Measurement of ASQ Usage in the County Jail Setting

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Abstract

Since the year 2000, the leading cause of death in a jail setting has been suicide. The purpose of this retrospective, descriptive quality improvement project was to evaluate the usage of the ASQ screening tool in the county jail setting after implementation of the tool. Data was collected on a convenience sample of 98 adults, age 18-65, located at a county jail in Wisconsin. Data regarding usage of the ASQ in the facility, demographic data and substance use history was collected. Outcome measures included determining the usage of the ASQ as well as analyzing the demographics and substance use in this population. Results showed the ASQ tool was used exclusively by the mental health staff, with no use by nursing or the correctional officers. The ASQ was used 61% of the time as a follow up screen for inmates identified as suicidal on intake assessment and 79% of the time for inmates placed on observation after arrest. The tool was not used during intake screening. Seventy percent of the subjects admitted to some type of substance use with alcohol being the most common substance of choice (52%). The data collected provides the foundation to guide further education and training to improve the implementation of the ASQ in the jail setting. The substance abuse data was congruent with national data and, given that substance use increases suicide risk, supports the need for improved suicide screening in the jail setting.

Keywords: inmate, corrections, jail, suicide, suicide attempt, suicidal ideation, suicide assessment, substance withdrawal, drug withdrawal, alcohol withdrawal, opiate withdrawal

ASQ Suicide Screening in the County Jail Setting

Suicide has been the leading cause of death in the jail setting since 2000 (Noonan, 2016). Characteristics have been identified that can increase an inmate's risk of suicide and one of the main risk factors associated with suicide in and outside of the jail setting is substance abuse (Borges, Walters, & Kessler, 2000). While standards exist on suicide prevention, it is unclear how well the inmate population is being screened.

Significance

Between the years 2000 and 2014, there were 14,786 inmate deaths in the jail setting and 31% were caused by suicides (Noonan, 2016). A 13% increase in suicide deaths in local jails occurred between the years of 2013 to 2014 (Noonan, 2016). The year 2014 showed the highest suicide rate to date which was 50 per 100,000 inmates (Noonan, 2016). This contrasts with the general population, where only two percent of deaths in the general population are related to suicide (Xu, Murphy, Kochanek, Bastian, & Arias, 2018). Notably, the Bureau of Justice Statistics found that deaths due to drug or alcohol intoxication increased from 72 in 2013 to 90 in 2014 (Noonan, 2016). Almost 12 million people cycle through jails each year, and many of these people who enter the jail face the phenomena of *shock of confinement*. They may be in jail for the first time, stripped of their job, house, and sense of normalcy which, when combined with a potential mental health issue or substance abuse disorder, could lead to suicidal behavior (Chammah & Meagher, 2015).

The impact of suicide in the jail setting can be profound, affecting the family of the victim, other inmates, the staff of the facility and the facility itself. No studies have been published regarding the economic costs of suicide to the facility. It can be expected that the jail will incur costs regarding the investigation of a death including coroner costs, potential funeral

expenses, and possible litigation from the inmate's family. Exposure to a fellow inmate's suicidal behavior has been shown to have a significant impact on the exposed inmate's mental health. Hales, Edmonson, Davison, Maughan, and Taylor (2015) found significantly higher psychiatric and psychological morbidities, especially anxiety, depression, hopelessness, and suicidal ideation in inmates that were exposed to suicidal behavior. When an inmate dies by suicide, it can also affect front line staff such as corrections officers and healthcare providers. Inmate suicide can lead to increased staff absenteeism, decreased performance, and increased burnout (Gaffney et al., 2009).

Local Issue

According to Noonan (2016), from 2012-2013, the suicide rate in the jail setting increased from 40 to 46 per 100,000 nationally. In the state of Wisconsin, there were 50 deaths caused by suicide between the years 2013-2018, with the majority of suicides being offenders under the age of 40 (Wisconsin Department of Corrections, 2018a). In local jails, deaths from drug or alcohol intoxication increased from 57 in 2012 to 70 in 2013, which is a 23% increase (Noonan, 2016).

Diversity Considerations

At the end of 2016, African Americans had the highest rate of incarceration, followed by Alaska Natives/American Indians (Zeng, 2018). Overall, the incarceration rate for African Americans was 3.5% higher than that of Caucasians. However, Caucasians account for 48% of the jail population, whereas African Americans consisted of 34% of the population (Zeng, 2018; Cramer, Wechsler, Miller, & Yenne, 2017). In comparison, the demographics seen in suicidal behavior in the jail setting show suicidal behavior to be more common in Caucasian males (Boren et al., 2018; Hayes, 2012; Cramer et al., 2017).

In 2016, about 85% of the jail population were male and 99% were older than age 18 (Zeng, 2018). Hayes (2012) found that approximately one-third of jail suicide victims were between the ages of 33 to 42, and Boren et al. (2017) discovered that the average age of suicide-completers was 38 years old. This data is congruent with the Federal Bureau of Prisons data showing that almost 19% of all inmates are between the ages of 36-40 (Federal Bureau of Prisons, 2019). The site chosen for the evidence-based project was an adult detention facility located in in Wisconsin. In the state of Wisconsin, the average age for male inmates is 38 years and 36 years for females. Fifty-one percent of male inmates and 68% of female inmates are Caucasian, 44% of males and 23% of females are African American, and eight percent of males and three percent of females are Hispanic (Wisconsin Department of Corrections, 2018b). These statistics are congruent with the national data. Safer (1997) found that adults and adolescents demonstrated significant differences in patterns of suicide and suicidal behavior. Therefore, the use of an adult facility for data collection prevents the introduction of bias and causing misleading conclusions.

Problem and Purpose

Specific characteristics that have been noted to increase the risk of suicide with inmates. These factors include demographic characteristics, history of psychiatric illness, and the type of facility for incarceration. Substance abuse is one of the main risk factors associated with suicide within and outside of the jail setting (Borges et al., 2000). In Wilcox, Conner, and Caine's empirical review (2004), persons with substance abuse and alcohol use disorders were found to be 10 to 17 times more likely to die from suicide. Limited research is published regarding suicidal behavior associated with substance withdrawal; however, incidental findings

in studies provide evidence that there might be a correlation. The lack of early identification of suicidal ideation in jail inmates is a component of the ongoing issue of increased jail suicides.

Intended Improvement with Purpose

Early identification of potentially suicidal inmates can lead to improved morbidity and mortality for this population, decreased costs for jails and their constituents related to completed suicides, and improved care of this high-risk population. The purpose of the proposed evidence-based quality improvement project was to evaluate the usage of the Ask Suicide Questions (ASQ) tool in the county jail setting during the six months after implementation (Appendix A).

Facilitators and Barriers

Facilitators for this project included the leadership at a correctional care company which includes the Vice President of Mental Health Services. This person served as a mentor to the student investigator and provided suggestions and resources throughout the process. The Vice President of Mental Health Services was also instrumental in providing access to the study site. The ASQ tool was developed by the National Institute of Mental Health (NIMH) and the NIMH has offered assistance regarding the further development of the ASQ as a tool in the correctional setting.

The intent of implementing the ASQ was to increase the effectiveness of suicide screening within the jail, but the major barrier encountered during the implementation of ASQ tool was the limited use outside of the mental health staff. In conjunction, a barrier regarding the sustainability of this project could include the lack of buy-in from all the participating individuals, especially in smaller jails. The pilot site included full-time qualified mental health professionals (QMHPs) that assisted with a proper and accurate assessment. Smaller jails often do not have access to QMHPs and may only have limited nursing and medical provider

hours. In these facilities, assessment questions are frequently asked by correctional staff. I f not educated regarding the importance of the ASQ assessment, the staff may not accurately and consistently use the tool.

The cost of the proposed evidence-based practice project was minimal and was not a barrier to the implementation of the project. The implementation of the ASQ tool at the site had already commenced and the project involved retrospective data collection via the electronic medical record (EMR). The names of inmates placed on observation were collected by the QMHP at the site and provided to the student investigator. The only barrier encountered during this process was that the initial QMHP working with the student investigator left her position at the jail, and a second QMHP had to be recruited to complete the identification of inmates for the project. The student investigator was able to access the EMR remotely, so no travel costs were incurred. (See Appendix B).

Review of Evidence

Inquiry

The review of evidence addresses early identification of suicidal behavior in the county jail setting. The inquiry is: How is the ASQ screening tool utilized in the adult county jail setting during the six month post-implementation phase?

Search Strategies

A literature search used PubMed, PsychInfo, CINAHL, and Cochrane databases. Search terms included inmate, corrections, jail, suicide, suicide attempt, suicidal ideation, suicide assessment, substance withdrawal, drug withdrawal, alcohol withdrawal, and opiate withdrawal (See Appendix C for definition of terms). After review and analysis the search yielded 22 applicable studies. Within the 22 studies, there were eight different study designs and five levels

of evidence based on the hierarchy developed by Melnyk and Fineout-Overholt (2015). There was one level-I evidence based guideline, five level-III studies (four systematic reviews and one quasi-experimental), 13 level-IV studies (five case control, four cohort, two cross-sectional, two correlational), two level-V qualitative reviews, and one level-VI descriptive study reviewed for evidence (See Appendix D).

Evidence By Themes

Demographic Variables Related to Suicide. Specific demographic characteristics are shown to increase an inmate's risk of suicidal behavior. Compared to females and other ethnicities, white males are most at risk for endorsing suicidal behavior (Boren et al., 2017; Cramer et al., 2017; Hayes, 2012; Schaefer, Esposito-Smythers, & Tangney, 2016). Inmates that exhibited behaviors such as aggression or agitation, impulsivity, and hopelessness were more likely to demonstrate suicidal behavior (Cramer et al., 2017; Folk et al., 2018). A history of a mental health diagnosis or previous suicidal behavior was also found to increase the endorsement of suicidal behavior (Cramer et al., 2017; Folk et al., 2018; Opitz-Welke, Bennefeldt-Kersten, Konrad, & Welke, 2016; Schaefer et al., 2016).

Specific factors are related to the criminal justice proceedings and the institutional setting that have been shown to increase the risk of suicidal behavior. Inmates that are pretrial or who were arrested for a violent crime are more likely to exhibit suicidal behavior (Boren et al., 2017; Hayes, 2012; Opitz-Welke et al., 2016). The jail setting is a risk factor for suicidal behavior as compared to the prison setting (Boren et al, 2017; Cramer et al., 2017). Because jails tend to house people who have just been arrested and are being held until they can post bond, proceed to trial, or be sentenced, the shock of confinement factor is exhibited more profoundly in the jail setting versus the prison setting. Another significant risk factor related to jail or prison housing

is single-cell housing units. Single-cell housing units can include isolation cells for mental health or medical diagnoses, disciplinary behavior, or protective custody. The literature shows a significant increase in the risk of suicidal behavior in inmates that are in single-cell housing (Boren et al., 2017; Cramer et al., 2017; Hayes, 2012; Reeves & Tamburello, 2014).

Substance Abuse and Suicide. Substance abuse is documented as a major risk factor for suicide in the general population (Arensman, Bernardi, Larkin, Wall, & McAuliffe, 2016; Artenie et al., 2015; Brackmund, Meyer, Schutz & Reimer, 2011; Bohnert, Ilgen, Louzon, McCarthy, & Katz, 2017; Kazour, Soufia Rohayem, & Richa, 2016; Wilcox et al., 2004). Alcohol and opioid disorders are frequently found to cause an increased risk of suicidal behaviors.

