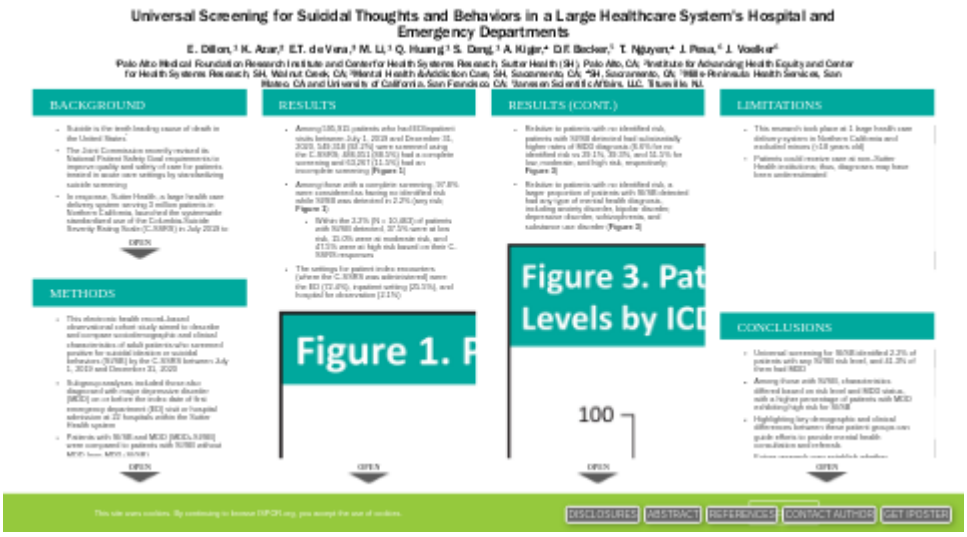
Universal Screening for Suicidal Thoughts and Behaviors in a Large Healthcare System's Hospital and Emergency Departments



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BACKGROUND

- Suicide is the tenth leading cause of death in the United States[1]
- The Joint Commission recently revised its National Patient Safety Goal requirements to improve quality and safety of care for patients treated in acute care settings by standardizing suicide screening
- In response, Sutter Health, a large health care delivery system serving 3 million patients in Northern California, launched the systemwide standardized use of the Columbia-Suicide Severity Rating Scale (C-SSRS) in July 2019 to be administered by clinicians in acute care facilities (**Table 1**)[2,3]

Table 1. C-SSRS Research Study Risk-level Assignment[a]

Ask questions 1 and 2	**YES**	**NO**
1. Have you wished you were dead or wished you could go to sleep and not wake up?	Low risk	No identified risk
2. Have you actually had any thoughts of killing yourself?	Low risk	No identified risk
If YES to question 2, ask questions 3, 4, 5, and 6. If NO to question 2, go directly to question 6.		
3. Have you been thinking about how you might do this?	Moderate risk	
4. Have you had these thoughts and had some intention of acting on them?	High risk	
5. Have you started to work out or worked out the details of how to kill yourself? Do you intend to carry out this plan?	High risk	
6. Have you ever done anything, started to do anything, or prepared to do anything to end your life?		No identified risk
If YES to question 6, ask question 7.		
7. Was this within the past 3 months?	High risk	Moderate risk

C-SSRS: Columbia-Suicide Severity Rating Scale.
[a]*High risk*: If question 4 = YES or question 5 = YES **or** question 6 is not null and question 7 = "within last 3 months." *Moderate risk*: If question 3 = YES **or** question 6 is not null and question 7 is not null and anything but not "within last 3 months." *Low risk*: If question 1 = YES **or** question 2 = YES **and** questions 1, 2, and 6 are not null. *No identified risk*: If question 1 = NO **and** question 2 = NO **and** question 6 = NO. *Incomplete*: All other conditions like: question 1 = null **or** question 2 = null **or** question 6 = null.

