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Detecting Suicide Risk in Adolescents and Adults in an Emergency Department:  
An Implementation Study

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**ABSTRACT**

A study was conducted to detect suicide risk in adolescents and adults seeking treatment in an Emergency Department (ED) in the Midwest, as well as to test the reliability, validity, and inter-rater reliability of the 4-item Risk of Suicide Questionnaire (RSQ) developed by Horowitz et al. (2001). The feasibility and need for the ED staff to conduct suicide screening of all patients who present to the ED was also assessed. This study expanded the implementation of the RSQ beyond its initial use with children and adolescents with psychiatric symptoms seeking treatment in a pediatric ED to include adolescent, adult, and geriatric patients in a Level II Trauma Center, regardless of chief complaint or psychiatric history. This study also included the training of Registered Nurses in the ED to administer the RSQ. Participants consisted of a convenience sample of 202 patients comprised of 59 adolescents (age 12 to 24) and 143 adults (over 25), including 36 geriatrics (65 and older). Demographic data, chief complaint, discharge diagnoses, and referrals were also obtained. Psychometric analysis demonstrated a lower than expected degree of reliability and an adequate level of criterion-related validity for the RSQ in this sample. Inter-rater reliability was also established. Approximately 42% of all patients who participated screened positive for suicide risk. Results support suicide screening by nurses as part of the admission assessment to determine suicide risk in all patients who present to an ED.

## BACKGROUND

Suicide is a serious public health concern in the United States and was the cause of death for 30,642 Americans in 2003, making suicide the 11<sup>th</sup> leading cause of death for all Americans, and the 3<sup>rd</sup> leading cause of death for young people 15-24 years of age (Center for Disease Control and Prevention, [CDC], 2005). In 2001, there were twice as many deaths caused by suicide than deaths caused by HIV/AIDS (National Institute of Mental Health [NIMH], 2004). Furthermore, individuals who were over 65 years of age accounted for 18% of all suicide deaths in the United States and suicide rates of white men age 85 and older were among the highest (NIMH, 2003b). Therefore, populations most at risk for committing suicide include those less than 25 years of age and the elderly. The ED may be an ideal setting in which to detect suicide risk, particularly because a large percentage of ED visitors lack primary care providers and use the ED for comprehensive health care needs (Folse, Eich, Hall, & Ruppmann, 2006). Furthermore, screening in the ED is an important intervention in the prevention of suicide (Gould, Greenberg, Velting, & Shaffer, 2003).

One of the problems related to suicide prevention is detecting those at risk. Suicide risk often goes undetected or untreated in the majority of populations, including in adolescents (Horowitz et al., 2001) and the elderly (NIMH, 2003a). Horowitz et al. (2001) noted the increased numbers of adolescents seeking emergency treatment with mental health problems, particularly self-destructive behavior, and the expanded responsibility the ED has for triaging mental health issues. The Harvard team identified that one reason suicide risk is not determined in the ED is because brief instruments to screen for suicidality are lacking. In addition to adolescents, older adults are also at disproportionate risk for suicide (NIMH, 2003b). Many times, older adults give fewer warnings to others regarding their suicide plans, use more violent and potentially fatal methods of suicide, and apply the chosen method with greater planning and resolve (Conwell, Duberstein, & Caine, 2002). In fact, many studies have found that up to 75% of older adults who die by suicide had visited their primary care physician within a month of their suicide (NIMH, 2003b). Therefore, identifying a means of suicide screening among this population that is effective in identification of suicidal ideation is imperative.

Health care providers must focus on suicide prevention in all populations and in all health care settings. Therefore, it is imperative that health care providers enhance their ability to detect suicide risk. The Surgeon General called for the implementation of suicide prevention strategies in a wide variety of health care settings that target different individuals and groups especially at risk for committing suicide (U.S. Public Health Service, 1999). The American Academy of Pediatrics (AAP) recommends asking all adolescents about suicidal thoughts during the routine medical history (AAP, 1988), and the American Medical Association (AMA) and the National Alliance for the Mentally Ill (NAMI) also recommend that providers screen to identify those at risk for suicide (AMA, 1994; NAMI, 2004). Similarly, suicide prevention among adolescents was one of twenty-one critical objectives identified by the US Department of Health and Human Services in Healthy People 2010. Assessment of suicide risk in the ED is a crucial process, as many suicidal patients are discharged without ever being assessed or receiving follow-up (Hickey, Hawton, Fagg, & Weitzel, 2001). Claassen & Larkin (2005) found that of people presenting to the ED for non-psychiatric reasons, 11% acknowledged passive suicidal ideation, 8% admitted that they had thought of killing themselves, and 2% reported current suicidal

ideation with the intent to attempt suicide. In addition, 39% of people who later died by suicide had visited an ED in the year before death and 61% of those were seeking treatment for reasons other than non-fatal self-harm (Gairin, House, & Owens, 2003). Aschenasy, Clark, Zinn, and Richtsmeir (1992) suggest that it is not necessary to be a psychiatrist to assess suicide risk. In fact, often the ED physician is more available than a psychiatrist or pediatrician at the time of crisis. Moreover, it is essential to dispel the myth that talking about suicide with youth leads to increased suicide attempts (Kalafat, 2003; Smith, 1991).

Research suggests that the current screening tools are lengthy, time-consuming, and need to be administered by trained personnel (Horowitz et al., 2001). In order to address the issues specific to an ED setting, a 14-item screening tool called the Risk of Suicide Questionnaire (RSQ) was developed and initially tested in an adolescent population with a mean age of 13.6. Evaluation of the RSQ included the establishment of criterion validity using the psychometrically sound 30-item Suicide Ideation Questionnaire ([SIQ], Reynolds, 1987). The results of the Horowitz et al. study showed that four questions on the RSQ (past and present thoughts of suicide, prior self-destructive behavior, and current stressors) identified 98% of the adolescents identified by the SIQ as at risk for suicide. The 4-item RSQ demonstrated high content validity, and includes most of the same risk factors identified in other studies (Horowitz et al., 2001).

