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Evaluation and Disposition of Medicaid-Insured Children and Adolescents with Suicide Attempts

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Abstract

Objective—Guidelines and quality of care measures for the evaluation of adolescent suicidal behavior recommend prompt mental health evaluation, hospitalization of high-risk youth, and specific follow-up plans—all of which may be influenced by sociodemographic factors. The aims of this study were to identify sociodemographic characteristics associated with variations in the evaluation of youth with suicidal behavior.

Methods—We conducted a large cohort study of youth, ages 7–18, enrolled in Tennessee Medicaid from 1995–2006, who filled prescriptions for antidepressants and who presented for evaluation of injuries that were determined to be suicidal based on external cause-of-injury codes (E-codes) and ICD-9-CM codes and review of individual medical records. Chi-square tests and logistic regression were performed to assess the relationship between sociodemographic characteristics and documentation of mental health evaluation, hospitalization and discharge instructions.

Results—Of 929 episodes of suicidal behavior evaluated in an acute setting, rural-residing youth were less likely to be admitted to a psychiatric hospital (AOR 0.72; 95% CI 0.55–0.95) and more likely to be medically hospitalized only (AOR 1.92; 95% CI 1.39–2.65). Females were less likely to be admitted to a psychiatric hospital (AOR 0.55; 95% CI 0.41–0.74) and more likely to be

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Potential Conflicts of Interest: None

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discharged home (AOR 1.44; 95% CI 1.01–2.04). Only 40% of those discharged to home had documentation of discharge instructions with both follow-up provider and date.

Conclusions—In this statewide cohort of youth with suicidal behavior, there were significant differences in disposition associated with sociodemographic characteristics.

Keywords

Adolescents; Suicide; Medicaid

Introduction

Suicide is the third leading cause of death in young people age 10–24 years in the United States, accounting for approximately 4,500 deaths every year.¹ Non-fatal suicidal behavior (suicidal ideation or attempted suicide) is even more common among youth and is an important predictor of future suicide attempts and completed suicide.² Annually, approximately 150,000 youth seek treatment in an emergency department following a self-harm event.^{3,4}

Because mental health care following suicidal behavior is critical to reduce the risk of future suicide,⁵ several regional and national efforts have sought to improve and standardize the evaluation and treatment of adolescent self-injurious behavior.^{2,6–9} Guidelines from the American Academy of Child and Adolescent Psychiatry (AACAP) state that youth presenting to emergency departments with suicidal behavior should undergo mental health evaluation for assessment and triage.¹⁰ Hospitalization in a medical or psychiatric unit is recommended unless there is certainty about medical and psychiatric stability. In cases appropriate for outpatient follow-up, discharge to home/community is permissible if oversight from supportive adult(s) in a safe/secured environment can be assured and if specific follow-up, including provider, date, and time has been arranged.

Several non-clinical factors, including health insurance coverage and sociodemographic factors (age, gender, and geographic residence) are likely to be influential in the evaluation and disposition of youth with suicidal behavior. As the enactment of the Affordable Care Act increases the availability and parity of mental health insurance coverage, the influence of sociodemographic characteristics on the provision of health care are of increasing interest. New initiatives, including Accountable Care Organizations, which seek to integrate mental and primary health care in an efficient, cost-effective manner, require an understanding of how sociodemographic characteristics influence health care delivery. Small studies have documented the influence of health insurance coverage; however, there are limited population-based data on the relationship of sociodemographic characteristics and the assessment and disposition of adolescent suicidal behavior.^{11–14}

The aims of this study were to identify and characterize variations in the evaluation and disposition of youth presenting for medical evaluation of suicidal behavior associated with sociodemographic characteristics. To address these aims, we utilized data from an ongoing study of youth in Tennessee's Medicaid population who were recently prescribed antidepressants and who presented for evaluation of injury episodes that were confirmed to

be suicidal in nature. This cohort provided a unique opportunity to examine these factors in an insured population with well-characterized suicidal behavior that was relatively homogeneous in terms of psychiatric risk.

