarding the use of the HEADS-ED tool.
Beginning of November 2021	Continued to regularly meet with staff regarding the use of the tool, adjusted the referral recommendations based on staff and patient experience.
End of November 2021	Assessed overall data on compliance with tool and behavioral health patient length of stay. Touched base again with clinical staff leaders to identify their experience with using the tool and re-adjust education as needed.
December 2021	Compile data, analyze and organize results to present back to key stakeholders to discuss further adjustments to the quality improvement intervention and next steps to continue improving quality of care for behavioral health patients.

Note. This table shows the timeline and action steps taken during the quality improvement project

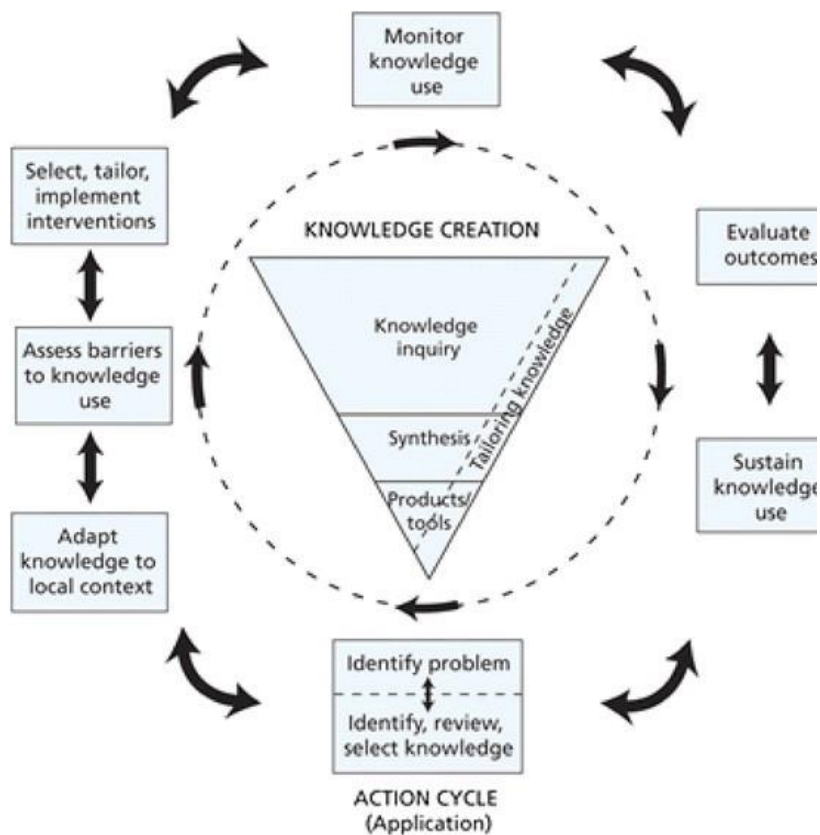
Table 8*Cost for Project*

Project Items	Number of items or staff members	Cost per item or staff hourly	Number of hours	Cost
Materials including paper, printing and distribution of the triage tool	One bulk supply	\$150 for items	One-time fee	\$150
Nursing Training and Education	15 Nurses	\$32/hr	1 hour	\$480
Nursing Training and Education for nurse leaders	1 RN Educator and 3 Charge RN's	\$45/hr	4 hours	\$720
Resource development for patient referral	1 SW	\$35/hr	8 hours	\$280
NP Implementation and monitoring:	1 NP	\$75/hr	20 hrs	\$1500
Monthly data collection and resource review	2 SW	\$35/hr x 2hrs	2 hours	\$140/ month
Educational tip sheets for staff	One bulk supply	\$150 for items	One-time fee	\$150
Total cost for quality improvement project implementation:				\$3420

Note. This table shows the cost for the quality improvement project outlined in this proposal.

Figure 1

Knowledge to Action Framework



Note. This figure shows the knowledge creation that contributes to the action cycle and how knowledge is then used to drive change. From Graham I, Logan J, Harrison M, Strauss S, Tetroe J, Caswell W, Robinson N: Lost in knowledge translation: time for a map? *The Journal of Continuing Education in the Health Professions* 2006, 26, p. 19. Copyright 2006 by John Wiley and Sons.

Figure 2

HEADS-ED Triage Tool

The HEADS-ED			
	0 No action needed	1 Needs action but not immediate/moderate functional impairment	2 Needs immediate action/severe functional impairment
H ome <i>Example: How does your family get along with each other?</i>	<input type="radio"/> Supportive	<input type="radio"/> Conflicts	<input type="radio"/> Chaotic / dysfunctional
E ducation, employment <i>Example: How is your school attendance? How are your grades? Are you working?</i>	<input type="radio"/> On track	<input type="radio"/> Grades dropping /or absenteeism	<input type="radio"/> Failing / not attending
A ctivities & peers <i>Example: What are your relationships like with your friends?</i>	<input type="radio"/> No change	<input type="radio"/> Reduction in activities/increased peer conflicts	<input type="radio"/> Increasingly to fully withdrawn / significant peer conflicts
D rugs & alcohol <i>Example: How often are you using drugs or alcohol?</i>	<input type="radio"/> None or infrequent	<input type="radio"/> Occasional	<input type="radio"/> Frequent / daily
S uicidality <i>Example: Do you have any thoughts of wanting to kill yourself?</i>	<input type="radio"/> No thoughts	<input type="radio"/> Ideation	<input type="radio"/> Plan or gesture
E motions, behaviours, thought disturbance <i>Example: How have you been feeling lately?</i>	<input type="radio"/> mildly anxious / sad / acting out	<input type="radio"/> Moderately anxious / sad / acting out	<input type="radio"/> Significantly distressed / unable to function / out of control / bizarre thoughts/significant change in functioning
D ischarge or current resources <i>Example: Do you have any help or are you waiting to receive help (counselling etc)?</i>	<input type="radio"/> Ongoing / well connected	<input type="radio"/> Some / not meeting needs	<input type="radio"/> None / on waitlist / non-compliant