Evidence exists that indicates alcohol use disorders can significantly increase the risk of suicidal thoughts, attempted suicides, and suicide completions (Bohnert et al., 2017; Darvishi, Farhadi, Haghtalab, & Poorolajal, 2015; Harford, Yi, Chen, & Grant, 2018; Wilcox et al., 2004). Darvishi et al. (2015) revealed that that alcohol abusers are two to three times more likely to endorse suicidal ideation and suicide attempt than the general population, and Harford et al. (2018) reported that self- and other-directed violence has a significant association to alcohol use disorders. Retrospective toxicology reports of completed suicides have shown alcohol as a contributory factor in 30-70 percent of cases (Arensman et al., 2016; Stenbacka, Leifman, & Romelsjo, 2009).

A large number of the studies examined the role of long-term patterns of alcohol use and suicide (Bohnert et al., 2017; Darvishi et al., 2015; Wilcox et al., 2004) However, acute intoxication has also been associated with self-harm. Borges et al. (2017) performed a meta-analysis that suggested an increased risk of suicide attempts associated with higher levels of

drinking. Studies suggest that there is a relationship between people who exhibit increased aggressiveness and impulsivity and the acute use of substances with the increased potential of self-harm (Artenie et al., 2015; Borges et al., 2017; Kazour et al., 2016).

From 1999 to 2012, the mortality rate related to prescription opioid use has more than tripled. Thirty-nine percent of the drug overdose deaths in 2012 were related to prescription opioids (Warner & Hedegaard, 2014). Recent research has shown that opioids are also a causative factor in a large number of completed suicides (Bohnert et al., 2017; Kazour et al., 2016; Stenbacka et al., 2010; Wilcox et al., 2004). Toxicology results from 2010 found that both prescription and illicit opioids were present in 23.2% of suicide victims (Fowler, Jack, Lyons, Betz, & Petrosky, 2018). Other data that demonstrates the number of suicide deaths with opioids as a causative factor had an increase from 2.2% in 1999 to 4.3% in 2014 (Braden, Edlund, & Sullivan, 2017).

To date, there have been no studies that have explicitly focused on drug or alcohol withdrawal and suicide, but there have been some incidental findings that may warrant further research in this area. Opitz-Welke et al. (2016) explored suicide in female inmates within German prisons. An incidental finding of their study was that substance withdrawal symptoms were documented significantly more often in women who died after a suicide attempt. The authors were unsure if the finding was related to a larger ratio of women who completed suicide suffering from substance abuse or that women who died by suicide had less effective medical care (Opitz-Welke et al., 2016).

Another study exploring the suicide risk of heroin dependent subjects found that when compared to 18% in the control group that almost two-thirds of the heroin abusers had a history of suicidal ideation (Kazour et al., 2016). This study assessed patients who were hospitalized for

a 7-10 day opioid withdrawal program prior to entering a rehabilitation program. The study found that 14.8% of the heroin use participants expressed active suicidal ideation during the initial admission. It was proposed that these patients would be at an impending risk of suicide because active suicidal ideation can be associated with the physiological and psychological cravings found during the withdrawal process. During this phase, patients can be impulsive and irritable, which can also increase suicide risk (Kazour et al., 2016).

According to the Vice President of Mental Health Services for a correctional healthcare company, approximately 90% of the suicide attempts and completions found within the company's system of jails involved some type of substance withdrawal (personal communication August 5, 2017). She emphasized that this was a convenience sample with preliminary numbers, but suggested that further research be conducted (personal communication August 5, 2017).

Suicide Screening. The United States Preventive Services Task Force (USPSTF) suggests that it is most productive to screen high-risk individuals with known mental illnesses or substance abuse disorders for suicidal behavior. (2013). Analysis of the evidence reveals that many variables make inmates in a jail setting at high risk for suicide. If substance abuse is added to these variables, the risk increases. No published evidence based practice guidelines exist on suicide risk assessment in the jail setting. However, the Emergency Nurses Association (ENA) published a clinical practice guideline related to suicide risk that could be applicable in the corrections setting. The level A (high) recommendations in the practice guideline include that suicide screening tools should be included in the assessment of every emergency department (ED) patient and a strong predictor of future suicide attempts is previous episodes of self-harm (Emergency Nurses Association [ENA], 2017). Level B (moderate) recommendations from the guideline include that training ED personnel in initial suicide assessment improves

confidence in screening, and there is a reasonable amount of evidence to supports some screening instruments as valid, feasible, and reliable for initial screening, including the ASQ.

As a level A recommendation, the ENA suggests that suicide screening tools should be included in the assessment of every patient (2017). The evidence supports that the jail population has variables that make inmates at high risk for suicide, and when coupled with substance abuse, the risk is even higher. The ASQ is highly sensitive for detecting suicide risk and provides strong evidence to rule out risk in the pediatric population (Ballard, Cwik, Van Eck, Goldstein, & Alfes, 2017; Horowitz et al., 2012; Newton, Soleimani, Kirkland, Gokiert, & Cloutier, 2017). Several studies affirm that the specificity for the ASQ is not as high as some other tools, but given the high risk level of the inmate population, high sensitivity should be deemed more critical (Ballard et al., 2017; Horowitz et al., 2012; Newton et al., 2017).

One of the level B recommendations in the ENA clinical practice guideline emphasizes that training personnel increases confidence in screening. The American Correctional Association (ACA) and the National Commission on Correctional Healthcare (NCCHC) have formulated standards for jails and prisons to follow regarding suicide prevention. The most recent revision of the ACA standards (as cited in Tripodi & Bender, 2007) dictates that new employees, during their first year, must have 40 hours of suicide prevention. Topics included should incorporate recognizing suicidal ideation and behavior and suicide prevention techniques. The standards also state that a suicide assessment be conducted by health care providers or specially trained officers during the initial screening after an arrest.

A barrier to these recommendations can be the facility size and lack of resources. According to the World Health Organization (WHO), all jails, regardless of size, must have a reasonable and comprehensive suicide prevention program (2007). Jail facilities

vary in size from hundreds of inmates to single digits. Larger facilities may have medical staff in house at all times with qualified mental health professionals (QMHPs) readily available, while smaller facilities may only have health professionals available a few hours a week. In these smaller facilities, it is the corrections staff who are responsible for the initial suicide screening and monitoring of an inmate. The ASQ questionnaire is a four-question screening instrument that needs little to no training before use, which is ideal in a situation where someone with no medical or psychiatric training is responsible for the initial screen (Newton et al., 2017)(Appendix E).

Theory

O'Connor and Kirtley (2018) developed the integrated motivational-volitional (IMV) model as a theoretical framework that could potentially predict factors that might lead a person to suicidal thoughts and identify factors that cause people to act upon those thoughts. The IMV model is described as a three-phase biopsychosocial framework including the pre-motivational, the motivational, and the volitional phases. The pre-motivational phase considers the antecedent factors and initiating events. In this phase, there are specific physiological and environmental factors and life events that increase a person's risk for suicide. The motivation phase is the beginning of suicidal ideation. The beginning of suicidal ideation results from a process that begins with feelings of humiliation or defeat. These feelings can lead to a feeling of entrapment which can be internal or external. This feeling of entrapment can lead to agitation which can lead to thoughts of suicide. The volitional phase moves from suicidal ideation to suicide attempts or completed suicide. This phase describes volitional moderators (VMs) that could be the cause of the move from suicidal ideation to enaction. Volitional moderators can be psychological, environmental, physiological, or social (O'Connor & Kirtley, 2018). Many

of the factors noted in the three phases of the theory are applicable to the current project. The concepts of psychological distress and substance abuse could fall into the pre-motivational phase and be a trigger to suicidal ideation. Internal and external feelings of entrapment are also concepts that can be identified in the inmate population. The environmental, psychological, social, and physiological volitional moderators are also aspects that can be observed in inmates in the jail setting (See Appendix F).

The IMV is a relatively new model developed to assist with the identification of factors that cause a person to move from thoughts of suicide to suicidal behavior. In the few studies that have investigated the IMV, variables in both the motivational and volitional phases have been identified in patients with suicidal ideation. Conversely, only variables in the volitional phase have been identified in patients who exhibit suicidal behavior (Wetherall et al, 2018; Dhingra, Boduszek, & O'Connor, 2015).

Methods

IRB and Site Approval

This evidence-based quality improvement project was presented as a non-human subject project. There was no site institutional review board (IRB), so the University of Missouri--Kansas City (UMKC) IRB was utilized and approval was received (Appendix G). The Vice President of Mental Health Services of the correctional healthcare company and the jail administrator at the site approved the project (Appendix H). Approval was also obtained from the University of Missouri—Kansas City's Department of Nursing (Appendix I).

Ethical Issues

Ethical aspects considered with this project included benefit and harm, protection of privacy and confidentiality, and sharing of benefits (Henk, Have, & Jean, 2009). Given that

suicide is the leading cause of death in the jail setting, the early identification of these patients is certainly a benefit. This intervention was designed to be utilized for the entire jail population and not just a specific sub-population which decreases the risk of a specific population not receiving the same standard of care in this setting. The inmate population is considered vulnerable, and all patient identifiers were removed from any data collected. The student investigator is employed by the correctional healthcare company but is not a provider at the proposed site so there was no conflict of interest.

Funding

Implementation of the ASQ had already occurred throughout the facilities managed by the company so no funding was needed to sustain this project. The company currently operates an online learning platform that can be utilized for initial and ongoing training regarding the use of the ASQ at little to no cost to the sites.

Setting and Participants

The setting for the proposed project was one adult detention facility located in Wisconsin. Inclusion criteria included English-speaking adult inmates who were placed on observation status post intake screening. Exclusion criteria were any non-English speaking inmate or an inmate under the age of 18. A convenience sample of all inmates placed on observation status for six months post-implementation of the ASQ was collected.

EBP Intervention

The Ask Suicide-Screening Questions (ASQ) is a 4-question suicide screening instrument that was developed to be utilized in the Emergency Department (ED) with patients 10-21 years who present with psychiatric and non-psychiatric reasons (See Appendix J). This simple tool was designed to be administered by nurses regardless of mental health training (Ballard et al.,

2017; Horowitz et al., 2012). The ASQ tool was found to have a sensitivity of 96.9%, specificity of 87.6% and negative predictive values of 99.7% for medical-surgical patients and 96.9% for psychiatric patients (Horowitz et al., 2012). All four questions are asked and a positive answer to any question is considered a positive screen and requires follow up. In conjunction with the ASQ developers through the National Institute of Mental Health (NIMH), the ASQ has been slightly modified for the jail setting, and permission was granted for use of the tool. The original four questions remain, but a fifth question was added. All five questions are asked when screening an inmate.

Training in the use of the ASQ began in early 2019 with the Vice President of Mental Health Services of the contract company educating medical and mental health providers, jail health and mental health administrators, and the regional nurse managers at the company's medical advisory meetings. A follow up online learning module was deployed on the company's learning management system (LMS) as a review for the above employees as well as medical and mental health employees who did not attend the meeting.

The training emphasized that anyone in contact with patients should use the ASQ. The individuals include corrections officers, nurses, practitioners and QMHPs. The training stated the ASQ should be used for assessment during suspected withdrawal, to supplement an intake screening, when an inmate requests mental health services, at times of acute stressors such as poor legal outcomes, times of distress, agitation, or instability, medication refusals involving life sustaining medications or psychotropics, or anytime in the presence of a concern.

Retrospective data was collected for the six months post implementation of the ASQ at the project site. Data collected included information regarding when the ASQ was used as a

screening tool and who was utilizing it. Other data collected included demographic data related to age, gender, and race, as well as substance use history of inmates placed on observation.

Data was collected from a report of inmates placed on observation status after the implementation date of June 15, 2019. This report was compiled by the lead QMHP and included all inmates on either medical or mental health observation during the project timeframe. The report was sent to the student investigator who collected the needed data remotely from the electronic medical record (EMR) of the site. Descriptive analysis was completed for the demographic data as well as the ASQ usage (Appendix K).