Methods

The study was performed as part of a larger retrospective cohort study of antidepressant use and suicidal behavior in children and adolescents that included 80,183 youth (age 6–18) who were enrolled in Tennessee's Medicaid Program (TennCare) between 1995 and 2006 and who were prescribed an antidepressant medication.¹⁵ The methods for identifying and confirming suicidal behavior in this cohort have been previously described.¹⁶ Briefly, TennCare claims data and linked death certificates were queried for International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) codes and external cause-of-injury codes (E-codes) corresponding to potential episodes of suicidal behavior as outlined previously.¹⁶ For each episode identified by these claims, medical records were sought and adjudicated to determine if an injury was deliberately self-inflicted and if intent to die was explicitly stated or could be inferred using definitions from the Columbia Classification Algorithm of Suicide Assessment.¹⁷ For the larger study, 87% of episodes identified by medical claims were obtained and had adequate documentation for adjudication.

For this study examining the evaluation and disposition of youth presenting with suicidal behavior, we excluded episodes of completed suicide. We reviewed 965 suicidal episodes (all episodes adjudicated as confirmed suicide attempts, preparatory actions toward suicidal behavior and suicidal ideation only). We excluded 36 records (4%) that were incomplete or that indicated that the subject left against medical advice. For the remaining 929 suicidal episodes, medical records were reviewed by the principal investigator and trained research nurses to record key characteristics of the history, evaluation, and disposition. The method of injury was characterized as cutting/stabbing, gunshot, hanging/asphyxiation, jump from height, ingestion, other or suicidal ideation only. Clinical documentation of prior psychiatric history and prior suicide attempts were recorded. Disposition was characterized as hospitalization (psychiatric [including youth transferred to a psychiatric hospital following admission to a medical hospital], medical only) or discharge to home or the community. We reviewed records for documentation of a mental health evaluation by a psychiatric physician or nurse, social worker, psychologist, counselor or representative of a mental health organization at any time prior to discharge from the acute care or medical hospital setting. For youth who were discharged to home, we reviewed discharge instructions for documentation of a specific follow-up provider and date. Subjects were characterized as having received complete discharge instructions (both specific provider and date provided), partial discharge instructions (either specific provider or date provided), or no discharge instructions (neither specific provider nor date provided).

We recorded sociodemographic data including gender, age, race and geographic residence of the parent/guardian. Gender and age at the time of the event were determined by medical record documentation. Because of differences in the epidemiology of suicide attempts between younger adolescents and older adolescents, age was sub-divided into two groups

(7–14 years and 15–18 years).¹⁸ Race was categorized as black, white, or other as self-reported by the parent/guardian and documented in administrative claims. Geographic residence using the parent/guardian's address was defined as rural, suburban or urban using Standard Metropolitan Statistical Area definitions.¹⁹ We chose to focus on geographic residence of the youth rather than where they sought care. While youth may be more likely to seek care in a setting close to them, youth from rural areas may seek care from facilities in non-rural areas. When youth seek care outside of their community, disposition and follow-up is likely to be influenced by the availability of resources both at the treating facility and in the child's community.

In the larger study, we found that less than 1% of the suicidal episodes were repeat events, therefore we performed X^2 -analyses to assess the relationship between sociodemographic characteristics and receipt of mental health evaluation and disposition. Multivariate logistic regression models were created to estimate the odds of receiving a mental health evaluation, being hospitalized in a medical or psychiatric facility, or being discharged home, after adjusting for the other sociodemographic variables (race, age, gender, geographic residence). For youth who were discharged to home, models assessed the relationship between sociodemographic characteristics and the receipt of mental health evaluation and characteristics of follow-up instructions. Statistical calculations were performed using Stata version 12.1 software (College Station, TX, USA).

Permission to use the study data was obtained from the Tennessee Department of Health and the TennCare Bureau. The study was reviewed and approved by the Vanderbilt University Institutional Review Board.