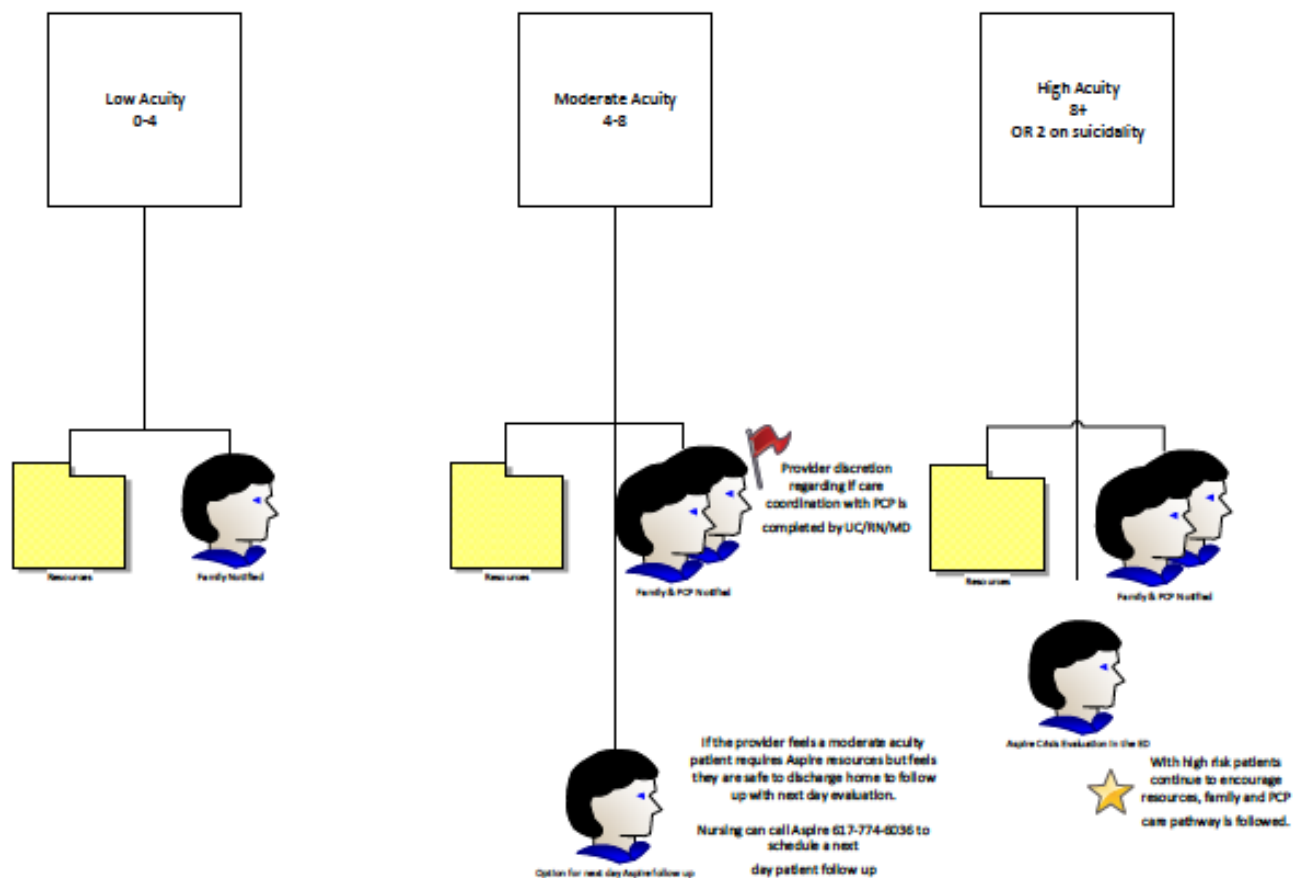
The HEADS-ED is a screening tool and is not intended to replace clinical judgment.

Note. This figure shows the HEADS-ED tool. From Cappelli M, Gray C, Zemek R, et al. The HEADS-ED: A rapid mental health screening tool for pediatric patients in the emergency department. *Pediatrics*: 2012;130 (2):e321-7. Copyright 2011 by Mario Cappelli.

Figure 3

HEADS-ED Clinical Care Pathways Based on Acuity Level

HEADS-ED TRIAGE SCORE CARE PATHWAYS



Note. This figure shows a handout provided to ED staff to help clarify recommended clinical pathways for patient care based on the different HEADS-ED acuity levels.

Figure 4

Education Presentation for Staff on Implementing the HEADS-ED tool

The HEADS-ED			
	0 No action needed	1 Needs action but not immediate/moderate functional impairment	2 Needs immediate action/severe functional impairment
Home <i>Example: How does your family get along with each other?</i>	o Supportive	o Conflicts	o Chaotic / dysfunctional
Education, employment <i>Example: How is your school attendance? How are your grades? Are you working?</i>	o On track	o Grades dropping / or absenteeism	o Failing / not attending
Activities & peers <i>Example: What are your relationships like with your friends?</i>	o No change	o Reduction in activities/increased peer conflicts	o Increasingly to fully withdrawn / significant peer conflicts
Drugs & alcohol <i>Example: How often are you using drugs or alcohol?</i>	o None or infrequent	o Occasional	o Frequent / daily
Suicidality <i>Example: Do you have any thoughts of wanting to kill yourself?</i>	o No thoughts	o Ideation	o Plan or gesture
Emotions, behaviours, thought disturbance <i>Example: How have you been feeling lately?</i>	o mildly anxious / sad / acting out	o Moderately anxious / sad / acting out	o Significantly distressed / unable to function / out of control / bizarre thoughts/significant change in functioning
Discharge or current resources <i>Example: Do you have any help or are you waiting to receive help (counseling, etc.)?</i>	o Ongoing / well connected	o Some / not meeting needs	o None / on waitlist / non-compliant

The HEADS-ED is a screening tool and is not intended to replace clinical judgment.
Scoring: Items can be evaluated independently in terms of need for action. To obtain a total score, add the value of each item together. Referral for a specialized mental health assessment should be considered if the total sum score is ≥ 8 and/or the "Suicidality" item is rated as ≥ 2. See www.heads-ed.com for more details.