Change Process and EBP Model

Kotter and Cohen's Model of Change was utilized as a framework for this project. This model is designed to act as a framework rather than a step-by-step implementation guide for change (Stragalas, 2010). The framework focuses on provoking emotion and urgency which will, in turn, promote change. The urgency of the suicide rate in the jail setting is well established and promoting buy-in regarding the simplicity of the assessment process using the ASQ should empower stakeholders to embrace the change.

The Iowa Model was used to guide the proposed inquiry. It is an algorithm-based framework initiated by an identified question or a problem that has been identified by a member of the healthcare team. The algorithm has defined decision points and feedback loops throughout the process (Schaffer, Sandau, & Diedrick, 2012). This model was designed for interdisciplinary use which is ideal in a county jail setting.

Study Design

The project was a retrospective descriptive design, quality improvement project. Convenience sampling included all inmates meeting inclusion criteria, was used and data on demographics and tool use was collected.

Validity

Threats to external validity were related to patient demographics and setting factors. The study setting was one county jail in Wisconsin, and it was unknown if the cultural and ethnic population included in the study sample would be congruent with the general jail population, which may affect the transferability of the study findings. Another external threat was how the ASQ tool was used. The study site employed nursing staff (RNs & LPNs) and qualified mental health professionals (QMHPs). However, in many jail settings, these professionals are not always available for all assessments, and correctional officers may be doing the screening. The ease of use and reliability and validity of the ASQ tool should help control for this concern of types of professionals using the tool.

Threats to internal validity were related to selection bias and maturational issues regarding staffing. A convenience sample was used consisted of all inmates meeting inclusion criteria. The lack of randomization and a comparison group can add confounding variables to the project. Midway through the six month post implementation period, one of the lead QMHPs left the facility which could be a confounding variable in regard to the consistent use of the ASQ.

Measured Outcomes and Measurement Instrument

The primary outcome was to determine the usage of the ASQ in the identification of suicidal ideation in county jail inmates. Secondary outcomes included analyzing the substance use in this population. Descriptive statistics were used to describe the ASQ usage and substance use in this population.

Quality of Data

A convenience sample of all identified observational patients was included in the data analysis; therefore, a priori power analysis was not conducted. Demographic data related to age, gender, and race, as well as substance use history was collected on all included participants. Data on the usage of the ASQ tool included when it was used and by whom. To ensure accuracy and consistency, the student investigator was the only person collecting and analyzing the data from the EMR. Some issues were identified related to attrition of staff and missing data within the EMR.

Analysis Plan

Descriptive statistics were used to describe the ASQ usage and substance use in the studied population. Also, descriptive statistics were used to report a summary of the demographic information of the participants including age, race, gender, and substance of choice.

Results

Setting and Participants

The project was conducted in an adult county correctional facility in Wisconsin. Data was collected from June 15, 2019 to December 15, 2019 which was the six months following the implementation of the ASQ. A convenience sample of 98 inmates was included in the study. Demographic characteristics, including age, gender, and race, were collected on these subjects. The majority (46.9%) were aged 26-35 and Caucasian (74.5%), with African American being the next largest population at 12.2%. Seventy-four of the participants were male (75.5%) and 24 participants were female (24.5%). (See Appendix K)

Intervention Course

The study site implemented the ASQ at the facility on June 15, 2019. The collaborating QMHP sent the student investigator a report containing a list of subjects that had been placed on observation status, either for medical or mental health reasons, from June 15, 2019 through September 30, 2019. Due to a staffing change at the facility, the report of observation subjects between October 1, 2019 to December 15, 2019 was delivered to the student investigator by another QMHP in January 2020. Data extrapolation was completed by early February 2020. Data analysis was reported by April 2020 and the results will be disseminated to stakeholders by May 2020 in order to discuss findings and possible revisions to training and education (Appendix L).

Outcome Data

Primary Outcome. The primary outcome was to determine the usage of the ASQ in the county jail setting. It was found that the ASQ was not being utilized during the intake process. In every instance that the ASQ was used, a QMHP utilized the tool. There was no usage by the nursing staff or correctional officers.

The intake form used by the correctional officers was noted to have two questions regarding suicide, “Are you currently feeling suicidal?” and “Have you ever attempted suicide? If yes, how long ago and method?” Of the 98 included subjects, 94 were asked these questions during intake (95.9%). Of the four not asked, the intake paperwork was missing from the EMR on two of the subjects.

Thirty-one subjects were identified as suicidal on intake (68.4%) using the intake form utilized by the correctional officers. However, two of those patients were marked as not suicidal on the intake form, but incident reports documented that these subjects exhibited suicidal

thoughts or behavior either prior to arrest or during the intake. The data showed that the ASQ was utilized 61.3% of the time during the follow-up evaluation of these subjects.

Besides being identified as suicidal on intake and placed on suicide watch, there were 68 other instances when a subject was placed on observation. The ASQ was used as a screening tool for 54 of these subjects (79.4%). Thirty-three of the subjects (61.1%) were on observation for possible substance withdrawal, 12 subjects (22.2%) were being observed for mental health reasons excluding intake suicidal ideation or behavior, and the remaining subjects were being observed for suicidal ideation or behavior occurring after intake, violent behavior and, in 2 instances, for undocumented reasons (16.8%) (Appendix M).

Secondary Outcome. Secondary outcomes involved analyzing substance use in the target population. Of the 98 included subjects, 70.4% admitted to some type of substance use. Alcohol use was the most common substance and was used by 52.2% of the subjects, opiates were used by 29%, methamphetamine 17.4%, and benzodiazepines 7.2%. Other types of substances mentioned included marijuana and cocaine (20.3%). Many of the subjects were polysubstance abusers and these percentages reflect that a single inmate may be using more than one substance (Appendix N). Thirty-three subjects were being monitored for possible substance withdrawal (Appendix M).

Discussion

Successes

This intervention was a success as it identified the areas and situations of the ASQ use and the personnel who were using it. This identification will be important as the project moves forward in other facilities. Areas of frequent use were identified, but areas where the tool could be used and was not were also identified. This finding suggests areas for improved

communication and education when the tool is being implemented at a jail setting by various personnel. At the study site, the tool was only being used by the QMHPs. With further education, the hope is that the tool could be used throughout the facility and across disciplines.

Study Strengths

The staff and administrators at the site were supportive. Even when the initial lead QMHP left the facility, the project facilitator assisted in finding a replacement QMHP that collected the needed reports on time. The project facilitator served as a mentor to the student investigator and provided support, encouragement and advice throughout the project.

The retrospective aspect of the study allowed for ease of data collection. Once the student investigator had the needed reports, it was a simple task to log on to the EMR and collect the appropriate data. The student investigator's familiarity with the EMR prior to the project also allowed for ease of data collection.

Results Compared to the Literature

According to the Emergency Nurse's Association Clinical Practice Guideline on Suicide Assessment (2017), a level A recommendation includes the use of a suicide screening tool in the assessment of every patient. Although the tool was not used to screen every inmate during the study, the ASQ was used 73.7% of the time to assess a patient that was placed on observation. Given that the facility did not use a validated assessment tool prior to the implementation of the ASQ, the project intervention should be considered a step in the right direction. The argument for using the ASQ in this setting was that the tool is simple, and was designed to be administered by nurses who did not have a considerable psychiatric training. However, the results of the study showed that the tool was used exclusively by the

QMHPs in the mental health staff, which indicates the need for further education regarding the tool.

When comparing the demographic characteristics, nationally, Caucasians account for 48% of the jail population, whereas African Americans consist of 34% of the population (Zeng, 2018; Cramer, Wechsler, Miller, & Yenne, 2017). At the pilot site, 74.5% of the studied population was Caucasian and 12.2% was African-American, which vastly differs from the national percentages. These differences may need to be considered when deciding to conduct further research at this facility, as the collected data may not be transferable.

Evidence shows that white males are most at risk for endorsing suicidal behavior compared to females and other ethnicities (Boren et al., 2017; Cramer et al., 2017; Hayes, 2012; Schaefer, Esposito-Smythers, & Tangney, 2016). The demographic data from the project found that of the 37 patients that were identified as having suicidal ideation or suicidal behavior, 22 were white males (59%). While these findings correspond with previous evidence, the majority of the population of the jail was Caucasian, limiting the validity in generalizing the project findings.

In regard to substance use, Darvishi et al. (2015) revealed that alcohol abusers are two to three times more likely to endorse suicidal ideation and suicide attempts than the general population. Toxicology reports have shown alcohol to be a contributory factor in 30-70% of completed suicides (Arensman et al., 2016; Stenbacka, Leifman, & Romelsjo, 2009). Of the 69 subjects in the study that admitted to substance use, 36 (52.1%) stated that alcohol was one of their substances of choice. Of the 37 subjects that were identified with suicidal ideation or behavior, 15 admitted to using or abusing alcohol (40.5%), which appears congruent with published evidence. Toxicology reports found that both prescription and illicit opioids were

found in 23.2% of suicide victims (Fowler, Jack, Lyons, Betz, & Petrosky, 2018). In the current study, 20/69 (29%) inmates identified opiates as one of their substances of choice. In 2017, the state of Wisconsin ranked 16th in opioid-involved overdose deaths, but remarkably in the current project, none of the 37 subjects identified as being suicidal in this project stated a history of opiate use (National Institute on Drug Abuse, 2019).

Internal Validity Effects

One internal validity effect to consider is the change in staffing during the data collection. Two different QMHPs ran the reports of inmates placed on observation, and a possibility is present that names were missed in the transition. Also, given that the ASQ was used exclusively by the mental health staff, the change in staffing could have affected the frequency of the tool's use. A convenience sample consistied of all inmates meeting inclusion criteria. Given the descriptive design of the project, the lack of randomization did not affect the results.

External Validity Effects

Because of the descriptive approach of the project, the lack of transferability is the leading negative external validity effect. The study setting was one county jail in Wisconsin and of the studied population, 74.5% were Caucasian and 12.2% were African American. These percentages are higher than the national average of 48% Caucasian and 34% African American in United States county jails. However, the studied population was a small part of the total population of the jail, so it is unknown if the diversity in the entire jail would be closer to national averages.

Another transferability issue is the use of the ASQ tool in the jail facility. The study site employed nursing staff, both registered nurses (RNs) and license practical nurses (LPNs) and

QMHPs, all of whom had training in how and when to use the tool. In the project, mental health staff utilized the tool. Given that the data were collected retrospectively, the reasons for lack of use by the other staff are unknown and would need to be addressed in order for the tool be effectively used at other facilities.

Sustainability of the Effects and Plans to Maintain the Effects

Sustainability is a concern given that the turnover of staff can result in a lack of use of the tool. At the study site, the health care staff and mental health staff were employees of a contracted company. Initial training regarding the ASQ was provided at corporate medical advisory meetings for various health care providers, as well as health care and mental health administrators, by the Vice President of Mental Health Services. A self-paced learning module was then offered on the company's online LMS for employees who did not attend the medical advisory meeting. Correctional officers are employed by the county and do not have access to the LMS. Their training was conducted by the Regional Nurse Managers of the contract company.

Rapid staff turnover is not unusual in the correctional setting, and depending on the frequency of the training, a decrease or inaccurate use of the tool may be seen. Given the findings of this project, a revision to the education and training of healthcare, mental health staff, and correctional staff may be needed.

Efforts to Minimize Study Limitations

Unfortunately, there was a turnover with the QMHPs who assisted with collecting the observation reports. Therefore, it is unknown if any names were missed in the transition. To increase the accuracy of the data collection, the student investigator was the only person that collected the data used in the study. Because jails have different population sizes and different

levels of staffing, it will be difficult to generalize the findings from this study to all county jail settings. However, the information obtained serves as a starting point in regard to where education needs to be emphasized.