METHODS

- This electronic health record–based observational cohort study aimed to describe and compare sociodemographic and clinical characteristics of adult patients who screened positive for suicidal ideation or suicidal behaviors (SI/SB) by the C-SSRS between July 1, 2019 and December 31, 2020

- Subgroup analyses included those also diagnosed with major depressive disorder (MDD) on or before the index date of first emergency department (ED) visit or hospital admission at 22 hospitals within the Sutter Health system

- Patients with SI/SB and MDD (MDD+SI/SB) were compared to patients with SI/SB without MDD (non-MDD+SI/SB)

- Additionally, screened patients were compared based on SI/SB risk categories as defined by the C-SSRS (no identified risk vs any risk)

- Data were analyzed using standard tests (Wilcoxon rank-sum tests for continuous variables and x^2 tests for categorical variables)

- All results reported are statistically significant at the 0.05 level

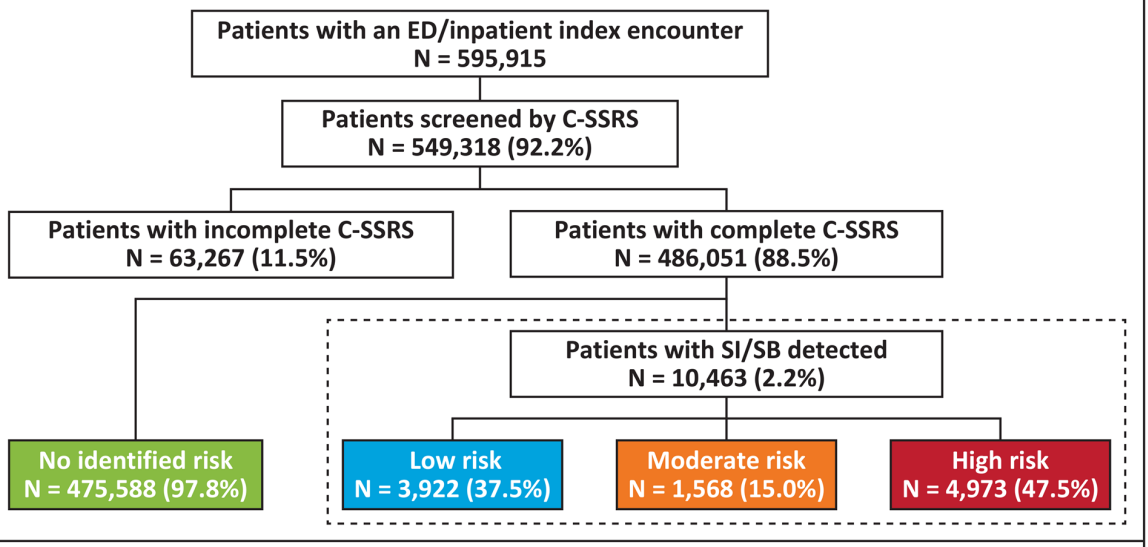
RESULTS

- Among 595,915 patients who had ED/inpatient visits between July 1, 2019 and December 31, 2020, 549,318 (92.2%) were screened using the C-SSRS; 486,051 (88.5%) had a complete screening and 63,267 (11.5%) had an incomplete screening (**Figure 1**)

- Among those with a complete screening, 97.8% were considered as having no identified risk while SI/SB was detected in 2.2% (any risk; **Figure 1**)
  - Within the 2.2% (N = 10,463) of patients with SI/SB detected, 37.5% were at low risk, 15.0% were at moderate risk, and 47.5% were at high risk based on their C-SSRS responses

- The settings for patient index encounters (where the C-SSRS was administered) were the ED (72.4%), inpatient setting (25.5%), and hospital for observation (2.1%)

Figure 1. Patient C-SSRS Screenings and Risk Levels (July 1, 2019 to December 31, 2020)