Standardizing Behavioral Health Triage: Quality Improvement Using the HEADS-ED tool

EDUCATION FOR ED PEDIATRIC PROVIDER AND NURSING STAFF

Background

At SSH approximately 10% of all pediatric patients present with behavioral health treatment needs

Use of Aspire ESP team helps manage high risk pediatric patients, but we often miss the opportunity to intervene and offer resources to lower risk patients who receive care in the ED

The HEADS-ED tool provides a rapid assessment tool that is evidence based to help facilitate behavioral health screening and offers an opportunity for early identification of pediatric patients that are at risk

This quality improvement intervention's goal is to improve patient quality of care through trailing the use of a standardized triage tool with clearly defined clinical pathways based on patient risk levels

Evidence from the Literature

- Gap in behavioral health care with limited standardization with management of behavioral health patient care
- Early screening and referral to treatment has been linked with improved patient outcomes
- Use of standardized tools in assessment of patients has been linked with improved quality of mental health care
- Integration of mental health assessment into patient care through standardized process improves patient outcomes.

(Fernandes et al., 2020; Jayaram et al., 2019; Molnar et al., 2018; Polihronis et al., 2016; Sanchez et al., 2017)

What is the HEADS-ED tool?

The HEADS-ED tool is a validated screening tool that was designed to help provide a rapid assessment of 7 patient domains:

- Home
- Education and Employment
- Activities and Peers
- Drugs and Alcohol
- Suicidality
- Emotions, Behaviors, Thought Disturbance
- Discharge or current resources

Each domain is scored as one of three options:

- 0 → no action needed
- 1 → needs action but not immediate
- 2 → needs immediate action

The sum of the scores for each domain provides the patient risk score.

Risk Scoring:

- 0-4 = Low risk- May benefit from resources
- 4-8 - Moderate risk - May benefit from evaluation
- 8+ - High risk - Needs social work evaluation while in ED

How is the HEADS-ED tool score used?

If a patient scores:

- 0-4 - Low risk: there will be a referral resource manual at the unit coordinators desk related to each different domain, please provide patient with information regarding the associated domain they scored positively towards. Recommend notifying a parent or family member with the patient that they scored low risk and were provided resources.
- 4-8- Moderate risk: follow same process for low risk but additionally recommend notifying patient's PCP with patient consent of patient presentation to the ED and positive screen, identify resources were provided but also identify need for follow up in the community. May consider setting up an aspire ESP community evaluation for next day.
- 8+ - High risk: follow same process for low and moderate but also requires a crisis evaluation for further assessment of emergent treatment needs.

***If a patient scores a 2 on the Suicidality patient also requires emergent evaluation regardless of total risk score.



How will this fit into patient care

Starting in October we will trail a 1-month period of using this standardized tool to screen all pediatric patients who present to the SSH ED

Screen will be completed by nursing staff and scanned into patient's chart by the unit coordinator and will be collected in a file at the unit coordinators desk

Nursing will follow the recommended care pathway depending on patient score, providing either resources and family notification, resources and call to PCP with option of next day ESP evaluation in the community or referral to emergent social work evaluation in the ED

If patients are identified as Low/Moderate and there is not felt to be an emergent safety risk with suicidality or significantly impaired insight/judgement, service referrals/resources are voluntary, and these patients may decline resources, family or PCP engagement but would encourage offering resources to these patients



Summary

This is a quality improvement project aimed at improving behavioral health patient care

This will involve a 1 month pilot of the use of the HEADS-ED tool which will be used to help stratify risk for pediatric patients presenting to the ED for care

This will held during the month of October

After this pilot intervention plan to re-assess the use of this tool by assessing percent of staff trained on the tool, staff compliance with this tool, and percent of patients offered resources who score positively on the screening tool. Additional metrics that will be reviewed will include patient length of stay in the department as it is thought the use of this tool and clear clinical pathways can decrease ED patient length of for low-risk patients.

If you have any questions on this quality improvement intervention or the HEADS-ED tool please reach out to Sarah Kugler for more information x46044 or skugler@southshorehealth.org

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Note. This figure shows the presentation that was provided to staff on the HEADS-ED tool.

Figure 5*Post Presentation Education Quiz Used to Assess Staff Understanding of Educational Module*

Post-Education Quiz:

1. What is the HEAD-ED tool?
 - a. A standardized tool to help assess sleep
 - b. An evidence-based tool used provide rapid behavioral health triage and disposition planning**
 - c. A tool to help screen patients for cognitive function
 - d. A tool used to measure a pediatric patients head

2. Early screening and referral to treatment has been linked with?
 - a. Poorer outcomes
 - b. Improved patient outcomes**
 - c. Staff frustration
 - d. Negative patient outcomes

3. A score of 3 on the HEADS-ED tool correlates with what risk level?
 - a. Low**
 - b. Moderate
 - c. High
 - d. Not enough information to decide this

4. A score of a 2 on the Suicidality domain has a care pathway that requires?
 - a. Emergent social work evaluation**
 - b. Discharge with resources
 - c. Discharge with primary care follow up
 - d. Discharge with no resources