Interpretation

Expected and Actual Outcomes

Because of the simplicity of the ASQ, the expectation was that the tool would be implemented by corrections staff and nursing staff when an initial screening was needed. Then when a patient had a positive screen, the mental health staff could do a follow-up evaluation. It was unexpected to find that the tool was not used by correctional staff or the nursing staff. It could be inferred that because the correctional officers are not employees of the contract company that they may have felt that the training was not important or that the suicide questions found on their intake form were sufficient for screening. Or, it could be simply that they did not want to their intake paperwork.

It is more unclear why the nursing staff did not use the form. The jail's population averaged 300 inmates at any given time. The jail has contracted for 148 hours of nurse staffing a week. Therefore, the nurses are in the facility from 0700-2300 Monday-Friday and 0700-1100 on the weekends. Nursing does not staff the intake area but are expected to review all of the intake screenings completed by the correction officers. During the study time period, the jail staffed four nurses, which is one short of being fully staffed. Mental health hours are contracted at 70 hours per week, with 3 QMHPs on staff (personal communication, March 10, 2020). There was QMHP staff turnover during the study period which could have affected the results. With double the nursing hours and the requirement of reviewing the intake screens, one could assume the nursing staff could effectively utilize the tool in several instances.

Because the ASQ was not utilized by the correctional officers, there was no use of the tool during intake screening. This finding was unexpected and unfortunate, as the ENA's clinical practice guideline related to suicide risk has a level A recommendation is that suicide screening tools be used in the assessment of every patient that presents to the ED (Emergency Nurses Association [ENA], 2017). The simplicity and brevity of the ASQ made it an ideal tool for an intake assessment.

One pleasant, unexpected finding was the high usage rate for screening during withdrawal observation. Of the 54 instances of ASQ use when an inmate was placed on observation, 33 of the screenings occurred because the patient was being monitored for withdrawal. None of the 33 subjects being monitored for withdrawal were identified as suicidal. Still, with substance abuse being a high risk factor for suicidal ideation and behavior, it is important for these patients to be monitored.

Intervention Effectiveness

The primary outcome of this project was to determine the usage of the ASQ in the identification of suicidal ideation in county jail inmates. The data collected in this project provides a foundation to improve the implementation of the ASQ in the jail setting. The data collected on the use of the ASQ can be used to guide further education and training to ensure adequate usage throughout facilities. The simplicity of the ASQ makes it an ideal screening tool in the jail setting. The data collected suggests that education and training need to be tailored to the specific staffing needs and capabilities of each jail.

Secondary outcomes included analyzing substance use in this population. The substance abuse data collected regarding alcohol use was congruent with national findings. Given that the

risk of suicide increases significantly with substance use, increasing the usage of the ASQ as a screening tool is critical.

Intervention Revision

Because this is a retrospective, descriptive study, there is no intervention to revise. However, the data collected does indicate a need for increased education in the use of the tool and suggests focus on various provider populations. Because of the differences in size and personnel in each jail, education and training will need to be individualized for each facility.

Expected and Actual Impact to Health System, Costs and Policy

The level A recommendation from the ENA's Suicide Risk Assessment guideline includes using a suicide screening tool in the assessment of every patient. With suicide being the leading cause of death in the jail setting, the impact of implementing this intervention could be immense. The expectation that the ASQ was going to be utilized throughout the facility, from intake to any time there was a concern, did not happen as expected, showing the need for increased training and education.

Minimal costs were expected for the project as the ASQ had already been implemented. Because the student investigator was able to collect data remotely, no costs were incurred. Because of the online training capability of the company, minimal costs should be presented related to continuing education. The ASQ tool is free to use through the NIMH.

Conclusion

Suicide is currently the leading cause of death in the jail setting. Early identification of potentially suicidal newly arrested substance users can lead to improved morbidity and mortality for this population, decreased costs for jails and their constituents related to completed suicides, and improved care of this high-risk population. The ASQ has been shown to be a valid tool in

the identification of suicidal ideation in both medical-surgical and psychiatric patients between the ages of 10-21. The simplicity of the tool and minimal training requirements for the use of this tool make it an ideal screening aid in the jail setting.

The primary outcome of this project was to determine the usage of the ASQ in the screening of suicidal ideation in county jail inmates. Because the data showed gaps in the usage of the ASQ, future evidence-based project implementation could be developed regarding educational interventions to increase throughout facilities. Secondary outcomes included analyzing substance use in this population. Once the ASQ is fully implemented within facilities, there may be further studies using the ASQ data to identify a correlation between suicidal ideation and substance withdrawal, potentially enhancing quality of care.

The results of this evidence-based quality improvement project will be shared with the medical and mental health staff at the correctional healthcare corporation. A written manuscript will be submitted for publication, and a poster will be presented at a regional or national conference related to correctional medicine or mental health (See Appendix O for project timeline). The increase in suicidal behavior and deaths in the jail setting, as well as the documented increase in substance abuse, should make the identification of these individuals a priority in the corrections setting.

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Appendix A

Logic Model for DNP Project					
Student: Annette Behney					
Inquiry, PICOTS: How is the ASQ screening tool in the adult county jail setting during the six month post implementation phase.					
Inputs	**Intervention(s)** *Activities*	**Outputs** *Participation*	**Outcomes -- Impact** *Short*	*Medium*	*Long*
Evidence, sub-topics 1. Variables related to suicide. 2. Substance abuse and suicide. 3. Suicide screening **Major Facilitators or Contributors** 1. Director of Mental Health services, ACH 2. DNP faculty 3. NIMH **Major Barriers or Challenges** 1. Limited use outside of mental health staff 2. Lack of buy-in from facilities	**EBP intervention which is supported by the evidence in the Input column (brief phrase)** Early identification of suicidal ideation in jail inmates with a history of substance abuse. **Major steps of the intervention (brief phrases)** 1. Brief training on ASQ through online learning portal 2. Implement in facilities 3. Collect post-implementation data in one pilot facilities 4. Statistical analysis and evaluation	**The participants:** newly arrested adult patients. **Sites:** Adult facility in Sheboygan, WI **Time Frame:** 6 months **Consent or assent Needed:** consent of facility **Other person(s) collecting data:** none **Others directly involved in consent or data collection** Site QMHP provided report of inmates on observation	**(Completed during DNP Project)** **Outcome(s) to be measured** Primary: Determine the use of the ASQ after implementation Secondary: Analyzing substance use in this population **Measurement tool(s)** NA **Statistical analysis to be used** **1.** Descriptive statistics will be used to describe the ASQ usage and substance use in the studied population.	**(after student DNP)** **Outcomes to be measured** Accurate use of the tool throughout the company.	**(after student DNP)** **Outcomes that are potentials** Decreased deaths from suicide

Appendix B

Item	**Item Description**	**Quantity**	**Unit Cost**	**Anticipated Cost**	**Actual Cost**
Travel to sites	Flight: ~$300 round/trip Rental car ~ $60/day x 3 days Hotel ~$120/night x 3 nights	2 separate visits	$840 per trip	$1680	$0 No travel required
Student Time	Student time is part of DNP project	600 hours	No cost		No cost
Dissemination of projection	Presentation of project proposal at the Advanced Practice Nurses of the Ozarks Regional Conference	Cost of one student investigator	Conference registration ~$450 Hotel for 2 nights ~$230 Cost to have poster printed $40 Cost for travel (drive or air travel) $90 Food $150		$1000
Total					$1000

Appendix C

Definition of Terms

Suicidal ideation: Individuals who have thoughts of taking their own lives (Beck, Kovacs, & Weissman, 1979)

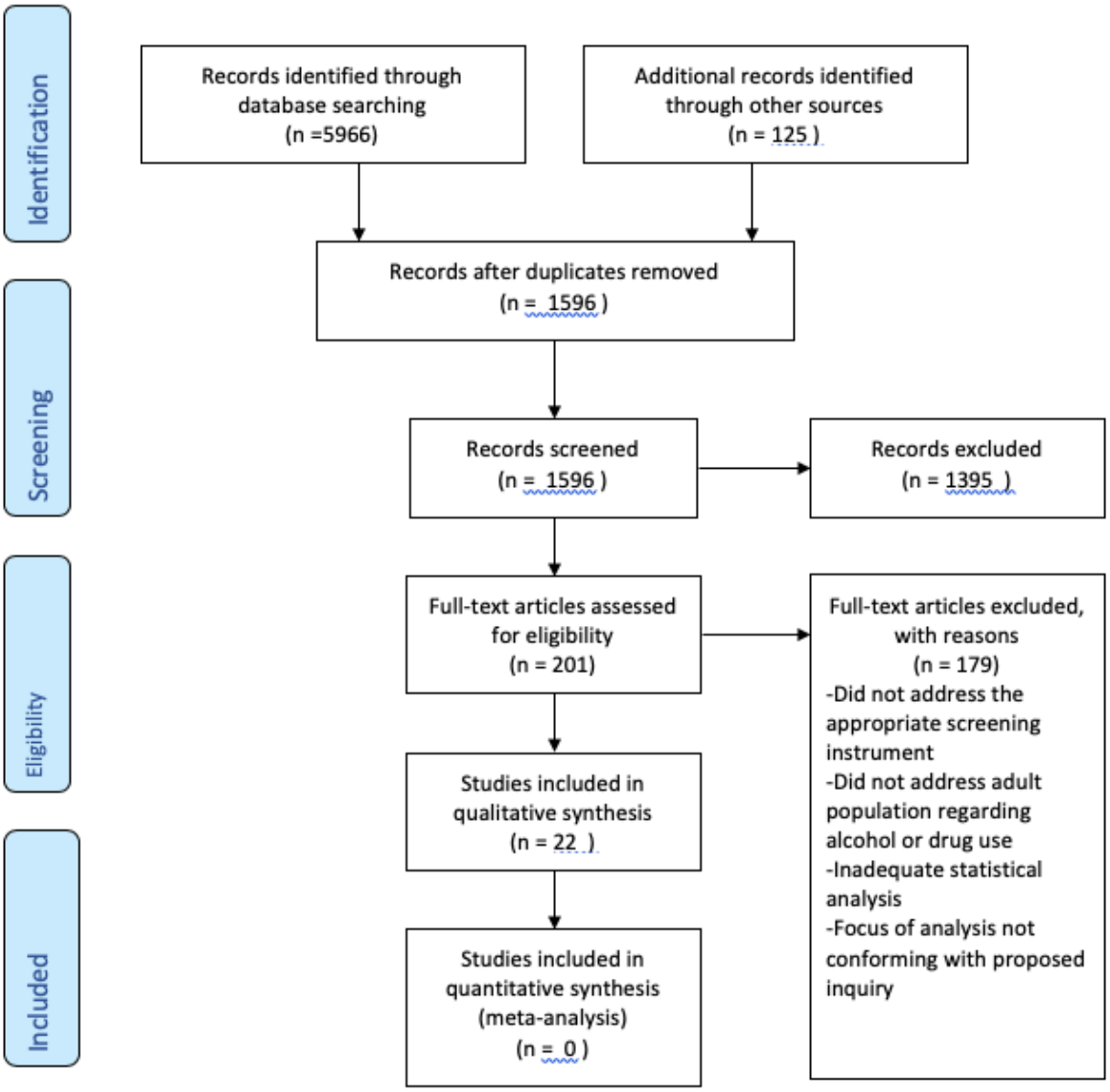
Suicidal Behavior: Behaviors that include self-harm, suicide attempts, and suicide (Silverman, Berman, Sanddal, O'Carroll, & Joiner, 2007)

Substance withdrawal: A group of symptoms of variable clustering and degree of severity which occur on cessation or reduction of use of a psychoactive substance that has been taken repeatedly, usually for a prolonged period and/ or in high doses (World Health Organization [WHO], 2019).