The 4-item RSQ was recently tested in a Level I Trauma Center in the Midwest to detect suicide risk in adolescents and adults in an ED (Folse, Eich, Hall, & Ruppman, 2006). Results supported the reliability and validity of the RSQ; it is noteworthy that approximately 30% of all individuals who presented to the ED, regardless of chief complaint, screened positively for suicide risk. In addition, results supported the continued use of a 4-item RSQ with all adolescents and use of a reduced 2-item form of the RSQ (Questions 1 and 2) with adults exhibiting psychiatric chief complaints to determine imminent risk of suicide in patients who seek treatment in the ED. The need for additional testing of the RSQ in both the adolescent and adult populations was identified (Folse et al., 2006).

One problem with suicide screening tools is that the instrument may not have the same predictability when used in populations that are different than those in which they were developed (Institute of Medicine, 2002). The use of studies to determine the effectiveness of suicide screening tools is definitely needed (U.S. Public Health Service, 1999). There is insufficient evidence to recommend for or against routine screening by clinicians to detect suicide risk in asymptomatic persons. Therefore, one of the purposes of this study was to determine the psychometric properties of the RSQ in another sample of individuals ages 12 and older, who presented to an ED in a medical center in the Midwest. In addition to determining the usefulness of the RSQ, the team also ascertained approximately how many people who come to the ED will require further services. The incidence of positive screens will enable health care professionals to implement resources that will adequately meet the needs of this vulnerable population. The results of this study will help determine the feasibility of screening all people over the age of 11 for suicide risk.

## PURPOSE

The purpose of this study was to assess the incidence of reported suicide risk in adolescents and adults who present to an ED. In addition, the reliability and validity of the 4-item version of the RSQ was evaluated. Select Registered Nurses in the ED were specially trained by the IWU Research Team to also administer the RSQ. The feasibility and need for the ED staff to conduct suicide screening of all patients who present to the ED was also assessed.

## RESEARCH QUESTIONS

Three research questions were identified:

1. To what extent is the Risk of Suicide Questionnaire (RSQ) reliable when administered to adolescents and adults who present to an Emergency Department?
2. Does the RSQ demonstrate adequate criterion-related validity in a sample of adolescents and adults who present to an Emergency Department?
3. Does the RSQ detect suicide risk in individuals who present to the Emergency Department with and without chief complaints involving suicidality?

## METHOD

### *Subjects*

A convenience sample of 202 adolescents and adults presenting to a Midwest Level II Trauma Center was used. The sample was comprised of all patients presenting to the ED, regardless of chief complaint or psychiatric history. To ensure patient safety and appropriateness for participation, the following inclusion and exclusion criteria were used.

#### Inclusion Criteria:

- All consecutive patients ages 12 and above who present to the ED during designated shifts until a maximum number of 100 adolescents and 200 adults were obtained
- Patients who have been evaluated as medically stable by the nurse
- Patients for whom privacy conditions support a discussion without risk of being overheard by other visitors in the ED
- Patients who can understand English

#### Exclusion Criteria:

- Patients who are medically unstable and whose participation could exacerbate chief complaint
- Patients for whom privacy conditions do not support a discussion without risk of being overheard by other visitors in the ED
- Patients who can not understand English

Demographic data were obtained from all participants (See Tables 1-3). Subjects ranged in age from 13 to 93 years. Fifty-nine participants were between the ages of 12 to 24 (adolescents) and 143 subjects were 25 and older (adults), including 36 subjects who were ages 65 and older (geriatrics). Diversity of participants existed; for example, according to self-report, racial

distribution of all participants consisted of 79.7% Caucasian, 17.8% African American, 2.0% Hispanic, and 0.5% Asian American. Subjects were interviewed in treatment rooms in the ED. Data were collected over 21 days during all shifts. The IWU Research Team collected 65.3% of the screenings while trained staff Registered Nurse data collectors in the ED collected the remaining 34.7%. Two patients, one of whom was presenting with a chief complaint involving suicidality, declined to allow the researchers to enter the treatment room. Two individuals declined to participate when approached by the research team. Lastly, two people, although deemed medically stable and eligible for participation, were not screened by the Research Team. Those excluded by the Research Team included a patient with end-stage lung disease whose family was making end-of-life care decisions. Once enrolled, no subjects withdrew during the study.

### ***Measures***

Suicide risk was measured using the four-item RSQ, developed by Horowitz et al. (2001). The following four questions were asked to all participants:

1. Are you here because you tried to hurt yourself?
2. In the past week, have you been having thoughts about killing yourself?
3. Have you ever tried to hurt yourself in the past (*other than this time*)?
4. Has something very stressful happened to you in the past few weeks (*a situation very hard to handle*)?

Responses were recorded as “yes”, “no”, or “no response” on the data collection tool.

The evaluation of criterion-related validity involved establishing correlations between RSQ responses and discharge diagnoses assigned by the attending physician. The responses to the RSQ were recorded either as yes, no, or no response. Similarly, the discharge diagnoses were determined by treatment providers in the ED and were subsequently coded dichotomously as either psychiatric-related or non-psychiatric in nature by the researchers. A psychiatric-related diagnosis included diagnoses such as depressive disorder, chemical dependency, anxiety, and stress reaction. Psychiatric diagnoses were then classified as suicide-related or not suicide-related to evaluate imminent risk of self-harm. A suicide-related diagnosis included diagnoses such as suicidal ideation and self harmful behavior.

### ***Procedure***

Institutional Review Board (IRB) approval was granted by the researchers' affiliate university, as well as the hospital IRB where the research was conducted. Permission to use the RSQ was obtained from Dr. Horowitz at Harvard. Informed written consent was obtained for all subjects, regardless of age. Per mandate of the hospital facility, subjects under the age of 18 were asked whether or not they would like their parent or legal guardian to be with them while they answered these questions. No incentives for participation were offered, and subjects were notified that there were no consequences for refusing to participate.