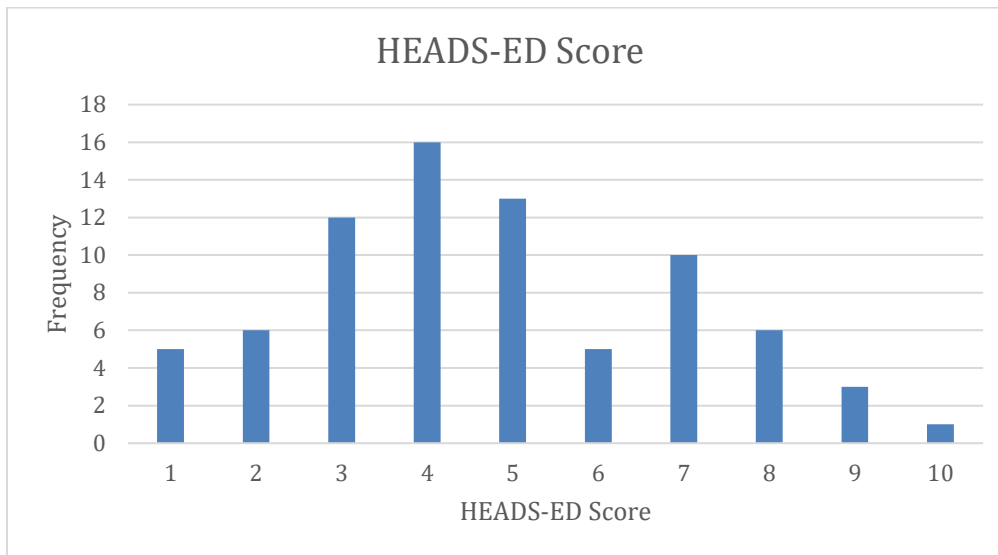
5. A moderate risk level recommends a care pathway that includes:
 - a. Resources**
 - b. Resources and a call to the patient's PCP
 - c. Consultation to nutrition
 - d. A call to the patient's dentist

Note. This figure shows the quiz questions that was offered after the presentation module on the HEADS-ED as demonstrated in Figure 3. Correct answers are outlined in bold.

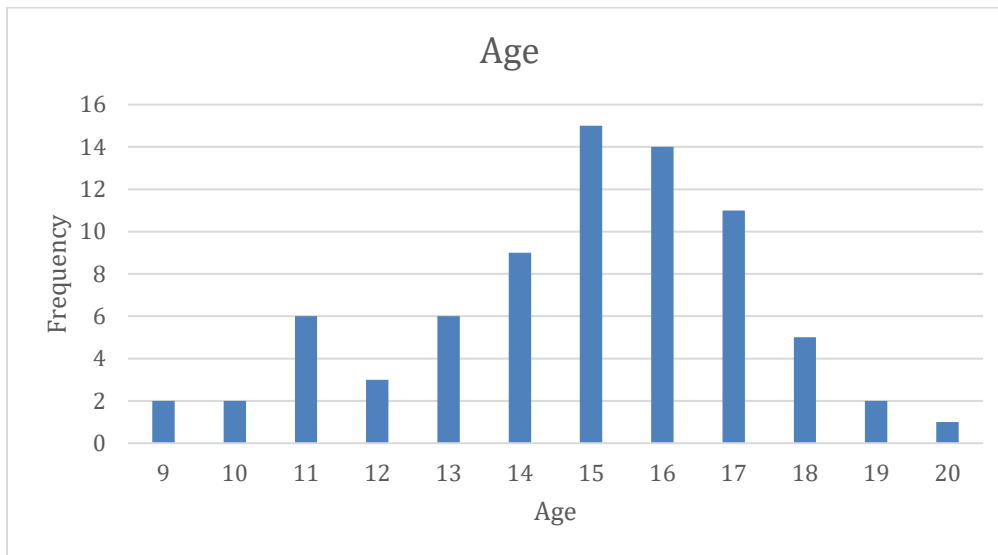
Figure 6*ED Behavioral Health Definition*

Patient Criteria Required to be met to fall within the Behavioral Health patient Population
Primary diagnosis of Mental Illness
Positive ED substance use or alcohol screening (+NIDA1 or AUDIT-C)
Positive psychosocial screening of behavioral health status/Health service
Positive screening for ED suicide triage
Ed probable disposition of medically cleared
<p>Has medical orders for:</p> <ul style="list-style-type: none"> • Substance use disorder evaluation • ED place in behavioral health hold • ED consult to behavioral health APC • IP consult to addiction medicine • IP consult to SBIR • IP consult to psychiatry • ED video surveillance • Monitor patient 1:1 • Monitor patient sitter at bedside • Monitor patient AVA • Elopement risk order panel • Patient cannot leave AMA
<p>Has referral order for</p> <ul style="list-style-type: none"> • Ambulatory referral to bridge intake assessment opioid • Ambulatory referral to bridge intake assessment alcohol
<p>If patient was provided with the following medications during their ED encounter</p> <ul style="list-style-type: none"> • Buprenorphine • Narcan • Methadone • Naltrexone