Jail inmate: Offenders confined in short-term facilities that are usually administered by a local law enforcement agency and that are intended for adults but sometimes hold juveniles before or after adjudication. Jail inmates usually have a sentence of less than 1 year or are being held pending a trial, awaiting sentencing, or awaiting transfer to other facilities after a conviction (Bureau of Justice Statistics [BJS], n.d.).

Appendix D

PRISMA 2009 Flow Diagram



Appendix E
Review of Evidence Table

First author, Year, Title, Journal	Purpose	Research Design[1], Evidence Level[2] & Variables	Sample & Sampling, Setting	Measures & Reliability (if reported)	Results & Analysis Used	Limitations & Usefulness
Variables Related to Suicide						
Boren et al. (2017) The Suicidal Inmate: A Comparison of Inmates Who Attempt Versus Complete Suicide. *Suicide and Life-Threatening Behavior*	Identify risk factors that distinguish suicide attempters from suicide completers in inmates	Descriptive, cross-sectional Level 4 Independent variables: criminal justice, demographic, incident- and institutional-related variables. Dependent variables: suicide attempt vs. suicide completion	-925 inmates that attempted or completed suicide between 1/07 and 10/15 -facilities in eight different states	continuous variables: independent samples *t* tests categorical variables: chi-square tests ordinal data: Mann-Whitney *U* tests	**Demographic**: Completers: male, older, more highly educated, and married, separated, divorced. **Criminal Justice**: Completers: minimum or maximum security classification, committed a violent crime, pretrial, **Institutional**: Completers: housed in protective custody or inpatient mental health unit; incarcerated in jail, housed in a single or double cell **Incident-related**: Completers: happens between 6 pm to 9 am, using hanging/self-strangulation	-larger sample size than similar studies, -data drawn from one company's facilities -Retrospective study that did not include nonsuicidal controls -Motivations for attempts were unknown
Schaefer et al. (2016). Suicidal ideation in an United States jail: Demographic and psychiatric correlates. *The Journal of Forensic Psychiatry & Psychology.*	-analyzed psychiatric and socio-demographic correlates -examine rates of SI in a male/female jail setting	Level 4 correlational study Variables of interest: SI, age, gender, race, hx of psychiatric diagnosis, hx of suicide attempt	-511 inmates in a suburban jail.	t-tests to determine group differences	-16% reported clinically significant SI. -caucasian, hx of previous suicide attempt, and hx of psychiatric diagnosis were more likely to endorse SI. - no significant correlation between age and gender and SI.	-how suicidal thoughts were measured not described. -SI only measured upon incarceration -suggested further study measuring SI along multiple points during incarceration.

Reeves et al (2014). Single cells, segregated housing, and suicide in the New Jersey department of corrections. *The Journal of the American Academy of Psychiatry and the Law*	Continuous QI initiative studying modifiable risk factors of single-cell and segregated housing on suicide risk	-Level 4 case control -General population vs segregated housing (all other locations in the jail); Single vs. double-cell status	26 inmates who completed suicide in New Jersey DOC from 2005-2011	-Annual suicide rates (odds ratio) were determined in various housing locations -Binomial analysis completed to test differences between the suicide rate in double-cell GP vs. the other housing units.	-All of the single cell housing units had significantly ($p<.01$) higher suicide rates than double-cell GP. -No suicides in any other double-cell area	-No prospective studies have been done on double-celling for its effect on suicide risk. -Small sample size
Opitz-Welke et al. (2016). Prison suicide in female detainees in Germany 2000-2013. *Journal of Forensic and Legal Medicine*	Compared characteristics of women vs men who completed suicide in German prisons from 2000-2013	-Level 4 case control Sociodemographic and forensic variables -Details of the suicide and specific risk factors	1037 men and 30 women and with suicide completions in German prisons	frequency data, t-test, chi-squared test, Fisher's exact test for small numbers	-Suicide rate for women increased between 2000-2013 and the rate for males decreased -Over half of suicides occurred pretrial **Drug withdrawal symptoms were noted significantly more often in women who completed suicide	-Long range study, but sample size small -Incidental finding of increased SI with drug withdrawal
Hayes (2012). National study of jail suicide: 20 years later. *Journal of Correctional Healthcare*	-follow-up national study of jail suicide -evaluates the distribution and extent of suicides in correctional facilities	-Level 6 descriptive -Variables include: demographic characteristics, Suicide incident characteristics, Facility characteristics and response	Identified 696 jail suicides occurring in 2005/2006, data analyzed on 464	Descriptive statistics-percentages and rates	-2/3 victims were white; 93% male, age 33 to 42. 42% single, 21% married/in relationship, 9% divorced -38% stated having history of mental illness during intake. -Nearly 20% took psychotropic meds -20% were intoxicated at the time of suicide -60% were assigned single-occupancy cell, over 1/3 were in	-3rd study by the same author over 20 years that shows trends of jail suicide -Large sample size, strictly descriptive

					segregation/isolation at time of death	
Folk et al. (2018). Differences between inmates who attempt suicide and who die by suicide: Staff-identified psychological and treatment-related risk factors. *Psychological Services*	Identify factors that would differentiate between inmates who are attempters or whodie by suicide	-Level 4 case control -Variables: Diagnostic factors, treatment factors, concurrent risk factors, historical risk factors. proximal risk factors	-925 inmates who attempted or completed suicide between 1/2007 and 10/2015 - eight state correctional facilities and two municipal jails	-Chi-squared tests were performed on the categorical items. -Mann-Whitney U tests -A Benjamini-Hochberg (B-H) correction	**Diagnostic-** borderline personality disorder (BPD) diagnosis, more likely to attempt **Concurrent risk factors:** more likely to attempt if they exhibited hopelessness, agitation, alienation, depressive symptoms, psychological turmoil, psychotic symptoms, a sudden change in mental status, or an identified suicide plan. **Proximal risk factors-** more likely to attempt if recently tried self-harm or demonstrates conflict with peers. **Historical risk factors-** more likely to attempt if have a documented history of trauma, suicide/self-harm behavior, impulsivity, no history of participation in mental health treatment, and substance use problems.	-Study only included archival data -Convenience sample -Reports of risk factors were based solely on documentation, there may be risk factors present that were not documented
Cramer et al. (2017). Suicide prevention in correctional settings: Current standards and recommendations for research, prevention, and training. *Journal*	-Literature review on protective and risk factors for suicide among inmates -Suggestions for suicide prevention, training and	-Level 5 qualitative review -Variables: Risk and protective factors, current practice recommendations, recommendations of prevention,		Literature review	**Incarceration, setting and staff risk factors-** Being incarcerated, jail vs prison, Isolation, Loss (freedom, support, economics, autonomy), Psychological strain, not enough mental health programming and staff, Administrative	Gap in identification and development of protective factor

of Correctional Healthcare	research in the correctional settings.	training & research			segregation/special housing unit, **Inmate characteristic risk factors-** History of psychiatric diagnosis, first incarceration, Caucasian ethnicity, young age, Male, Historical or current alcohol/drug use, Impulsivity, Introversion, Aggression, Emotional instability, Hopelessness	
Substance Abuse and Suicide						
Wilcox, Connor & Caine, (2004). Association of alcohol and drug use disorders and completed suicide: An empirical review of cohort studies	Updates and expands on previous meta-analysis on suicide resulting from mental disorders	Level 3 empirical review of cohort studies Reviewed studies from previous meta analysis that included drug use and alcohol disorders and suicide.	42 studies met eligibility criteria	-standard mortality ratios: risk for suicide for those having SUD were > in the general population. -interrater reliability analysis conducted on studies from the previous meta-analysis,	-standardized mortality ratios (SMR) for suicide: *alcohol use disorder (979 95% CI *opioid use disorder 1351; 95% *intravenous drug use 1373; 95% CI *mixed drug use 1685; 95% CI *heavy drinking 351; 95% CI.	-Older study, but information remains pertinent -Substantial between study heterogeneity seen in alcohol related studies-specifically between earlier and later studies, suggesting earlier studies had different results than newer studies -Limited data from other substances did not produce similar results
Arensman et al., (2016). Suicide among young people and adults in Ireland: Method characteristics, toxicological analysis, and substance abuse histories compared	Studied suicide completers to identify socio-demographic characteristics and circumstances of death associated with age.	Level 4 case control study. Socio-demographic characteristics, methods of suicide, history of drug and alcohol abuse, and toxicology results	-121 consecutive suicides -2007-2012 -southern Ireland	-Binary logistic regression analysis and Pearson's x^2 tests -Hosmer and Lemeshow test: goodness-of-fit	-79.5% of sample tested positive for drugs and/or alcohol during toxicological analysis. -No significant difference between age groups -15-24 yo more likely to attempt suicide by hanging. -History of substance abuse similar in the two age groups	-small sample size, limited statistical power -Lack of control group -Alcohol and drug levels were not assessed, so can't determine the extent to which this substances affect behavior -Recreational and therapeutic drugs were group together.

Backmund et al. (2011). Factors associated with suicide attempts among injection drug users. *Substance Use & Misuse*	Determinerisk factors for suicide attempts in opiate users	-Level 4 prospective cohort study -Dependent variable-attempted suicide -Independent variables-sociodemographic characteristics, Injection drug use (IDU)-related factors	1049 accepted patients admitted into detox unit from April 1991-April1997	Bivariate logistic regression used to calculate the relative odds	Independent factors associated with suicide attempts: being without counseling, older age (>29 years), female gender, emergency treatment, and drug user treatment experience	-Data collection was completed by 1997 -No standardized psychiatric assessment -Retrospective data -Prevalence rates to be lower because of estimation.
Stenbacka et al (2010). Mortality and cause of death among 1705 illicit drug users: A 37 year follow up: Mortality among illicit drug users	-Examine the overall mortality of female and male opiate, cannabis, and amphetamine users -to analyze causes of death as relates to various kinds of drug use.	-Level IV longitudinal case control -Dependent: mortality, cause of death, and inpatient hospitalization -Independent: Alcohol, opiate, central nervous system stimulants, cannabis or other drugs	-1705 substance abusers -Stockholm -followed from 1967 to 2003	-Standardized rate ratio for mortality -Incidence of mortality -Poisson regression analysis	- during 37 year follow-up, 860 subjects died -Most common causes of death were suicide, cardiovascular disease, and accidents. -86 deaths had opiate abuse as a contributing or underlying cause -CS (central stimulants) as contributing or underlying cause were evident in 171 deaths - in those aged 24 years or younger, almost 1/5 of deaths were from suicide	-Unsure of the number of subjects who stopped their substance use, or changed to other illicit drugs or to alcohol after 1967 - the SRR and mortality would be higher, if the calculations included only those who continued their abuse, -unnecessary mortality due to Sweden's restrictive opiate substitution treatment policies during the study period.
Kazour et al (2016). Suicide Risk of Heroin Dependent Subjects in Lebanon. *Community Mental Health Journal*	among heroin dependent inpatients, determine associated factors and the frequency of suicidal behavior	-Level III Quasi experimental -Dependent: Impulsivity, depression, suicidal ideation -Independent: opioid dependent	-61 heroin dependent patients admitted consecutively to a psychiatric hospital -Israel -61 patients in the control group	-Beck Suicidal Ideation Scale (BSI), -Barratt impulsivity Scale (BIS) -Hamilton Depression Rating Scale (HAMD)	- 37.7 % of heroin group had a history of suicide attempt -Patients with a history of SA: more often females, early first substance and early heroin abuse . -Higher levels of depression and impulsivity	-Inpatient heroin dependent group was compared to a non-hospitalized matched group. -second degree relatives may not remember or know family history of SA: recall bias