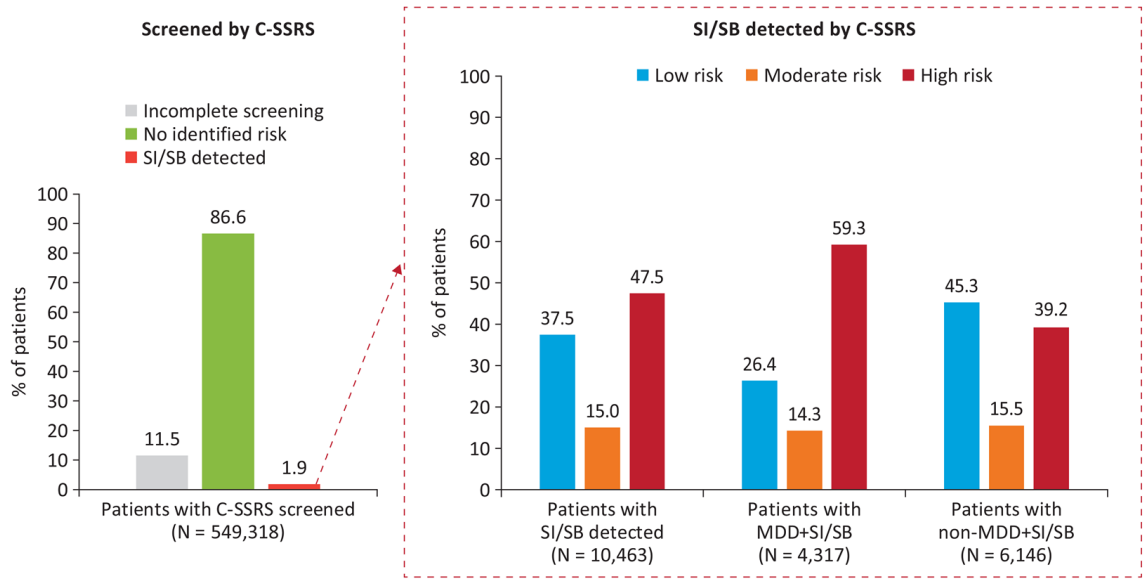


C-SSRS: Columbia-Suicide Severity Rating Scale; ED: emergency department; SI/SB: suicidal ideation or suicidal behaviors.

- Among those with SI/SB detected, 4,317 (41.3%) had MDD+SI/SB and 6,146 (58.7%) had non-MDD+SI/SB

- A higher percentage of patients with MDD+SI/SB were at high risk compared to patients with non-MDD+SI/SB (59.3% vs 39.2%; **Figure 2**)

Figure 2. C-SSRS Risk Levels for Patients With MDD+SI/SB[a] and Non-MDD+SI/SB[b]



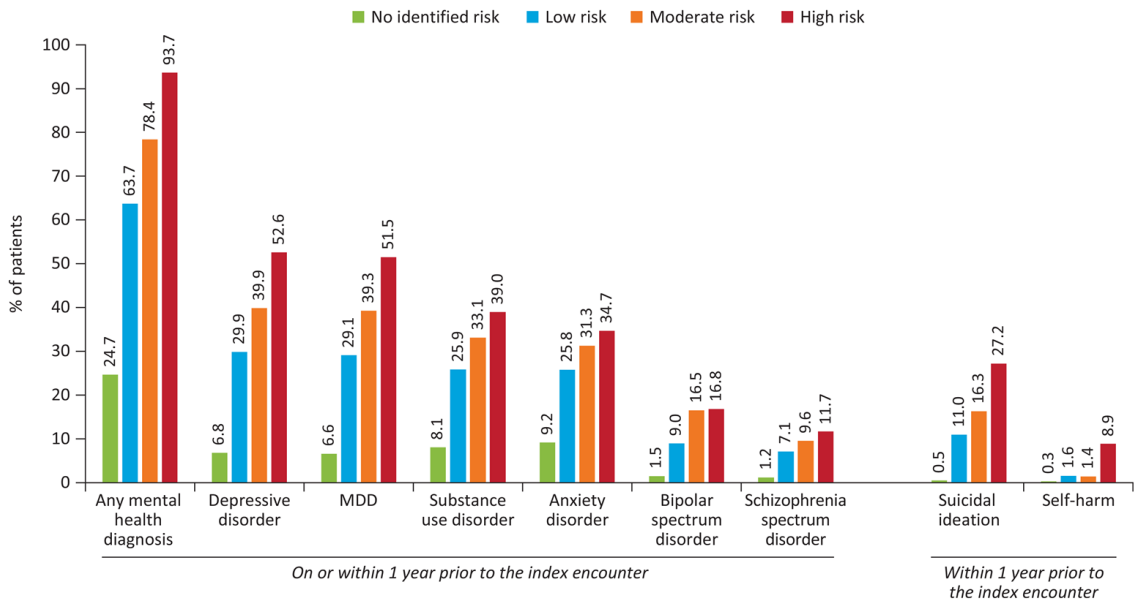
C-SSRS: Columbia-Suicide Severity Rating Scale; MDD: major depressive disorder; MDD+SI/SB: suicidal ideation or suicidal behaviors with major depressive disorder; non-MDD+SI/SB: suicidal ideation or suicidal behaviors without major depressive disorder; SI/SB: suicidal ideation or suicidal behaviors.
[a]MDD+SI/SB: patients with SI/SB detected by the C-SSRS and with MDD diagnosed on or within 1 year prior to the index encounter.
[b]Non-MDD+SI/SB: patients with SI/SB detected by the C-SSRS, but without a MDD diagnosis on or within 1 year prior to the index encounter.