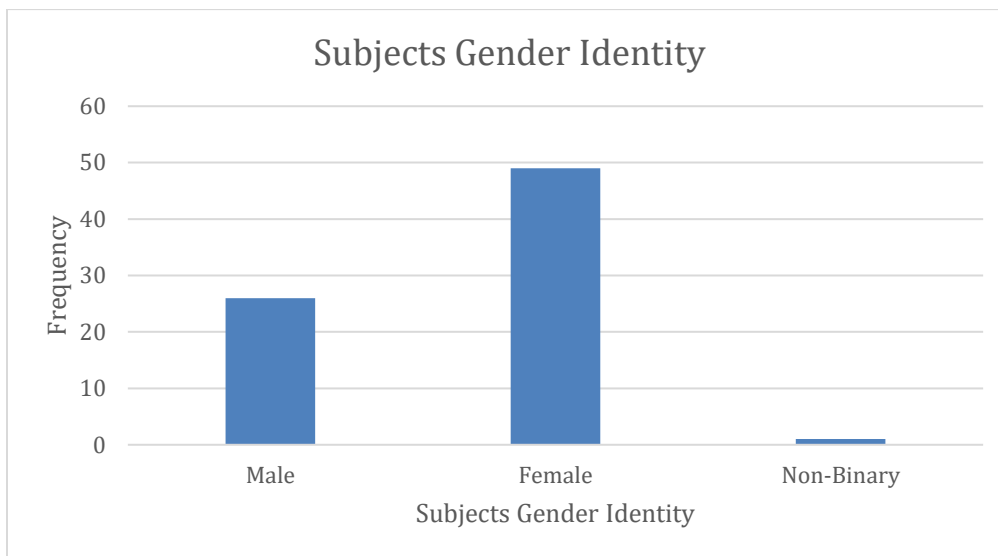
Note. This figure shows the criteria to define a patient as behavioral health, patients are included as behavioral health patients if they meet one of the above criteria.

Figure 9*HEADS-ED Score Distribution*

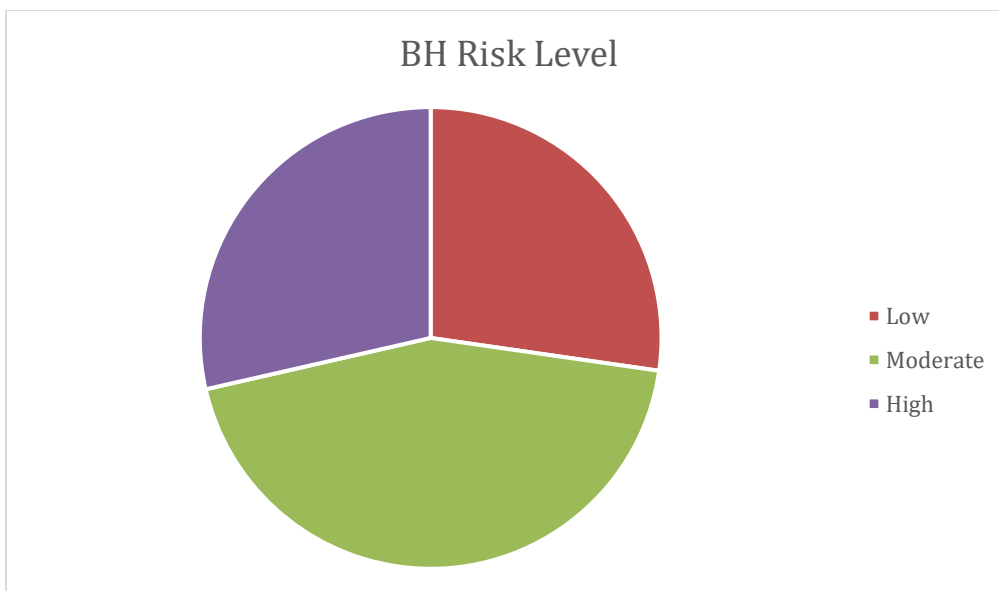
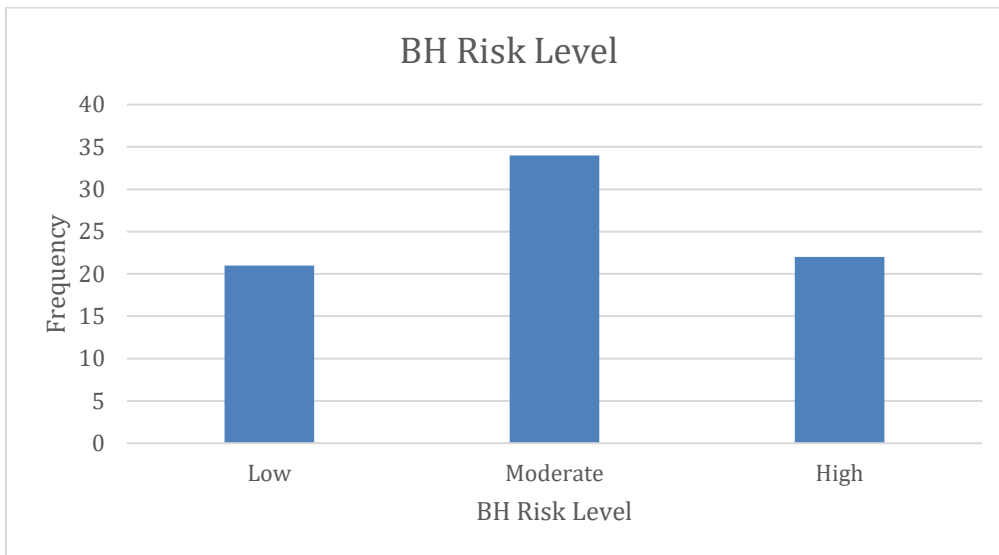
Note. This figure shows the distribution of the HEADS-ED scores that were collected through the pilot period from October-December 2021.