			paired by age and gender	-Descriptive statistics: Student's t-test, Chi square test, ANOVA and Pearson correlation test	correlated with more lifetime suicide attempts - number of suicide attempts significantly associated to number of previous admissions for detox -13.1 % used intentional heroin OD as a means of suicide.	-indirect measures of suicide risk (current suicidal ideation and past SA) -the defined geographical area and the sample size
Harford et al. (2018). Substance Use Disorders and Self- and other-directed violence among adults: Results from the national survey on drug use and health. *Journal of Affective Disorders*	Studies the extent to which SUDs, are associated with self- harm and violence towards others	-Level IV cross sectional -Dependent: self and other-directed violence -Independent: substance use disorders, psychological distress, criminal justice involvement, socioeconomic variables	-Data collected from consecutive NSDUH surveys from 2008-2015. -314,881 adults 18 and older	-Frequency distributions of each variable -Cross-tabulation and correlation between self harm and violence towards others -Multinomial logistic regression -Adjusted Wald tests were used	For self-harm compared with no violence, alcohol use disorder, nicotine dependence and criminal justice involvement indicate significantly higher odds	-All information on violent behavior is based on retrospective reports -Inherent bias related to self-reporting. -The same time frame was not used for all measures -Selection bias: many people who engaged in violence may not have been included in sample
Bohnert et al. (2017). Substance use disorders and the risk of suicide mortality among men and women in the US Veterans Health Administration: Substance use disorders and suicide. *Addiction*	Study relationships between suicide and SUDs for men and women	-Level IV cohort study -Dependent-suicide -Independent-sex, substance use disorders, age, demographic variables	-all veterans receiving care at VA during fiscal year 2005 -(n = 4 863 086). -6 year suicide assessment follow up.	-percentage and number of current SUD diagnoses -SUD-specific and overall suicide rates -gender-stratified Cox proportional hazards regression models	-suicide rate among SUD diagnosis was 75.6 per 100 000 person years; 76.1/10000 for males and 63.4/100 000 for females. -the suicide rate for sedative use was highest, followed by amphetamine, opioid, cannabis, alcohol and cocaine use -current diagnosis of any SUD was associated with elevated suicide risk	-Previous research has has VA patients may have higher rates of suicide and poorer mental and physical health, than the general US population. -Differentiating between suicide and accidental overdose among individuals with SUDs difficult and cause of deaths could be misclassified -Diagnoses based on VA providers

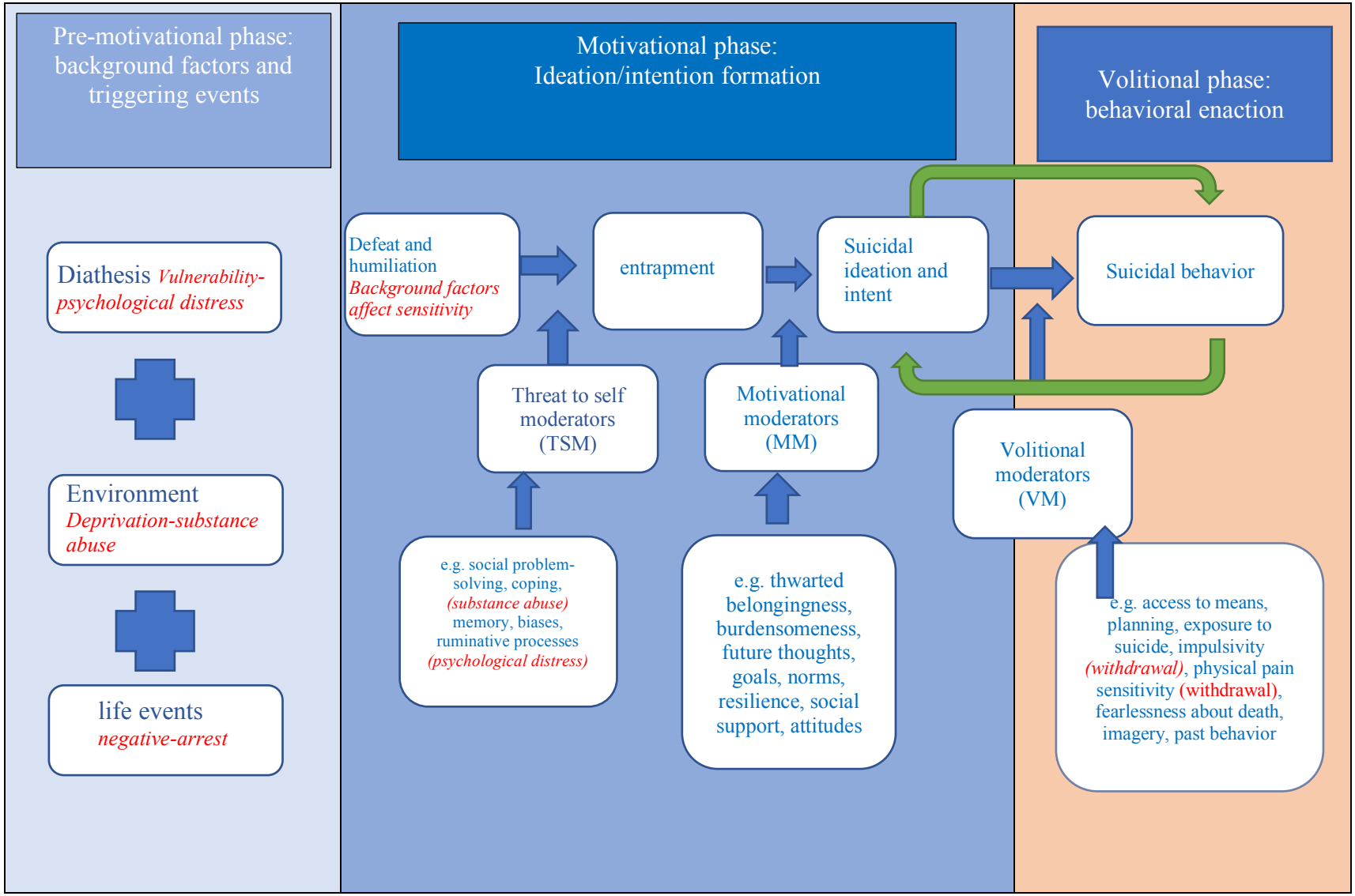
						judgement; validity and reliability a concern
Artenie et al. (2015). Licit and illicit substance use among people who inject drugs and the association with subsequent suicidal attempt: Substance use and suicide attempt among PWID. *Addiction*	In people who inject drugs (PWID), determine relationships between recent substance use and resultant suicide attempt	-Level IV cohort study-secondary analysis -Dependent-suicide attempt -Independent-types of substances and frequency, sociodemographic characteristics, psychological stress, unstable housing, or being incarcerated in last 6 months	797 PWID who used in the previous 6 months -Montreal Canada	-Descriptive statistics -person time method was used to calculate incidence of SA -Poisson distribution was used to estimate CI -to determine the relationship between substance use and SA, a GEE analyses with a binomial logit link -a Univariate GEE analyses	-significant positive association found between occasional and regular sedative–hypnotics use, alcohol consumption, and subsequent SA. -Positive correlation between recent use of cannabis, alcohol and sedative–hypnotics with subsequent SA. -use of opioids, cocaine, or amphetamine not associated with later SA.	-No random sampling, - because of self-reported data, could have social desirability bias -drug and ETOH disorders diagnoses were not based on DSM criteria
Darvishi et al. (2015). Alcohol-Related Risk of Suicidal Ideation, Suicide Attempt, and Completed Suicide: A Meta-Analysis. *PLOS.*	Examined the effect of alcohol use disorder (AUD) on suicidal ideation and behavior,	-Level III systematic review -Dependent: suicidal ideation, suicide attempt, and completed suicide	-31 studies -420,732 participants	-risk ratio (RR) -odds ratio (OR)	-Significant association between AUD and SI -Strong association between AUD and SA -Significant association between AUD and completed suicide	Selection bias- 12 potential studies could not be included because full-text could not be found
Borges et al. (2016). A meta-analysis of acute use of alcohol and the risk of suicide attempt. *Psychological Medicine.*	To determine the of acute alcohol use on suicide attempts	-Level III systematic review -Dependent variable: suicide attempt -Independent variable: acute use of alcohol	-7 studies -1240 cases	-Common ORs -95% CIs	-Any acute alcohol use was correlated with increased risk of a suicide attempt: -The higher the level of acute drinking, the greater the risk	-Possibility for missed studies -Low number of studies -uses data from reports of patients from different countries; unable to determine how effects differ by culture or country
Suicide Screening						

ENA (2017). Clinical practice guideline: Suicide Risk assessment	Determine which predictors and risk assessment tools are effective in screening for suicidal ideation and behavior during the initial assessment	-Level 1 EBP -Variables: instruments validated for assessment, potential predictors for suicide,	-56 studies included	-Level A (High) recommendation based on having applicability and relevance to emergency nursing practice and is consistent and good quality evidence. -Level B (moderate) recommendation; evidence has applicability and relevance to emergency nursing practice there may be some minor inconsistencies in quality of evidence	-Level A-a scrrening tool should be used for all patients -Level A- previous episodes of self-harm strong predictor of suicidal behavior -Level B-training required to improve confidence -Level B- ASQ, MSHR, RSQ considered reliable instruments	-designed for the emergency department, but certain concepts could be applicable to the corrections setting.
Newton et al. (2017). A Systematic Review of Instruments to Identify Mental Health and Substance Use Problems Among Children in the Emergency Department. *Academic Emergency Medicine*	systematic review evaluating the psychometric properties, performance metrics, and accuracy of instruments used to identify pediatric mental health problems and substance use	-Level 3 systematic review -Review of instruments identifying emotional or behavioral disorders, mental illness, substance use problems, or suicide risk -Primary outcomes: instrument reliability and validity for	-14 studies included in synthesis	- two reviewers assessed methodologic quality for all studies -quality of instrument assessed using a modified version of an evaluation tool -used QUADAS-2 to assess applicability of diagnostic	ASQ -1)high risk of bias for patient selection methods, 2)an unclear risk of bias for how the reference standard and index were used in the diagnostic evaluation 3) a low risk of bias for timing and flow of instrument delivery. -ASQ, RSQ are more sensitive but less specific -ASQ and RSQ show strong evidence to rule out risk.	- limited to pediatric patients, but the review of the ASQ went up to age 21, which could be applicable in an adult corrections setting -significantly different methods found among the studies -limited number of trials for each instrument, unable to assess for risk of publication bias.