To examine the feasibility of Registered Nurses screening all patients who present to an ED for suicide risk, an implementation component of the study was conducted. Registered Nurses employed in the ED at the medical center were recruited to administer the RSQ to eligible patients. The IWU Research Team attended multiple staff meetings to explain the study and the role of the staff RN in data collection. Full copies of the research protocol were provided to RNs deemed to be prospective data collectors. Three nurses in the ED volunteered to become trained staff RN data collectors and met individually with the IWU Research Team.

Data were collected in the ED over twenty-one days during all shifts. Registered Nurses asked patients they deemed medically stable for permission to allow either the trained staff Registered Nurse data collectors or the Principle Investigator and Research Assistant to administer a brief survey about suicide risk as part of a research study. Patients were informed that the study was voluntary and would not delay their treatment time. Patients were also informed that participation in the study would not replace the standard of care. After agreeing to participate, either the trained staff RN data collector or the IWU Research Team obtained written informed consent. Demographic data (age, gender, and race), chief complaint, and the subject's medical record number were recorded. No other personal identifiable information was taken. The RSQ was administered orally and took an average of 90 seconds to complete. Rarely did the administration of the RSQ exceed the average length of time. Only when subjects had difficulty speaking or wished to discuss various life stressors at length did the length of administration exceed 90 seconds.

If the patient answered "yes" to any of the four questions, it was considered a positive screen. In the event that respondents answered "yes" to a question, several follow-up questions were asked to determine imminent risk to patient safety, such as how they had been thinking of killing themselves or what stressful event had happened in the past weeks. Regardless of the subsequent responses, answering "yes" or having "no response" accompanied by nonverbal behaviors of concern to any of the initial four questions constituted a positive screen, requiring notification of the attending physician. Responses to follow-up questions, such as identified plan to complete suicide or details regarding stressful events and perceived ability to cope, were also communicated to the physician. The attending physician would then make decisions regarding discharge diagnoses, treatment plan, and referrals (as applicable). If deemed necessary by the attending physician, he/she followed an existing treatment protocol for responding to an identified behavioral health client and resources within the current system were utilized. The treatment protocol included determining the need for an appropriate referral to the community-based crisis team, a university counseling center (if the subject was a university student), or hospital-based social services. Further, a one-to-one monitor or member of the Security staff could be ordered in the ED to assure the patient's safety if immediate danger was suspected.

All patients were given a copy of the informed consent, which included contact information for the Principal Investigator, who is an advanced practice psychiatric nurse, and the hospital and university IRB contact information. These references were provided to account for any potential risks associated with asking sensitive questions about suicide. Once the subject was discharged from the ED, the medical record number was used to obtain the discharge diagnoses, disposition, and referral information for each participant.



### ***Statistical Analysis***

SPSS 13.0 was used for all statistical analysis. Reliability of the RSQ was measured through internal consistency and was reported as a Cronbach's alpha. Because the instrument is in its early stage of development, internal consistency would have been established if coefficient alphas of .70 or above were obtained (Mishel, 1998; Nunnally & Bernstein, 1994). Inter-item correlations between .30 and .70 would ensure that each question was appropriately related to the other questions, but was not unnecessary or redundant (Frank-Stromborg & Olsen, 1997).

To establish inter-rater reliability, the IWU Research Team trained each staff RN data collector regarding administration of the RSQ. The IWU Research Team then performed screenings with the trained RN data collector to ensure that each rater recorded the responses to questions in an identical manner. The IWU Research Team worked with the staff RN data collector until at least one positive and one negative screening was obtained. Inter-rater reliability was found by examining the similarity of ratings between multiple raters (Aron & Aron, 2003).

Criterion-related validity was assessed by correlating responses from the RSQ with the post-evaluation diagnoses. Traditionally, in variables of a psychological nature, a large correlation is considered to be about .50 or above, a moderate correlation to be about .30, and a small correlation to be about .10 (Aron & Aron, 2003). If a positive RSQ screen had a significant correlation with post-evaluation diagnoses indicating imminent suicide risk, criterion-related validity was supported. Additionally, criterion-related validity was supported if the scores of those who responded negatively to the RSQ significantly correlated with the absence of post-evaluation diagnoses indicating suicide risk.

## **RESULTS**

### ***Reliability (Internal Consistency)***

Cronbach's alphas were calculated for the 4-item RSQ using all participants (See Table 4), and the subgroups of adolescents ages 12 to 24 (See Table 5) and all adults ages 25 and older (See Table 6). Cronbach's alphas ranged from .44 to .46 for the 4-item RSQ. Suboptimal levels of reliability were shown in all participants ( $\alpha = .46$ ), as well as in the subgroups of adults ( $\alpha = .44$ ) and adolescents aged 12-24 ( $\alpha = .46$ ).

Adequate inter-item correlations were established between Questions 1 (Here because you tried to hurt self) and Question 2 (Current thoughts of killing self) in all participants and in each of the subgroups. In contrast, inter-item correlations involving Questions 3 (Past suicide attempts) and Question 4 (Current stressors) suggested these questions added little to extent of the reliability of the instrument (See Tables 4-6).

Based on recommendations in the pilot study utilizing the RSQ (Folse et al., 2006), Cronbach's alphas were recalculated for a modified 2-item RSQ (Questions 1 and 2) using all participants (See Table 7), the subgroup of adolescents aged 12-24 (See Table 8), and the subgroup of adults aged 25 and older (See Table 9). Although slightly improved from the reliability of the 4-item screen, inadequate levels of reliability were found for all participants ( $\alpha = .56$ ) using the two

question RSQ. Further, moderately improved from the reliability of a 4-item screen, a moderate degree of reliability was established for the subgroup of adolescents ( $\alpha = .64$ ) when considering only Questions 1 and 2 of the RSQ. The reliability of the two question RSQ in the adult population ( $\alpha = .44$ ) remained unchanged from the reliability of the four question RSQ in adults. A comparison of the degree of reliability supported in the 4-item and 2-item RSQ in all participants and in each subgroup is highlighted in Table 10.