RESULTS (CONT.)

- Relative to patients with no identified risk, patients with SI/SB detected had substantially higher rates of MDD diagnosis (6.6% for no identified risk vs 29.1%, 39.3%, and 51.5% for low, moderate, and high risk, respectively; **Figure 3**)

- Relative to patients with no identified risk, a larger proportion of patients with SI/SB detected had any type of mental health diagnosis, including anxiety disorder, bipolar disorder, depressive disorder, schizophrenia, and substance use disorder (**Figure 3**)

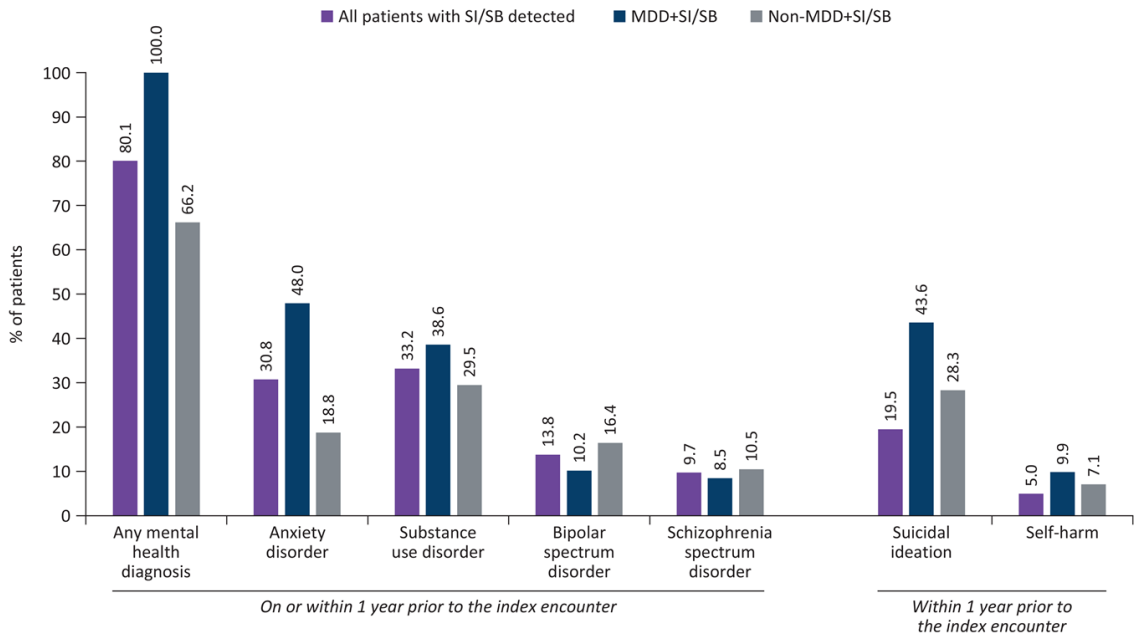
Figure 3. Patients With Behavioral Health Diagnoses,[a] Comparing Patients Across C-SSRS Risk Levels by ICD-10 Codes



C-SSRS: Columbia-Suicide Severity Rating Scale; ICD-10: *International Classification of Diseases, Tenth Revision*; MDD: major depressive disorder.
[a]Behavioral health diagnoses were measured on or within 1 year prior to the index encounter. Suicidal ideation and self-harm were measured within 1 year prior to the index encounter (excluding the day of the index encounter).

- Patients with MDD+SI/SB differed from patients with non-MDD+SI/SB with respect to the presence of concurrent select mental health comorbidities, including anxiety disorder (48.0% vs 18.8%), substance use disorder (38.6% vs 29.5%), and documentation of prior suicidal ideation (43.6% vs 28.3%; **Figure 4**)

Figure 4. Patients With Behavioral Health Diagnoses,[a] Comparing Patients With MDD+SI/SB[b] Versus Non-MDD+SI/SB[c] by ICD-10 Codes



C-SSRS: Columbia-Suicide Severity Rating Scale; ICD-10: *International Classification of Diseases, Tenth Revision*; MDD: major depressive disorder; MDD+SI/SB: suicidal ideation or suicidal behaviors with major depressive disorder; non-MDD+SI/SB: suicidal ideation or suicidal behaviors without major depressive disorder; SI/SB: suicidal ideation or suicidal behaviors.
[a]Behavioral health diagnoses were measured on or within 1 year prior to the index encounter. Suicidal ideation and self-harm were measured within 1 year prior to the index encounter (excluding the day of the index encounter).
[b]MDD+SI/SB: patients with SI/SB detected by C-SSRS and with MDD diagnosed on or within 1 year prior to the index encounter.
[c]Non-MDD+SI/SB: patients with SI/SB detected by C-SSRS, but without a MDD diagnosis on or within 1 year prior to the index encounter.