		psychometric studies, positive and negative likelihood ratios for cohort and diagnostic studies		studies and methodologic quality	-ASQ: highly sensitive instrument for detecting risk of suicide in the population of interest,	
Horowitz et al. (2012). Ask Suicide-Screening Questions (ASQ): A Brief Instrument for the Pediatric Emergency Department. *Archives of Pediatric & Adolescent Medicine*	development of a brief suicide screening instrument for use in pediatric emergency departments.	-Level IV prospective, cross sectional -17 candidate questions were asked then followed by the Suicidal Ideation Questionnaire	-convenience sample: 524 patients between 10-21 years -presented with either psychiatric or medical/ surgical complaints in the ED -between 9/10/08 and 1/5/11.	-Predictive values -likelihood ratios -sensitivity/ specificity,	-sensitivity and specificity was 96.9% for medical/surgical patients and 87.6% for psychiatric patients. -Only 1 (0.3%) of 311 patients with medical/surgical concerns who screened negative on the ASQ, screened positive on the SIQ	-Lack of generalizability: Study EDs were all in urban, tertiary care teaching hospitals -Selection bias related to convenience sampling
Ballard et al. (2017). Identification of At-Risk Youth by Suicide Screening in a Pediatric Emergency Department. *Prevention Science*	-examine nursing compliance with administration -describe the relationship between primary complaint, screening results, demographics, and disposition -determine the value of the ASQ in identifying suicide risk in patients whom may have	-Level IV retrospective cohort study -Variables- demographic variables, presenting complaint, ASQ responses, disposition, dc diagnosis	-970 consecutive patients (ages 8-18) -Johns Hopkins Hospital Pediatric ED -from March 2013 to August 2014	-Univariate analyses -Sensitivity and specificity	-nursing compliance rate 79% -Nurses were less likely to screen patients with drug or alcohol overdoses, bizarre behavior, hallucinations or internalizing symptoms. -Over half of psychiatric patients screened positive. Patients who have a suicide-related presenting complaint, were older, female, and be hospitalized or transferred on their visit were more likely to screen positive -53% of psychiatric patients who screened positive presented without suicide-related chief complaints.	-limitation in generalizability: single site, retrospective review of medical record data, -Responses may be biased secondary to the presence of parents/guardians during screening

	otherwise gone undetected -determine the relationship between ASQ results and repeat ED visits					
Perry et al. (2010). Screening Tools Assessing Risk of Suicide and Self-Harm in Adult Offenders: A Systematic Review. *International Journal of Offender Therapy and Comparative Criminology*	Systematic review assessing the validity of suicide assessment and screening tools in identifying suicidal behavior in adult offenders.	-Level 5 systematic review	-5 studies -4 different instruments	-sensitivity and specificity -positive predictive value (PVP) -negative predictive value (PVN	-3 instruments had high sensitivity: the Suicide Potential Scale (86%), the SCL, (86%) and the SCOPE, (81%). -Good specificity- the Suicide Potential Scale (80%), the Suicide Probability Scale (78%), the SCOPE (71%), and the SCL (21%).	-none of the instruments were validated with community offenders -All were validated as screening instruments to identify a well person from a probably not-well person

Appendix F
The Integrated Motivational-Volitional Model



Appendix G
IRB Approval

UMKC **Institutional Review Board**
University of Missouri-Kansas City

5319 Rockhill Road
Kansas City, MO 64110
816-235-5927
umkcirb@umkc.edu

Dear Annette Behney (UMKC-Student),

A member of the UMKC Research Compliance Office screened your QI Questionnaire to project #2016026-QI entitled "ASQ Screening to Identify Suicidal Ideation in Newly Arrested Substance Abusers" and made the following determination:

QI Determination: **The project has been determined to be a quality improvement activity not requiring IRB review.**

If you have any questions regarding this determination, please feel free to contact our office at 816-235-5927, umkcirb@umkc.edu, or by replying to this notification.

Note Regarding Publications: It is appropriate to disseminate and replicate QI/program evaluation successes, including sharing the information external to an organization. This may include presentations and publications. The mere intent to publish the findings does not require IRB review as long as the publication does not refer to the activity as research.

Thank you,
UMKC Institutional Review Board

Appendix H
Site Approval Letter

Appendix I
Program Approval Letter

UMKC School of Nursing and Health Studies

July 12, 2019

DNP Project Proposal Approval
UMKC DNP Student

This letter serves to provide documentation regarding Annette Behney's Doctor of Nursing Practice (DNP) Project proposal. Ms. Behney obtained approval for her project proposal, *ASQ Screening to Identify Suicidal Ideation in Newly Arrested Substance Abusers,* from the School of Nursing and Health Studies DNP faculty on July 12, 2019.

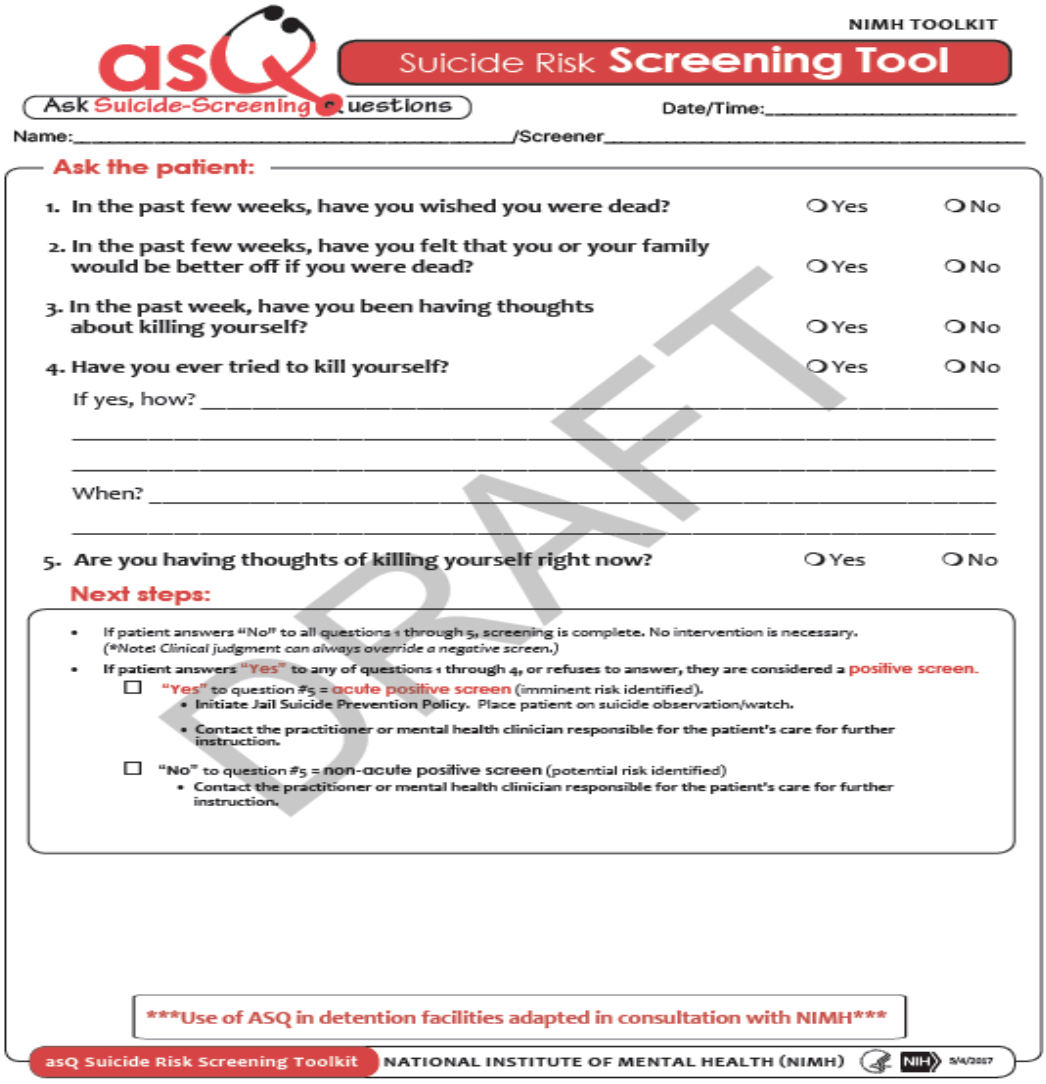
If we can provide further information, please feel free to contact us.

Sincerely,

Cheri Barber, DNP, RN, PPCNP-BC, FAANP
Clinical Assistant Professor
DNP Program Director
UMKC School of Nursing and Health Studies
barberch@umkc.edu

Lyla Lindholm, DNP, ACNS-BC
UMKC MSN-DNP Program Coordinator
Clinical Assistant Professor
DNP Faculty

Appendix J
ASQ Screening Tool



NIMH TOOLKIT

asQ Suicide Risk Screening Tool

Ask Suicide-Screening Questions

Date/Time:_____

Name:_____/Screener_____

Ask the patient:

1. In the past few weeks, have you wished you were dead? ❍ Yes ❍ No
2. In the past few weeks, have you felt that you or your family would be better off if you were dead? ❍ Yes ❍ No
3. In the past week, have you been having thoughts about killing yourself? ❍ Yes ❍ No
4. Have you ever tried to kill yourself? ❍ Yes ❍ No

   If yes, how? _____

   _____

   _____

   When? _____

   _____
5. Are you having thoughts of killing yourself right now? ❍ Yes ❍ No

Next steps:

- If patient answers "No" to all questions 1 through 5, screening is complete. No intervention is necessary. *(*Note: Clinical judgment can always override a negative screen.)*
- If patient answers "Yes" to any of questions 1 through 4, or refuses to answer, they are considered a positive screen.
  - ☐ "Yes" to question #5 = acute positive screen (imminent risk identified).
    - Initiate Jail Suicide Prevention Policy. Place patient on suicide observation/watch.
    - Contact the practitioner or mental health clinician responsible for the patient's care for further instruction.
  - ☐ "No" to question #5 = non-acute positive screen (potential risk identified)
    - Contact the practitioner or mental health clinician responsible for the patient's care for further instruction.

Use of ASQ in detention facilities adapted in consultation with NIMH

asQ Suicide Risk Screening Toolkit NATIONAL INSTITUTE OF MENTAL HEALTH (NIMH) NIH 5/4/2017

Appendix K
Demographic Data

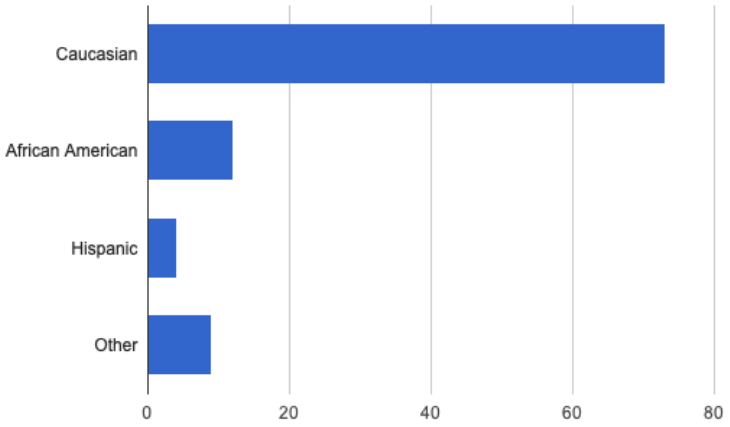


Figure 1. Race
Counts/frequency: Caucasian (73, 74.5%), African American (12, 12.2%), Hispanic (4, 4.1%), Other (9, 9.2%)

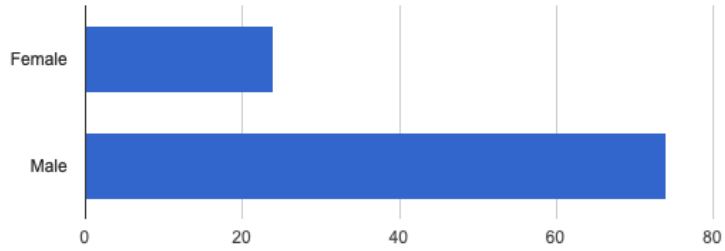


Figure 2. Gender
Counts/frequency: Female (24, 24.5%), Male (74, 75.5%)