Figure 10*HEADS-ED Screen Age Distribution*

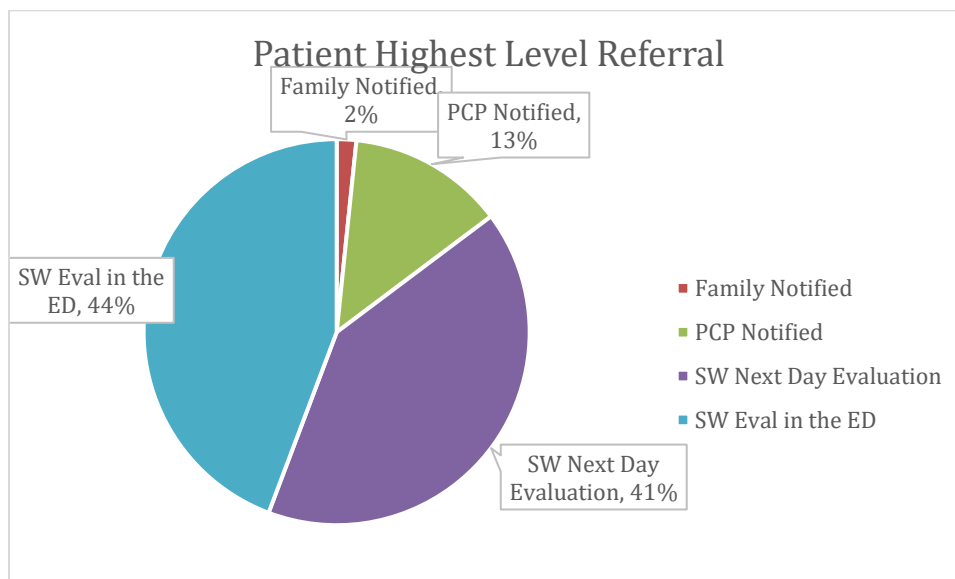
Note. This figure shows the distribution of ages of the patients who received the HEADS-ED screens.

Figure 11*HEADS-ED Distribution of Gender Identity*

Note. This figure shows the distribution of gender identity for the patients who the HEADS-ED screens were completed on.

Figure 12*HEADS-ED Associated Risk Levels*

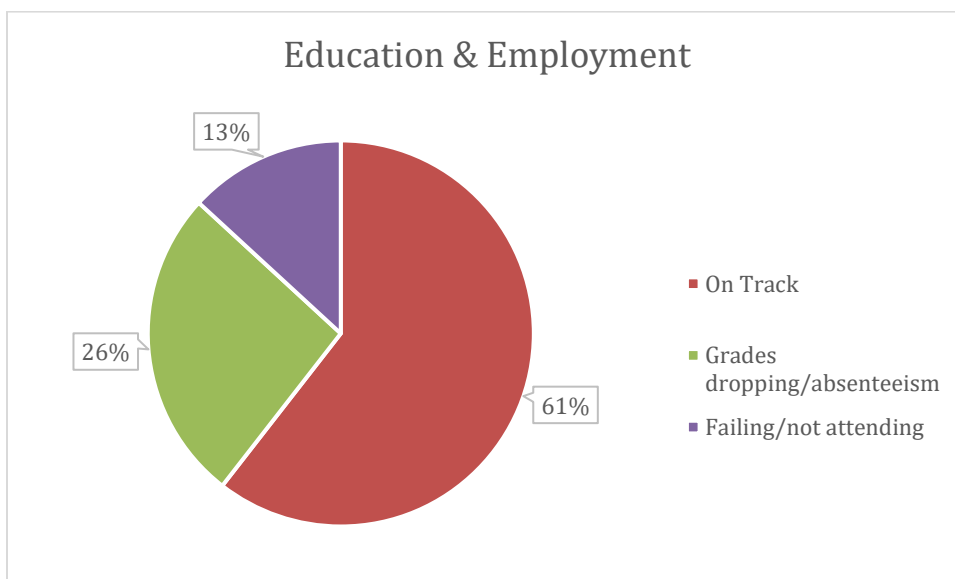
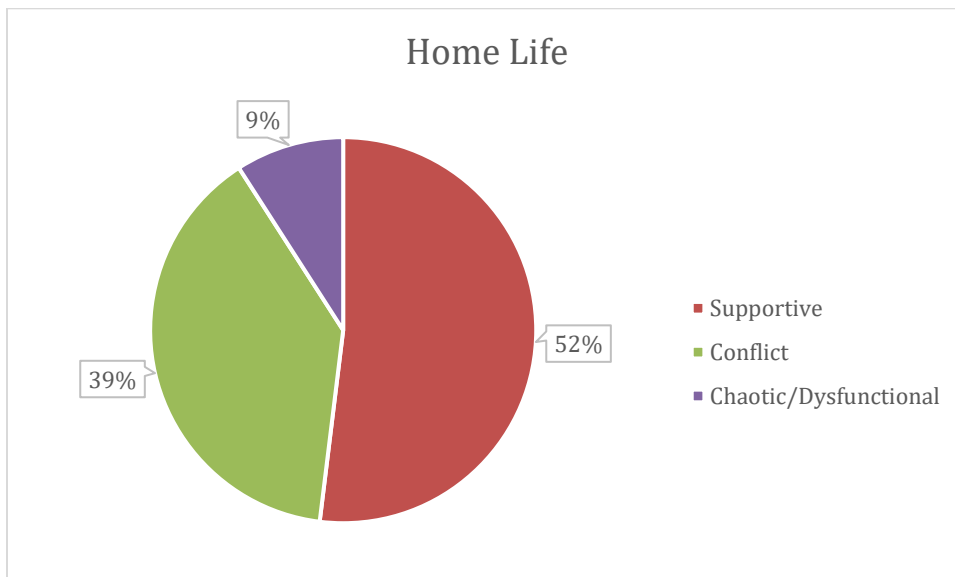
Note. This figure shows the distribution of risk levels that the HEADS-ED scores in both a bar graph and pie chart. The distribution was as follows, low included 21 patients 27%, moderate included 34 patients 44.2 % and high included 22 patients 28.6%.