Results

Of the 929 youth with confirmed suicidal events, 72% were female, 82% were white and 42% resided in a rural area. Fifty-six percent of the cohort was age 15–18 years. Ingestion was the most common mechanism of injury accounting for 81% of the suicidal episodes and cutting was the second most common (9%). The presence of a psychiatric history was documented in 91% of the cases and previous suicide attempt was documented in 41% of the cases. Inconsistencies in clinical documentation of psychiatric history limited our ability to determine frequencies of specific psychiatric diagnoses (i.e. suicide attempt, bipolar mood disorder or substance abuse) or their relationships to evaluation and disposition.

Table 1 displays the elements of the evaluation and disposition of adolescents with suicidal behavior by sociodemographic characteristics. A mental health evaluation was documented for 81% of episodes of suicidal behavior. Older adolescents were significantly more likely than younger adolescents to have a mental health evaluation (83% vs. 76%; $p=.04$); however, there were no significant differences in receipt of a mental health evaluation associated with gender, race, or area of geographic residence. Youth who were hospitalized in a medical facility were more likely to have a mental health evaluation than those who were discharged home (83% vs. 69%, $p=.001$).

Following evaluation of suicidal episodes, 51% of youth were hospitalized in a psychiatric facility, 24% in a medical facility only, and 25% were discharged to home from the acute setting. Relative to youth from non-rural residences, youth from rural areas were significantly less likely to be admitted to a psychiatric hospital (54% vs. 46%; $p<.05$) and significantly more likely to be admitted to a medical hospital only (31% vs. 19%; $p<.05$). There was no significant difference in the proportion discharged from the emergency department for rural vs. non-rural residence. Females were significantly less likely than males to be admitted to a psychiatric hospital (47% vs. 61%; $p<.05$), but significantly more likely to be admitted to a medical hospital only (26% vs. 19%; $p<.05$) and to be discharged to home from the acute setting (27% vs. 20%; $p<.05$). Youth who were age 15–18 years were more likely to be admitted to a medical hospital than youth age 7–14 years (27% vs. 20%; $p<.05$).

Of the 25% of confirmed suicidal episodes that resulted in being discharged to home from the acute setting, 41% had documentation of specific discharge instructions with both a specific follow-up provider and time, an additional 42% had discharge instructions to follow-up with a specific provider, but without a specific time and 13% lacked instructions for follow-up. There were no differences in receipt of discharge instructions by geographic residence, race, age or gender.

Table 2 displays the adjusted odds of receipt of mental health evaluation, disposition, and receipt of discharge instructions after controlling for other sociodemographic characteristics. In the multivariate analysis, there were no significant differences in receipt of mental health evaluation associated with sociodemographic characteristics. Relative to males, females had significantly lower adjusted odds of being admitted to a psychiatric hospital (Adjusted Odds Ratio [AOR] 0.55; 95% confidence interval [CI] 0.41–0.74), significantly higher adjusted odds of being admitted to a medical hospital only (AOR 1.57; 95% CI 1.09–2.26), and being discharged from the acute setting to home or the community (AOR 1.44; 95% CI 1.01–2.04). Youth from rural areas had significantly lower adjusted odds of being admitted to a psychiatric hospital (AOR 0.72; 95% CI 0.55–0.95) and nearly twice the adjusted odds of being admitted to a medical hospital only (AOR 1.92; 95% CI 1.39–2.65). There were no significant differences in the adjusted odds of psychiatric hospitalization, medical hospitalization or discharge from emergency department associated with age or race.

Discussion

In this large, statewide, cohort study of Medicaid-insured adolescents who presented with suicidal behavior, we identified differences in the evaluation and disposition of youth that were associated with sociodemographic characteristics. Some of these differences can be attributed at least in part to the epidemiology of suicide risk. Other differences are more likely to reflect differences in available resources. We also identified potential missed opportunities for mental health evaluation and the documentation of discharge follow-up.