Inter-rater reliability was established ( $\alpha = 1.0$ ) among the Principal Investigator, Research Assistant, and each staff RN data collector.

### ***Criterion-related Validity***

Criterion-related validity was examined for the 4-item RSQ using all participants, and the subgroups of adults aged 25-64 and all adolescents aged 12-24 by correlating Question 1, Question 2, Question 3, Question 4, and the 4-item RSQ screen result with the following variables: Chief Complaint, Psychiatric-related Discharge Diagnosis, and Suicide-related Discharge Diagnosis.

Pearson's correlation coefficients ( $r$ ) were calculated first for all participants (See Table 11). Significant large positive correlations were found between Question 1 (Here because you tried to hurt self) and chief complaint,  $r = .57$  ( $p < .01$ ) and suicide-related discharge diagnosis  $r = .86$  ( $p < .01$ ). A significant moderate positive correlation was found between Question 1 and a psychiatric-related discharge diagnosis,  $r = .44$  ( $p < .01$ ). Question 2 (Current thoughts of killing self) significantly correlated positively with chief complaint,  $r = .40$  ( $p < .01$ ), psychiatric-related discharge diagnosis  $r = .45$  ( $p < .01$ ), and suicide-related discharge diagnosis,  $r = .33$  ( $p < .01$ ). Further, a positive screen (answering yes to at least one question) was correlated at the  $p < .01$  level with chief complaint  $r = .30$  and psychiatric-related discharge diagnosis  $r = .24$ . A positive screen was correlated at the  $p < .05$  level with suicide-related discharge diagnosis,  $r = .15$ . Question 3 (Past suicide attempts) had a moderate level of correlation with chief complaint  $r = .34$  ( $p < .01$ ) and small correlations with both psychiatric-related discharge diagnosis  $r = .26$  ( $p < .01$ ) and suicide-related discharge diagnosis,  $r = .16$  ( $p < .05$ ). There was a small correlation between Question 4 (Current stressors) and chief complaint  $r = .18$  ( $p < .01$ ). Question 4 (Current stressors) did not correlate with psychiatric-related discharge diagnosis or suicide-related discharge diagnosis.

For all adolescents aged 12-24 (See Table 12), large correlations ( $p < .01$ ) were noted between Question 1 and chief complaint ( $r = .76$ ), psychiatric-related discharge diagnosis ( $r = .76$ ), and suicide-related discharge diagnosis ( $r = 1.00$ ). Similarly, Question 2 and chief complaint ( $r = .34$ ), psychiatric-related discharge diagnosis ( $r = .34$ ), and suicide-related discharge diagnosis ( $r = .48$ ) demonstrated a moderate level of correlation at the .01 level of significance. Question 3 had a low level of correlation with chief complaint  $r = .28$  ( $p < .05$ ) and psychiatric-related discharge diagnosis  $r = .28$  ( $p < .05$ ). Question 4 did not demonstrate a significant correlation with chief complaint, psychiatric-related discharge diagnosis, or suicide-related discharge diagnosis. Thus, Question 4 contributed little to the establishment of criterion validity. A positive screen demonstrated a moderate correlation with chief complaint  $r = .30$  ( $p < .05$ ).

Additional correlations were found in the adult population (See Table 13). It is noteworthy that there were no suicide-related discharge diagnoses in the adult population of this sample. Positive correlations between Question 1 and chief complaint,  $r = .37$  ( $p < .01$ ) and Question 1 and psychiatric-related discharge diagnosis,  $r = .26$  ( $p < .01$ ) were established. Additionally, Question 2 correlated positively with psychiatric-related discharge diagnosis  $r = .52$  ( $p < .01$ ) and chief complaint,  $r = .44$  ( $p < .01$ ). Question 3 correlated moderately with chief complaint,  $r = .36$  ( $p < .01$ ); Question 3 demonstrated a small correlation with psychiatric-related discharge diagnosis,  $r = .26$  ( $p < .01$ ). A very low level of correlation existed between Question 4 and chief complaint,  $r = .19$  ( $p < .05$ ), as well as between Question 4 and psychiatric-related discharge diagnosis,  $r = .18$  ( $p < .05$ ). A positive screen was correlated with chief complaint,  $r = .30$  ( $p < .05$ ), and psychiatric-related discharge diagnosis,  $r = .28$  ( $p < .01$ ).

## DISCUSSION

Psychometric analysis demonstrated a lower than expected degree of reliability for the 4-item RSQ in this sample among all participants, as well as the subgroups of adults and adolescents. A reduced, 2-item form of the RSQ yielded improved, yet still inadequate, levels of reliability in all participants, as well as in the subgroup of adolescents. There are several factors that may be affecting the reliability of the RSQ in this sample. There were only four items on the RSQ to analyze for internal consistency, and fewer items tend to make it very difficult to obtain high alphas (Waltz, Strickland, & Lenz, 1991). This was the first study utilizing the RSQ in which a significant number ( $n=36$ ) of geriatric subjects, ages 65 and older, were included in the sample. It must be emphasized that the Harvard team developed and tested the RSQ in a pediatric population in a pediatric behavioral health ED (Horowitz et al., 2001). A pilot study tested the RSQ in both adolescents and adults in a Level I Trauma Center and confirmed reliability and validity of the 4-item RSQ, but did not include a significant geriatric population (Folse et al., 2006). In addition, this was the first study in which the 4-item RSQ was administered by non-researcher Registered Nurses in the ED. Although the manner in which reliability was impacted by these factors is unknown, these factors may have contributed to a lower than expected level of reliability in this sample.