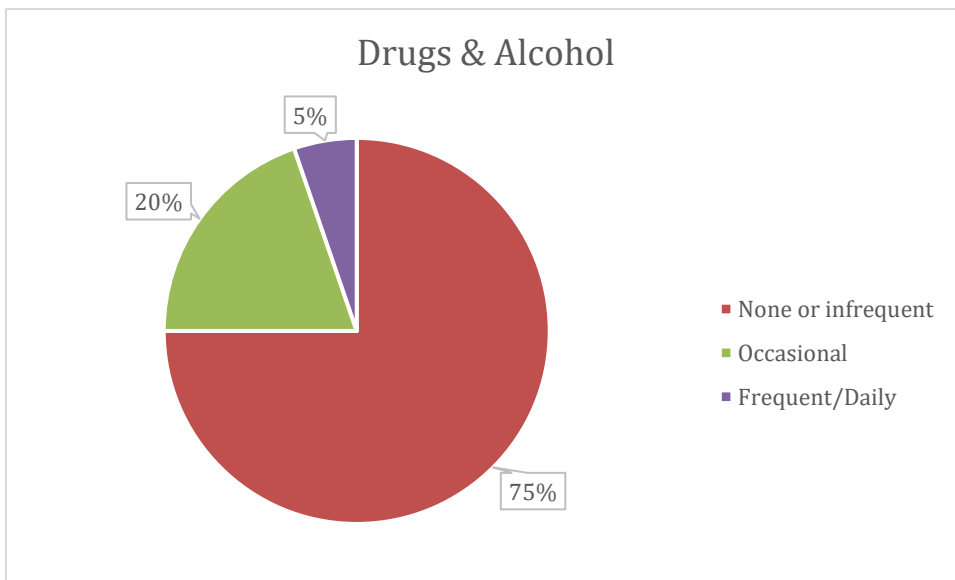
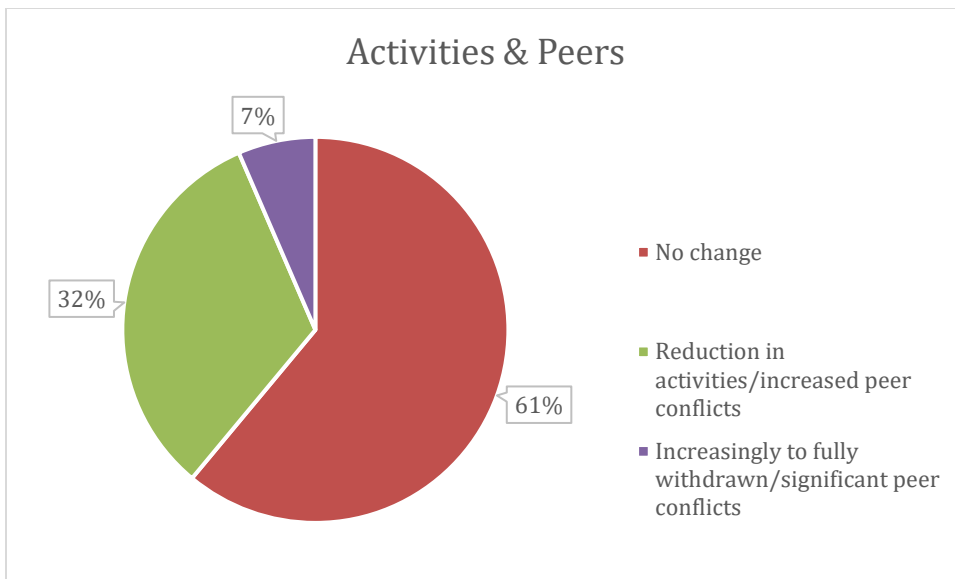
Figure 13*Patient Highest Level Referral*

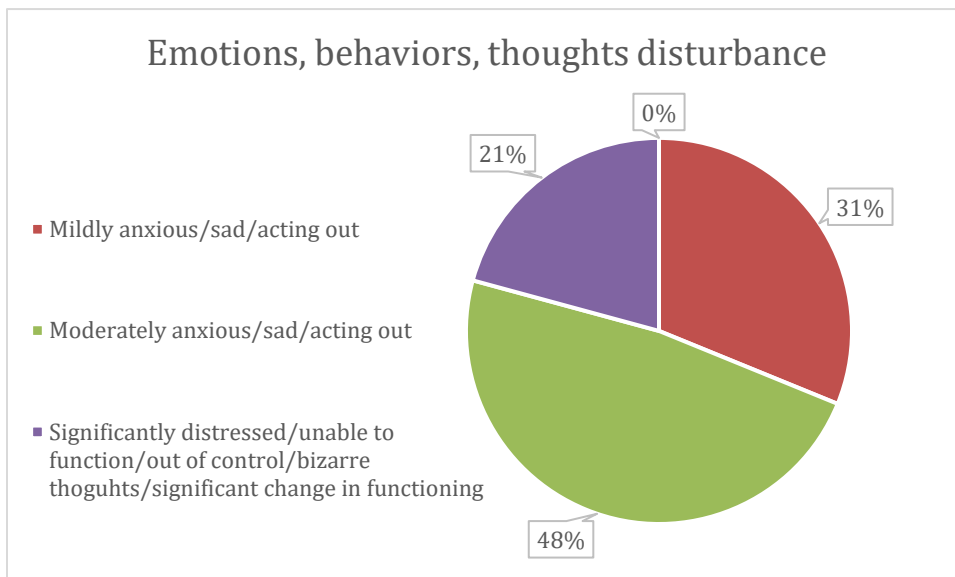
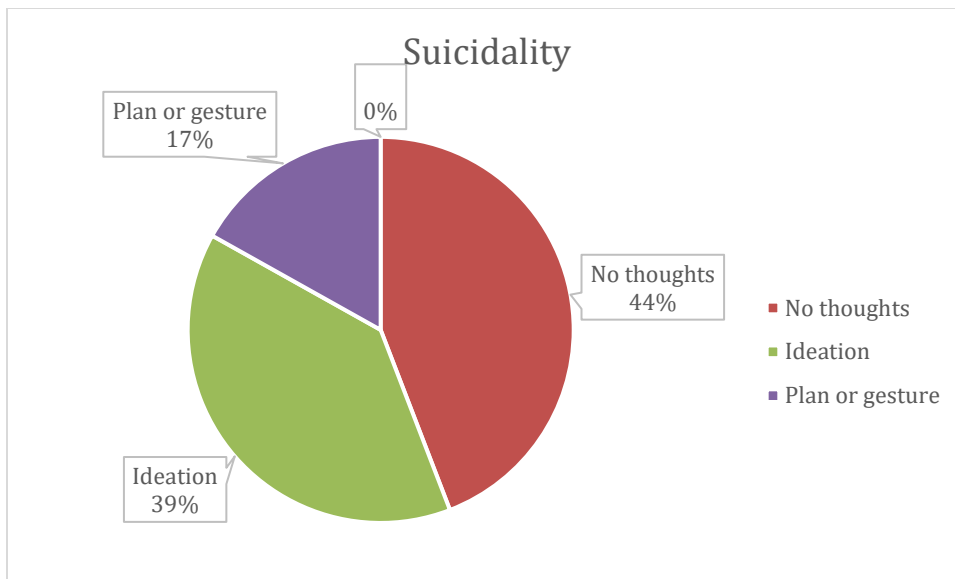
Note. This figure shows the different dispositions for patients screened with the HEADS-ED tool. This identifies the highest-level referral provided, multiple referrals were often provided to patients screened. This chart outlines family being notified as the highest referral in 1.3% or 1 case, PCP notified in 8 cases or 10.4%, social work next day evaluation in 25 cases or 32.5% and social work evaluation in the ED in 27 cases or 35.1% (highest level referral). SW is the abbreviation for social work.