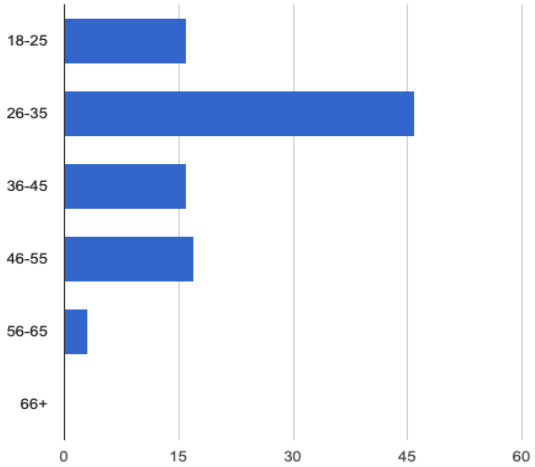
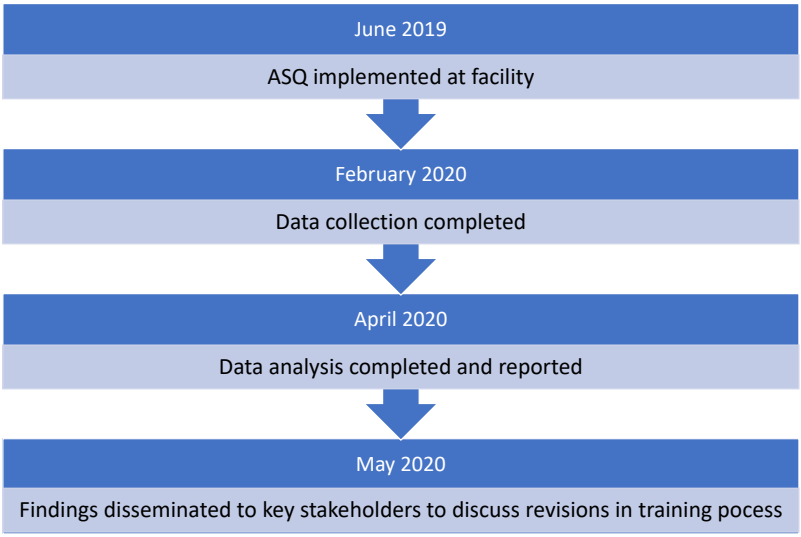


Figure 3. Age
Counts/frequency: 18-25 (16, 16.3%), 26-35 (46, 46.9%), 36-45 (16, 16.3%), 46-55 (17, 17.3%), 56-65 (3, 3.1%), 66+ (0, 0.0%)

Appendix L
Intervention Flow Diagram



Appendix M
Primary Outcomes

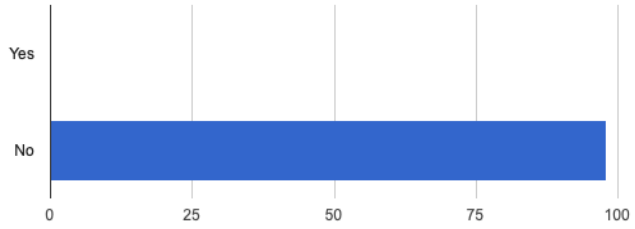


Figure 1. ASQ used on intake
Counts/frequency: Yes (0,0.0%), No (98,100.0%)

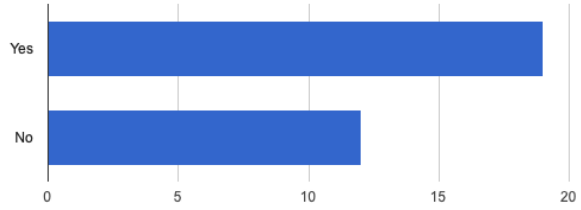


Figure 2. If suicidal on intake, was ASQ for follow-up screen
Counts/frequency: Yes (19, 61.3%), No (12, 38.7%)

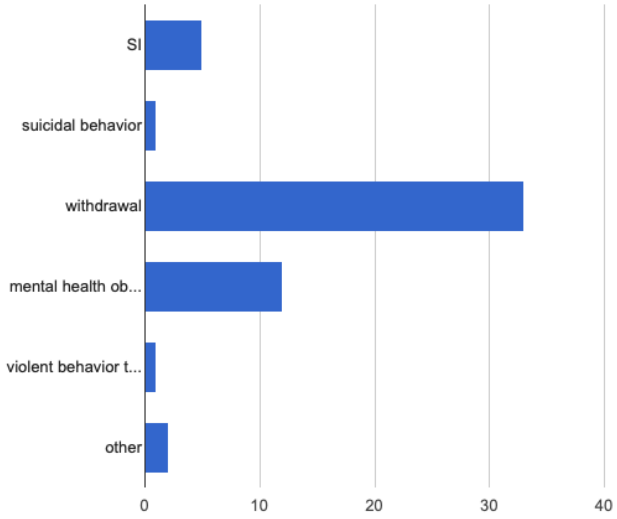


Figure 3. Other instances of ASQ Use
Counts/frequency: SI (5, 9.3%), suicidal behavior (1,1.9%), withdrawal (33, 61.1%), mental health observation (12, 22.2%), violent behavior towards others (1, 1.9%), other (2, 3.7%)

	Correctional officers	Nursing Staff	QMHP
Intake follow up	0	0	19
Other times during incarceration	0	0	54

Figure 4. Staff use of the ASQ

Appendix N
Secondary Outcomes

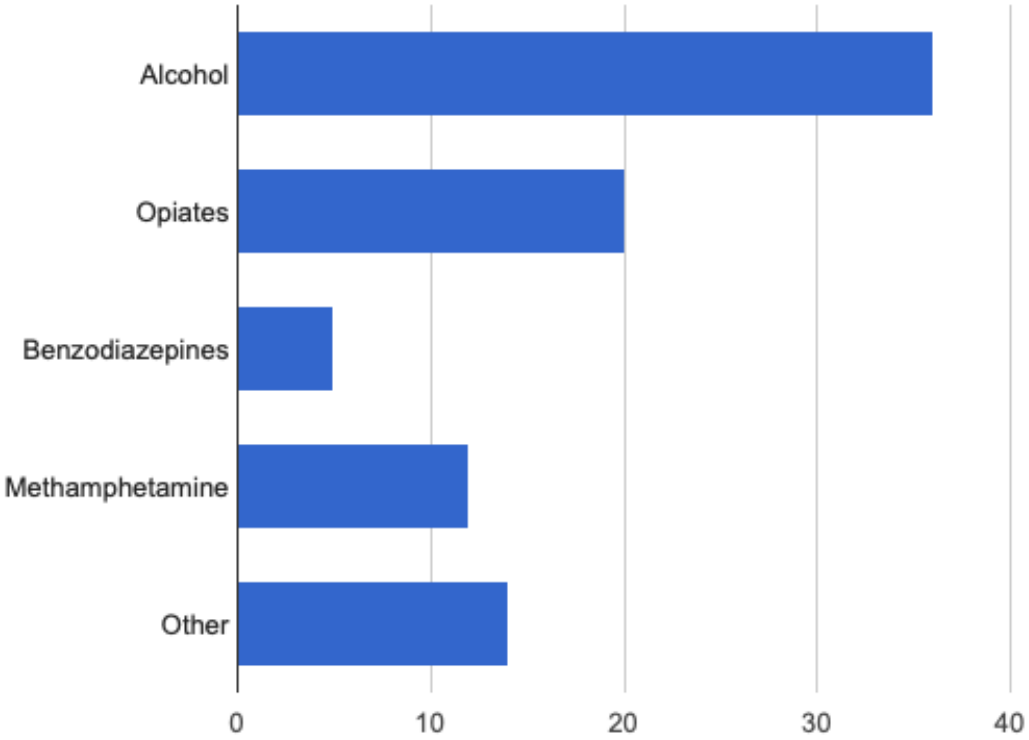
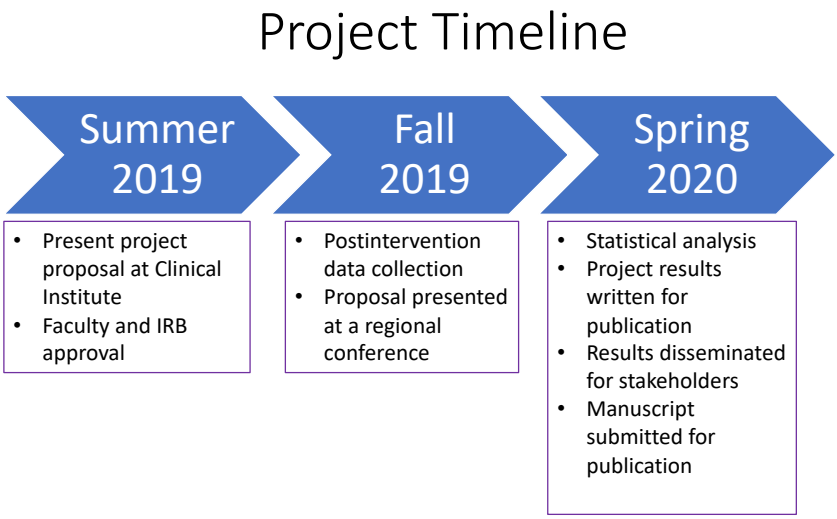
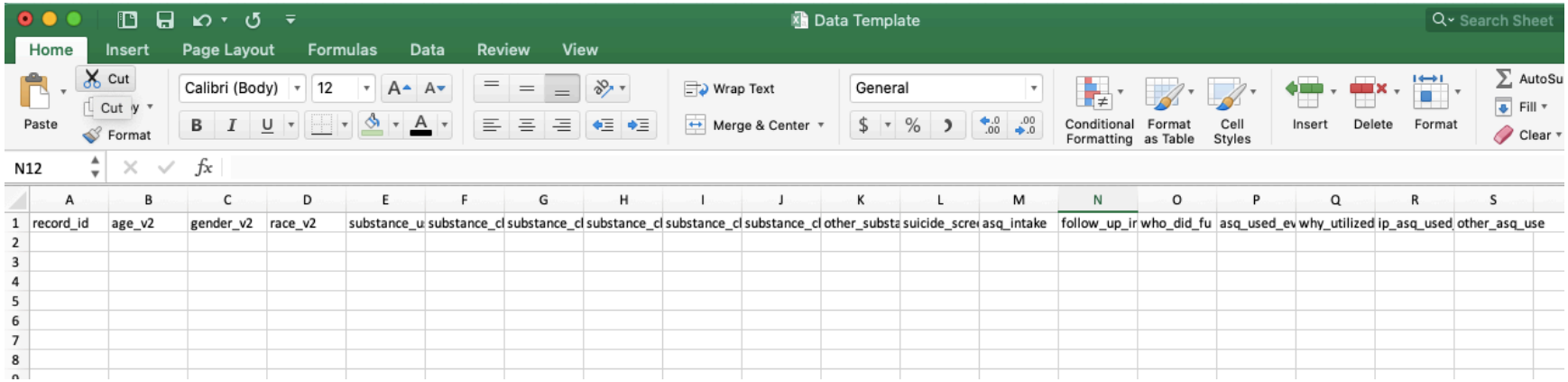


Figure 1. Substance use
Counts/frequency: Alcohol (36, 52.2%), Opiates (20, 29.0%), Benzodiazepines (5, 7.2%), Methamphetamine (12, 17.4%), Other (14, 20.3%)

Appendix O


Project Timeline
Summer 2019
Fall 2019
Spring 2020
• Present project proposal at Clinical Institute
• Faculty and IRB approval
• Postintervention data collection
• Proposal presented at a regional conference
• Statistical analysis
• Project results written for publication
• Results disseminated for stakeholders
• Manuscript submitted for publication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Search Sheet
Home
Insert
Page Layout
Formulas
Data
Review
View
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Cut
Format
Calibri (Body)
12
Wrap Text
Merge & Center
General
Conditional Formatting
Format as Table
Cell Styles
Insert
Delete
Format
AutoSu
Fill
Clear
N12
A B C D E F G H I J K L M N O P Q R S
1 record_id age_v2 gender_v2 race_v2 substance_u substance_cl substance_cl substance_cl substance_cl substance_cl other_substa suicide_scre asq_intake follow_up_ir who_did_fu asq_used_ev why_utilized ip_asq_used other_asq_use
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