Although not discounting the inadequate level of reliability demonstrated in this sample, it is worth considering to what extent a screening tool necessitates reliability, in light of its clinical utility. The goal of screening for suicide is to identify individuals at risk of suicide who would not have otherwise self-reported suicidal ideation and/or sought treatment or referrals to appropriate services. Due to the nature of the questions of the RSQ, perhaps expecting subjects to respond in the same manner to multiple items of the RSQ is not the only variable to consider. Rather, it may be more clinically significant that the screen is able to identify an individual who endorses only one of the four questions of the RSQ and who is at imminent risk of suicide in order to facilitate linkage with the appropriate treatment and/or referrals. Therefore, screening for suicide may be clinically significant despite the lack of statistical reliability.

Because reliability was not established, an examination of validity should be approached with caution. Criterion-related validity was supported by solid Pearson's correlation coefficients in all subgroups and in the overall population. In the entire sample, as well as both subgroups, subjects who verbalized a positive response to Question 1 and Question 2 generally received a

psychiatric-related discharge diagnosis after evaluation. In addition, those adolescents who endorsed Question 1 and Question 2 generally received a suicide-related discharge diagnosis after evaluation. This is expected because the diagnosis is determined after the risk of suicide has been identified; therefore, any participant who came into the ED because of self-harm or who endorsed having recent suicidal thoughts would be given a psychiatric and/or suicide-related diagnosis. This is consistent with the findings of the pilot study utilizing the RSQ (Folse et al., 2006). No adult patients (ages 25 and older) in imminent risk of suicide presented to the ED during the time that data were collected. As a result, correlations between Questions 1 and 2 with suicide-related discharge diagnosis could not be evaluated in the subgroup of adults. In the entire population and both subgroups, individuals who presented with a psychiatric chief complaint had a tendency to have positive response to Question 1 and Question 2, yielding a positive screen. Therefore, individuals who present to the ED with suicidal or psychiatric chief complaints may be at a higher risk for suicide. Moreover, patients presenting with a psychiatric-related complaint are likely to have had recent suicidal thoughts, recently experienced a stressful situation, and/or to be at the ED because they tried to hurt themselves. Further study is needed to determine if Question 1 and Question 2 detect imminent suicide risk in patients presenting with both psychiatric and non-psychiatric chief complaints. Additionally, Question 3 and Question 4 were shown to contribute little to the validity of the RSQ for the entire population. Question 3 demonstrated small correlations with a psychiatric-related discharge diagnosis and a suicide-related discharge diagnosis. In addition, Question 4 demonstrated no significant correlation with either a psychiatric-related discharge diagnosis or a suicide-related discharge diagnosis. Therefore, further study is needed to determine if Questions 3 and Questions 4 may be more applicable to a general psychiatric evaluation, rather than a screening for imminent suicide risk.

In the entire population, a positive screen demonstrated a small correlation with a psychiatric-related discharge diagnosis and suicide-related discharge diagnosis. This emphasizes the high rate of false-positive screenings and the high sensitivity and low specificity demonstrated using the 4-item RSQ. Although approximately 41.6% of participants in all age groups screened positively on the RSQ, only 1.5% were deemed suicidal. Only 5.1% of adolescents aged 12-24 were deemed suicidal, despite 50.8% yielding a positive screen. Despite 37.8% screening positively for suicide risk, no adults in imminent risk of suicide presented to the ED during the times that data were collected. However, these correlations must be interpreted with caution because there are a multitude of factors, other than suicide risk, that could account for a positive screen (Folse et al., 2006).

In the adult (ages 25 and older) population, 4.9% presented to the ED with a psychiatric chief complaint. Of the seven adults presenting with a psychiatric chief complaint, 100% screened positively, 100% received a psychiatric-related discharge diagnosis, yet 0% received a suicide-related discharge diagnosis. Of the adults who received a psychiatric-related discharge diagnosis, 28.6% presented with a psychiatric chief complaint. Of the adult population, 95.1% presented with a non-psychiatric chief complaint; 34.6% had a positive screen, 5.1% received a psychiatric-related suicide diagnosis, and 0% received a suicide-related diagnosis. Therefore, the data demonstrate that in this sample, the RSQ was able to identify psychiatric problems in adults who presented with and without psychiatric chief complaints. However, the data do not demonstrate that the RSQ was able to identify imminent suicide risk in adults who presented with and without psychiatric chief complaints in this sample.

In the adolescent (ages 12-24) population, 8.5% presented with a psychiatric chief complaint. Of the five adolescents presenting with a psychiatric chief complaint, 100% screened positively, 80.0% received a psychiatric-related discharge diagnosis, and 60.0% received a suicide-related discharge diagnosis. Of the adolescents who received a psychiatric-related discharge diagnosis, 20% presented with a psychiatric chief complaint. A large majority (91.5%) of the adolescent population presented with a non-psychiatric chief complaint. Of those adolescents presenting with a non-psychiatric chief complaint, 46.3% screened positively, 1.9% received a psychiatric-related discharge diagnosis, and 0.0% received a suicide-related discharge diagnosis. Therefore, the data demonstrate that in this sample, the RSQ was able to identify psychiatric issues, as well as suicide risk, in adolescents who presented with psychiatric chief complaints. Further study is needed to determine the need to screen all adolescent patients for suicide risk.

Despite the apparent inability of the RSQ to consistently identify suicide risk in patients who presented without psychiatric chief complaints, there are clinical benefits to screening all adolescents and adults for suicide risk. An unknown number of subjects may have screened positively, been determined to be at risk of suicide, and given appropriate referrals without any documentation of a suicide-related diagnosis or referral in the permanent medical record. While conducting the study, inconsistent documentation occurred regarding behavioral and mental health diagnoses and referrals among treatment providers in the ED. For example, a young adult female with a chief complaint of a post-abortion vaginal bleed endorsed suicidal ideation in the past week and had a plan to commit suicide, as well as access to medications that could be potentially lethal. The positive screen was communicated to the attending physician, who then referred the young woman for a psychiatric evaluation in the ED by a university counseling service. Following discharge, there was no mention in the permanent medical record of endorsement of suicidal ideation, a suicide or psychiatric-related discharge diagnosis, or the referral to the counseling service. If this young woman would not have been screened for suicide risk and subsequently referred to appropriate resources, she may have executed her plan to commit suicide. This case emphasizes the clinical importance of conducting suicide screenings in the ED.