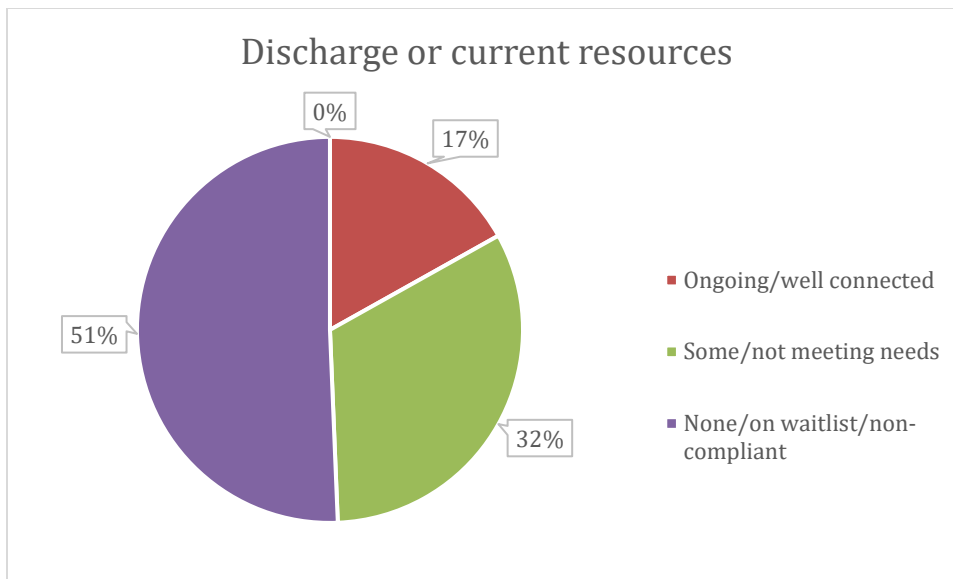
Figure 14

Pie Charts of HEADS-ED Assessed Domains





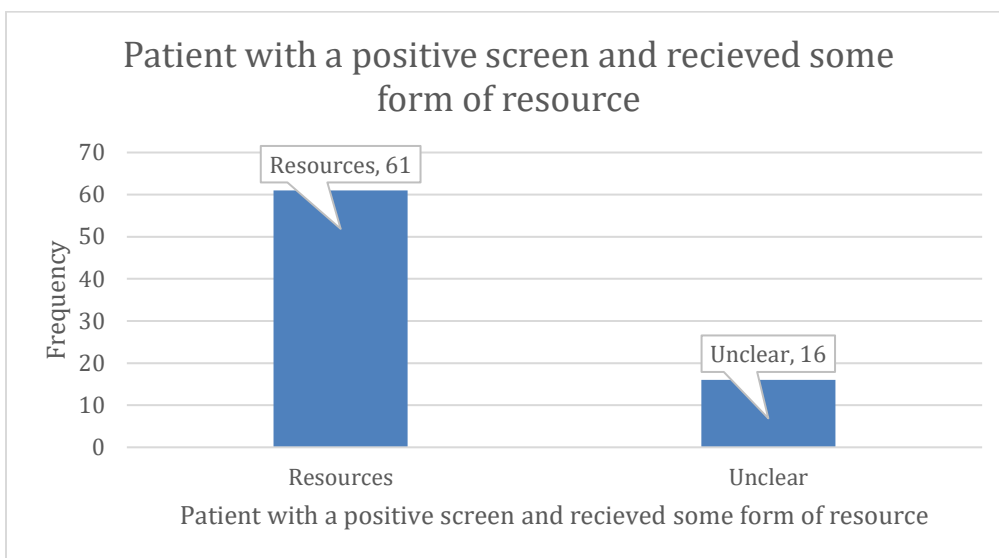




Note. These pie charts show the breakdown of how patients screened scored on the seven distinct areas of the screen including Home, Education & employment, Activities & peers, Drugs & alcohol, Suicidality, Emotions, behaviors and thought disturbance, and Discharge or resources.

Figure 15

Bar Graph of Patients Provided with Resources



Note. This bar graph outlines the number of patients who scored positively on the HEADS-ED tool and who were subsequently provided resources, this also outlines there being 16 screens where nursing did not clearly document what care pathway occurred after the patient screened positively using the tool.