- Compared to patients with no identified risk, a higher proportion of those with any SI/SB risk were male (48.1% vs 43.0%), were non-Hispanic White (55.5% vs 47.9%), were younger (mean age: 40.9 vs 49.8 years), were homeless in the last 12 months (12.2% vs 2.5%), had their index encounters in psychiatric units (5.8% vs 0.1%), and had mental health diagnoses (80.1% vs 24.7%), including MDD (41.3% vs 6.6%)

- Additionally, a higher proportion of patients with MDD+SI/SB were in the youngest age group (18-24 years; 26.4% vs 17.9%), were female (54.8% vs 49.8%), had an income ≥$75,000 (40.4% vs 32.4%), had a median household income ≥$75,000 (39.3% vs 31.0%), and had their index encounters in psychiatric units (10.1% vs 2.7%)

LIMITATIONS

- This research took place at 1 large health care delivery system in Northern California and excluded minors (<18 years old)
- Patients could receive care at non–Sutter Health institutions; thus, diagnoses may have been underestimated

CONCLUSIONS

- Universal screening for SI/SB identified 2.2% of patients with any SI/SB risk level, and 41.3% of them had MDD
- Among those with SI/SB, characteristics differed based on risk level and MDD status, with a higher percentage of patients with MDD exhibiting high risk for SI/SB
- Highlighting key demographic and clinical differences between these patient groups can guide efforts to provide mental health consultation and referrals
- Future research may establish whether universal screening in acute care settings leads to improved follow-up care for those with SI/SB

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DISCLOSURES

E. Dillon, K. Azar, E.T. de Vera, M. Li, Q. Huang, S. Deng, A. Kiger, D. Becker, and T. Nguyen have no conflicts of interest to disclose. J. Pesa and J. Voelker are employees of Janssen Scientific Affairs, LLC, and stockholders in Johnson & Johnson.

ABSTRACT

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Background

The Joint Commission recently revised its National Patient Safety Goal requirements to include standardizing suicide screening. Sutter Health launched system-wide standardized use of the Columbia Suicide Severity Rating Scale (C-SSRS) in acute care facilities in July 2019.

Objective

Describe and compare characteristics of adult patients screening positive for suicidal thoughts or behaviors (STB) including those with major depressive disorder (MDD).

Methods

Electronic health record-based observational cohort study describing and comparing sociodemographic and clinical characteristics of adult patients screening positive for STB (7/1/2019-10/4/2020), including those with MDD. MDD+STB were compared to those with STB without MDD (STB-MDD) and on risk categories (no risk v any risk). Wilcoxon rank-sum tests for continuous variables and $\chi 2$ tests for categorical variables were used. Results reported are statistically significant at 0.05.

Results

410,302/478,143 (85.8%) of adults were screened by C-SSRS, 8,416 (2.05%) had STB, 914 (10.9%) had MDD+STB, 7,502 (89.1%) had STB without MDD. Of those with STB, 3,278 (38.9%) were low risk, 1,314 (15.6%) moderate risk, and 3,824 (45.4%) high risk. Any risk vs no risk: males (46.6% v 42.3%), White (55.5% v 47.9%), mean age 41.6 v 50.3 years, homeless in last 12 months (12.0% v 2.5%), index encounter Psych unit (10.3% v 0.2%), mental health diagnoses (22.2% v 4.9%), MDD (10.9% v 1%). MDD+STB patients vs MDD-STB: mean age 38.8 v 41.9 years, female (58.6% v 52.8%), Asian (9.7% v 6.6%), income $75,000+ (45.5% v 34.0%), index encounters in Psych units (46.5% v 5.9%), substance abuse (12.1% v 3.9%), anxiety (16% v 2.2%) and documented prior suicidal ideation (3.7% v 0.5%).

Conclusion

Screening for STB identified 2.05% with any STB and 10.9% with MDD+STB. Characteristics differed based on risk and MDD status. Highlighting demographic and clinical differences between these patient groups can guide efforts to provide mental health consultation and referrals.

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