Based on the results with this study, modifications to the treatment protocol may need to be made to differentiate levels of risk identified by the RSQ. Because screening is important in identifying individuals at risk of suicide, all four questions should be asked to every patient that presents to the ED. However, a change in protocol following screening may be warranted. To illustrate, responding affirmatively to Questions 1 or 2, which suggests imminent risk, would warrant notification of the attending physician. In contrast, action following "yes" to Questions 3 or 4 in the absence of positive responses to 1 or 2 would be at the nurse's discretion. Based on patient responses to follow-up questions and the nurse's clinical judgment, the nurse would decide if consultation with the physician is an appropriate action. If this modified protocol had been utilized with this sample, 5.9% of subjects (n=12), based on their responses to Questions 1 and 2, would have necessitated notification of the attending physician, compared to 41.6% when following the current protocol. Thus, a revised protocol based on this two-tiered screen would maximize the clinical utility of the RSQ and would reduce the burden of false positive screens on the healthcare team, allowing the RSQ to be universally administered.

While collecting data, trends in responses to Question 4 became evident. Question 4 asks about stressors that have occurred “in the past few weeks”. Question 4 had the highest rate of affirmative responses of all four questions with 33.7% of the entire sample answering positively. When asked for further information, such as what had happened and when it had happened, it became clear that a significant portion of the participants were endorsing Question 4 and identifying stressful events that had occurred outside of “the past few weeks”. The data collectors began to track self-reported positive responses that were recorded as a negative response based on the RSQ criteria. It is noteworthy that approximately 39% of the geriatric population endorsed Question 4, whether the stressor occurred within the past few weeks or outside of this specified time parameter. Of the geriatric population, 25% reported stressors within “the past few weeks”, and 14% of the geriatric population self-reported an affirmative response to Question 4 that extended beyond “the past few weeks”.

It is also noteworthy that among the geriatric population (age 65 years and older), there were no positive responses to either Question 1 (Here because tried to hurt self) or Question 2 (In the past week been having thoughts of killing self). There were no suicide-related discharge diagnoses among the geriatric population in this sample, which is inconsistent with national statistics. There are two possible explanations for this phenomenon. There could have been no geriatric individuals at risk of suicide who presented to the ED during the times of data collection. It is also possible, and more probable, that there were geriatric individuals at risk of suicide, but who chose not to disclose thoughts of suicidal ideation.

To expand, geriatric adults are less likely to endorse suicidal ideation than younger people (Conwell, Duberstein, & Caine, 2002). Many older adults grew up in a period where a strong stigma was attached to mental illness and treatment (Morris, 2001) and believe that psychological issues are a sign of weak character (Reed, 2006). Most of the geriatric participants in this study demonstrated a “what does this have to do with me?” attitude toward the suicide screen study and many laughed at Questions 1 and Questions 2. Because of generational beliefs and cultural beliefs, some of these individuals could have potentially been a positive screen, but chose not to report suicidal behaviors or thoughts. Also, in many situations, physical problems take precedence over mental health issues for the geriatric client, as well as for their family members and primary care providers (Reed, 2006). Older adults may also be reluctant to admit to having a mental health issue, such as suicidal ideation, in front of a family member or friend, because they believe it might reflect negatively on their family members (Reed, 2006). Most of the geriatric participants in the study were accompanied in the ED treatment room by a family member or friend. Therefore, although some geriatric subjects may have been having suicidal thoughts, been presenting to the ED because of a suicide attempt or self-harm, and/or had a past suicidal attempt, they may not have disclosed this information in deference to their family member or friend.

The large number of positive responses among the geriatric population to Question 4 (Something very stressful in the past few weeks), both within and outside of the specified time parameters, is a noteworthy point of exploration. All of the geriatric patients who had a positive screen endorsed Question 4. These subjects identified a wide variety of stressors, including a death of a spouse, a recent change in medical condition, and inadequate financial resources for healthcare. The percentage of positive responses to Question 4 implies that there is a high incidence of



perceived stressors among the geriatric population. Disclosure of these significant stressors could be a symptom of depression in an older adult. Since the RSQ is designed to detect suicide risk or the desire to die, it may not be the instrument to identify loss of the will to live, or hopelessness. This may be particularly germane to the elderly population. Therefore, perhaps a tool designed to screen for depression may be more useful in identifying elderly patients at risk of self-harm.

Depression is one of the most common conditions associated with suicide in older adults and the National Institute of Mental Health emphasizes the importance of improving detection and treatment of depression as a means of reducing suicide incidence among the geriatric population (2003b). Due to increased use of ED services by the growing geriatric population and recommendations to attend to the psychological status of geriatric adults in emergency care (Meldon, Emerman, Schubert, Moffa, & Etheart, 1997), the ED may be an ideal setting in which to screen geriatric patients for depression. However, the most common depression screenings are between 13 and 30 questions (Byrd, 2005; Reed, 2006). These tools would be very time-consuming in a face-paced ED environment and would not be time-efficient for use by the ED nurses. Depression screens exist for older patients; despite the attractiveness of the brevity of these screening tools in the ED, there is little known about the performance of these tools in varied treatment sites. There has also been a low specificity demonstrated with these types of instruments (Blank, Gruman, & Robison, 2004). However, a depression screening tool that is appropriate for the geriatric population, as well as the ED setting, may be effective in identifying geriatric individuals at risk for both depression and suicide.