Youth from rural areas were more likely to be admitted to a medical hospital and less likely to be admitted to a psychiatric hospital than youth residing in non-rural areas. These findings persisted even after controlling for gender, race, and age. Studies show that youth from rural

areas are disproportionately more likely to attempt and complete suicide than youth from suburban/urban regions. Among the reasons posited for this disparity are that rural youth are likely to have lower socioeconomic status and poorer access to health care.^{20,21} In this study, the mechanisms for suicidal behavior utilized by youth from rural and non-rural settings were similar. In a policy statement on treating suicidal behavior, the American Academy of Pediatrics noted the influence of availability of facilities, insurance coverage, and managed care policies on the choice between medical and psychiatric hospitalization following a suicide attempt.²² The youth in our study were enrolled in the state's Medicaid program, so it seems likely that the differences in medical and psychiatric hospitalization for these youth are a reflection of differential resources. In addition to assessing and treating the medical needs of youth with suicidal behavior, medical hospitalization ensures safety and may facilitate mental health evaluation for youth in rural settings where mental health resources may be less accessible.^{22,23} Differences in hospitalization and their effects on hospital resource utilization and repeat suicidal behavior represent important areas for future inquiry.

Females with suicidal behavior were less likely than males to be admitted to a psychiatric facility and more likely to be discharged home from the acute setting. Epidemiologic data show that adolescent males are less likely to attempt suicide, but are more likely to complete suicide than females.^{8,24} Recognition that males are at higher risk for suicide completion is reflected in clinical guidelines which should lead to more intensive evaluation of adolescent male suicidal behavior.²

We found no significant disparities in receipt of mental health evaluation by youth from rural and non-rural areas. In addition to the potential use of hospitalization to facilitate evaluation of youth in rural areas, this parity may also be attributable to the wide-spread presence of mobile crisis teams (MCTs) in Tennessee. MCTs were developed in the 1970's in response to the deinstitutionalization of patients with mental illness and have been used to complement or replace emergency department psychiatric care.²⁵ Studies show that MCTs improve access to care for patients, provide support for families and reduce the number of inpatient psychiatric hospitalizations.²⁵⁻²⁷ With a presence in each of Tennessee's 95 counties, it is likely that MCT's have helped to reduce potential disparities in access to mental health evaluations following suicidal behavior.

Though there were not significant differences based on sociodemographic characteristics, nearly 20% of the 929 confirmed episodes of suicidal behavior in this study did not have documentation of a mental health evaluation prior to discharge. We also found that less than half of youth who were discharged home from the acute care setting had documentation of discharge instructions that included follow-up with specific provider and time and 13% had no follow-up instructions. These findings are notable given that the study population included high-risk youth who had recently been prescribed antidepressants. The lack of documentation of follow-up instructions is particularly striking because it is reasonable to expect that many of these youth have a relationship with an outpatient provider who prescribed the antidepressant. Documentation of mental health evaluation and follow-up appointments have been proposed as potential quality of care measures in the emergency

department management of suicidal behavior.²⁸ These findings suggest important opportunities to improve the care of youth with suicidal behavior.

This study has limitations. It included a cohort of youth from a single state who were prescribed antidepressants and who were insured through the Medicaid program. Tennessee is a geographically diverse state and at the time of the study, approximately 30% of Tennessee's youth were covered by TennCare. However, the findings from this study may not be generalizable to youth with other medical or mental health conditions or to youth who were not prescribed antidepressants. Although youth in the cohort had been prescribed an antidepressant, the specialty of the outpatient prescriber (mental health, primary care, or other) was not available. The strengths of this study include the large number of confirmed suicidal episodes included in analysis. Though potential episodes of suicidal behavior were identified using administrative claims data, these claims were augmented by adjudication of the medical records for each episode to delineate suicidal from non-suicidal self-injurious behavior.