Unlike the previous two studies utilizing the RSQ, this research study integrated an implementation component. Three staff Registered Nurses in the ED administered the RSQ to over a third of study participants. If the RSQ became a permanent component of the treatment plan for all patients presenting to an ED, the four questions would be integrated into the pre-existing RN admission assessment. Overall, the nurses in this study stated that the RSQ was an easy-to-use tool to assess for suicide risk among patients in the ED and identified several potential benefits to adding the RSQ to the admission assessment. Perceived benefits included enhanced ability to discover and deal with emotional issues as a part of an overall picture of patient's health and the opportunity to identify patients at risk who would not have otherwise been identified. As one nurse stated, "If you don't ask, you won't know". One nurse stated that because she was the nurse assigned to the patients and had already developed a therapeutic relationship with the patients, she would be more likely to get honest responses from the clients, rather than the research team who had not previously established a therapeutic relationship.

The staff nurses also identified perceived potential barriers to integrating the RSQ as a component of the RN admission assessment. Many nurses believed asking patients questions about suicide was intrusive and they did not always feel comfortable asking the 4 questions of the RSQ. Patients sometimes had a negative or guarded reaction when asked about sensitive topic areas, including suicide. The nurses likened it to previous experiences of integrating a domestic violence screen into the admission assessment. However, it is noteworthy that in the pilot study, 100% of adolescents who completed the RSQ in another study said that this tool would be useful to ask everyone who presents to the ED (Folse et al., 2006).

All three nurses identified that most ED staff nurses would perceive the RSQ as “one more thing they would have to do” and may be resistant to comply, but one nurse believed that if you were able to show the staff the positive impact that the RSQ screening tool can have on patients, the staff would be receptive. Some of the nurses also expressed concern with some of the questions in the RSQ. All nurses perceived Question 2 to be very valuable in screening patients, some believed Question 4 to be less relevant to screening for suicide risk because of the wide variety of stressors expressed, and another nurse believed that Question 1 was unnecessary, as the nurse should already be familiar with the chief complaint of the patient. One of the nurses that participated in data collection expressed concern regarding the liability implications for a nurse and other healthcare providers if a patient were to screen positively for suicide risk and there was no follow-up treatment or referral.

It is noteworthy that the results of the Horowitz et al. (2001) study suggest that health care professionals in EDs can effectively screen for suicide risk using the four-item RSQ. Nurses using the RSQ preferred it as a method of suicide assessment to their previous use of their own intuition to decide when and how to ask about suicidal ideation. They expressed that this tool was quicker and easier than previous methods. Patients and parents participating in this study had high satisfaction with the use of this questionnaire, noting that it allowed openness and acceptance to talk about suicidal ideation.

### ***Limitations***

The sample size for this study was adequate; however this sample yielded a suboptimal level of internal consistency. While the sample did include adequate representation of males, females, adolescents, adults, Caucasians, and African Americans, it did not adequately include Hispanics, Asian Americans, other races, and the young adolescent (ages 12-17) population. This may affect the generalizability of the results. In addition, despite attending multiple staff meetings and providing complete copies of the research protocol to staff RNs, a limited number of staff RNs volunteered to be involved in data collection. This limits the generalizability of the findings regarding the feasibility of screening all patients who present to an ED. Finally, there was inconsistent documentation regarding behavioral and mental health diagnoses and referrals at the institution. This compromises validity because all diagnoses and referrals may not be included in the permanent patient record.

### ***Research and Clinical Implications***

There are several research and clinical implications associated with the results of this study. The RSQ is a tool that is appropriate for use in the ED and can be administered by a variety of health care providers with relative ease. Whether used in its original four-item form or modified to include only Questions 1 and 2, the RSQ is one of the only brief suicide screening tools available. From the implementation portion of the study, it became clear that Registered Nurses have the capability, access to patients, and rapport with patients that are necessary to obtain a true suicide screen. The RSQ could become an integrated component of the RN admission assessment. All four items of the RSQ yield important information that could be used by a nurse to conduct a more thorough psychological evaluation of each patient and identify current psychological issues, as well as possible suicide risk. However, further study is needed to determine if it is feasible and if it is necessary for the ED staff to



conduct suicide screening of all patients who present to the ED. In addition, it may be worthwhile to implement a protocol utilizing the RSQ that employs a two-tiered decision-making tool that differentiates the immediacy of risk to maximize clinical utility of the instrument. A broader implementation study, involving a large number of Registered Nurses, is needed to further assess the feasibility of screening every patient. It would also be helpful to track the impact of universal screening would have on the financial and personnel resources of both the medical center and the community referral agencies. If the RSQ was integrated into the initial admission assessment tool in the ED, there would need to be education of healthcare providers regarding assessment and documentation of behavioral health issues to provide optimal patient care.

In this sample, the RSQ did not identify geriatric patients at risk for suicide. Geriatric depression and suicide are prevalent healthcare problems that are underdiagnosed and undertreated in the United States (Reed, 2006). There is a need for development of a brief tool to assess for suicide risk, as well as depression, among geriatric patients in the ED. If the ED will serve as a site for depression and suicide screening, a brief tool that applies to the geriatric population must be developed.

In summary, although the data and statistics in this sample do not support screening all patients who present to an ED for suicide risk, there are significant benefits of performing universal suicide screenings in the ED. Further study is needed to determine if the RSQ is indeed a reliable and valid tool to be used by Registered Nurses in EDs across populations or if another tool must be developed. Suicide continues to be a national health problem and vulnerable populations include the adolescents and elderly (NIMH, 2003a). If patients are not asked directly about suicide risk, they may not be identified. Studies have shown a significant portion of patients who visit the ED for non-psychiatric reasons have suicidal ideation (Claassen & Larkin, 2005) and a significant percentage of people who later died by suicide had visited an ED in the year prior to death (Gairin, House, & Owens, 2003). Further study is needed to determine if a screening tool for suicide risk used in the ED has the potential to decrease the incidence of suicide, particularly among the adolescent and elderly populations.

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Table 1

*Demographic Data for All Participants (N=202)*


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Age		
Mean		42.5
Standard Deviation		22.0
Range		13-93
Gender		
Male		40.1%
Female		59.9%
Race/Ethnicity		
Caucasian		79.7%
African American		17.8%
Hispanic		2.0%
Asian American		0.5%
Chief Complaint		
Psychiatric		5.9%
Non-psychiatric		94.1%
RSQ Screen		
Positive		41.6%
Negative		58.4%
Discharge Diagnosis		
Psychiatric		9.4%
Non-psychiatric		90.6%
Suicide Diagnosis		
Yes		1.5%
No		98.5%

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Table 2

*Demographic Data for Adolescents Ages 12-24 (n=59)*

<hr/>		
Age		
Mean		19.3
Standard Deviation		2.5
Range		13-24
Gender		
Male		39.0%
Female		61.0%
Race/Ethnicity		
Caucasian		67.8%
African American		27.1%
Hispanic		3.4%
Asian American		1.7%
Chief Complaint		
Psychiatric		8.5%
Non-psychiatric		91.5%
RSQ Screen		
Positive		50.8%
Negative		49.2%
Discharge Diagnosis		
Psychiatric		8.5%
Non-psychiatric		91.5%
Suicide Diagnosis		
Yes		5.1%
No		94.9%
<hr/>		

Table 3

*Demographic Data for Adults Ages 25-93 (n= 143)*

Age		
Mean	52.1	
Standard Deviation	19.1	
Range	25-93	
Gender		
Male	40.6%	
Female	59.4%	
Race/Ethnicity		
Caucasian	84.6%	
African American	14.0%	
Hispanic	1.4%	
Asian American	0.0%	
Chief Complaint		
Psychiatric	4.9%	
Non-psychiatric	95.1%	
RSQ Screen		
Positive	37.8%	
Negative	62.2%	
Discharge Diagnosis		
Psychiatric	9.8%	
Non-psychiatric	90.2%	
Suicide Diagnosis		
Yes	0.0%	
No	100.0%	

Table 4

*Reliability for the 4-item RSQ With All Participants (N=202)*

Variable	Inter-Item Correlation			
	Q1	Q2	Q3	Q4
Question 1				
Question 2	.44			
Question 3	.22	.24		
Question 4	.12	.15	.24	
Cronbach's Alpha	.46			



Table 5

*Reliability for the 4-item RSQ With Adolescents Aged 12-24 (n=59)*


---

Variable	Inter-Item Correlation			
	Q1	Q2	Q3	Q4
Question 1				
Question 2	.48			
Question 3	.25	.28		
Question 4	.14	.14	.10	
Cronbach's Alpha	.46			

---

Table 6

*Reliability for the 4-item RSQ With Adults (n=143)*

---

Variable	Inter-Item Correlation			
	Q1	Q2	Q3	Q4
Question 1				
Question 2	.40			
Question 3	.20	.21		
Question 4	.12	.16	.31	
Cronbach's Alpha	.44			

---

Table 7

*Reliability for the 2-item RSQ With All Participants (N=202)*

---

Variable	Inter-Item Correlation	
	Q1	Q2
Question 1		
Question 2	.44	
Cronbach's Alpha	.56	

---

Table 8

*Reliability for the 2-item RSQ With Adolescents Ages 12-24 Only (n=59)*

---

Variable	Inter-Item Correlation	
	Q1	Q2
Question 1		
Question 2	.48	
Cronbach's Alpha	.64	

---

Table 9

*Reliability for the 2-item RSQ With Adults Ages 25 and older (n=143)*

---

Variable	Inter-Item Correlation	
	Q1	Q2
Question 1		
Question 2	.40	
Cronbach's Alpha	.44	

---

Table 10

*Comparison of Reliability (Cronbach's Alpha) for 4-item and 2-item RSQ*

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<u>Group</u>	<u>N</u>	<u>4-Item RSQ</u>	<u>2-Item RSQ</u>
All	202	.46	.56
Adolescents 12-24	59	.46	.64
Adults	143	.44	.44

Table 11

Pearson's Correlation Coefficients for All Participants (N = 202 )

<u>Variable</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
1. Question 1	--							
2. Question 2	.44**	--						
3. Question 3	.22**	.24**	--					
4. Question 4	.12	.15**	.24**	--				
5. Screen	.17*	.28**	.53**	.82**	--			
6. Chief Complaint	.57**	.40**	.34**	.18*	.30**	--		
7. Psych Diagnosis	.44**	.45**	.26**	.13	.24**	.71**	--	
8. Suicide Diagnosis	.86**	.33**	.16*	.09	.15*	.49**	.38**	--

\*  $p < .05$ \*\*  $p < .01$

Table 12

Pearson's Correlation Coefficients for Adolescents Ages 12-24 (n=59)

---

<u>Variable</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
1. Question 1	--							
2. Question 2	.49**	--						
3. Question 3	.25	.28*	--					
4. Question 4	.14	.14	.10	--				
5. Screen	.23	.30*	.52**	.76**	--			
6. Chief Complaint	.76**	.34**	.28*	.14	.30*	--		
7. Psych Diagnosis	.76**	.34**	.28*	.02	.18	.78**	--	
8. Suicide Diagnosis	1.0**	.48**	.25	.14	.23	.76*	.76*	--

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\*  $p < .05$ \*\*  $p < .01$



Table 13

Pearson's Correlation Coefficients Adults Ages 25 and Older Only (n = 143)

---

<u>Variable</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
1. Question 1	--							
2. Question 2	.40**	--						
3. Question 3	.20*	.21*	--					
4. Question 4	.12	.16	.31**	--				
5. Screen	.11	.27**	.53**	.85*	--			
6. Chief Complaint	.37**	.44**	.36**	.19*	.30*	--		
7. Psych Diagnosis	.26**	.52**	.26**	.18*	.28**	.69**	--	
8. Suicide Diagnosis	--	--	--	--	--	--	--	--

---

\*  $p < .05$ \*\*  $p < .01$