Conclusion

In this statewide cohort of Medicaid-insured youth with confirmed suicidal behavior, those from rural residences were less likely to be hospitalized in a psychiatric facility and more likely to be medically hospitalized. Of youth discharged home after acute evaluation of suicidal behavior, less than half had documentation of a specific follow-up plan. With increasing focus on accountable care, these findings suggest barriers and opportunities to implementing evidence-based care for youth with suicidal behavior.

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What's New?

In this statewide cohort of Medicaid-insured youth with suicidal behavior, those from rural areas were more likely to be medically hospitalized. Of youth discharged home after acute evaluation of suicidal behavior, a minority had documentation of a specific follow-up plan.

Table 1
Evaluation and Disposition of Adolescents with Suicidal Behavior by Sociodemographic Characteristics

	Mental Health Evaluation	Disposition			Complete Follow-up Instructions Documented**
Total		Any Psychiatric Hospitalization	Medical Hospitalization Only	Discharged Home	
n	929	473 (51%)	222 (24%)	231 (25%)	94 (41%)
Gender					
Male	257 (28%)	157 (61%)*	48 (19%)*	52 (20%)*	19 (37%)
Female	672 (72%)	316 (47%)	174 (26%)	179 (27%)	75 (41%)
Race					
White	758 (82%)	383 (51%)	184 (24%)	189 (25%)	76 (40%)
Black	139 (15%)	75 (54%)	29 (21%)	34 (24%)	15 (44%)
Age group					
7–14 years	406 (44%)	315 (76%)*	214 (52%)	82 (20%)*	47 (43%)
15–18 years	523 (56%)	434 (83%)	259 (50%)	140 (27%)	47 (38%)
Geographic Residence					
Non-rural	542 (58%)	295 (54%)*	102 (19%)*	143 (26%)	62 (43%)
Rural	387 (42%)	178 (46%)	120 (31%)	88 (23%)	32 (36%)

* p-value < 0.05

** For those patients discharged to home only; complete discharge instructions include both a specific follow-up provider and specific follow-up date

Table 2
Evaluation and Disposition of Adolescents with Suicidal Behavior by Sociodemographic Characteristics, Multivariate Analysis

	Mental Health Evaluation	Disposition			Specific Follow-up Instructions Documented**
		Any Psychiatric Hospitalization	Medical Hospitalization Only	Discharged Home	
	AOR* (95% CI)	AOR* (95% CI)	AOR* (95% CI)	AOR* (95% CI)	AOR* (95% CI)
Gender					
Male	1.00 (reference)	1.00(reference)	1.00 (reference)	1.00(reference)	1.00(reference)
Female	1.04 (0.72–1.51)	0.55 (0.41–0.74)	1.57 (1.09–2.26)	1.44 (1.01–2.04)	1.21 (0.47–3.07)
Race					
White	1.00 (reference)	1.00(reference)	1.00 (reference)	1.00(reference)	1.00(reference)
Black	0.75 (0.48–1.19)	1.04 (0.71–1.53)	1.07 (0.67–1.72)	0.87 (0.56–1.35)	2.90 (0.63–13.15)
Age group					
7–14 years	1.00 (reference)	1.00(reference)	1.00 (reference)	1.00(reference)	1.00(reference)
15–18 years	1.36 (0.98–1.90)	0.90 (0.69–1.17)	1.36 (0.99–1.87)	0.87 (0.64–1.18)	1.03 (0.46–2.30)
Geographic Residence					
Non-rural	1.00 (reference)	1.00(reference)	1.00 (reference)	1.00(reference)	1.00(reference)
Rural	1.02 (0.72–1.45)	0.72 (0.55–0.95)	1.92 (1.39–2.65)	0.81 (0.59–1.12)	1.40 (0.60–3.29)

* AOR: Adjusted odds ratio (odds adjusted for each of the other socio-demographic characteristics listed in the table)

** For those patients discharged to home only; complete discharge instructions include both a specific follow-up provider and specific follow-up date