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 JOURNAL OF  
 ADOLESCENT  
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Adolescent health brief

## Emergency Department Utilization Among American Indian Adolescents Who Made a Suicide Attempt: A Screening Opportunity

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Article history: Received August 22, 2013; Accepted November 20, 2013

Keywords: Suicide; Screening; Emergency department; American Indian

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 A B S T R A C T

**Purpose:** Reservation-based American Indian adolescents are at significant risk for suicide. Preventive approaches have not focused on medical service utilization patterns on reservations, which are typically limited to one local emergency department (ED). Patterns of ED utilization before suicide attempts were evaluated to identify opportunities for screening and intervention.

**Methods:** Cross-sectional study of Apache adolescents (aged 13–19 years) who attempted suicide and consented to medical chart review. Lifetime presenting problems for Indian Health Service ED visits before the index suicide attempt were extracted and coded.

**Results:** A total of 1,424 ED visits from 72 Apache adolescents were extracted (median lifetime visits,  $n = 18$ ). In the year before the attempt, 82% ( $n = 59$ ) of participants had had an ED visit for any reason and 26% ( $n = 19$ ) for a psychiatric reason, including suicidal thoughts or self-harm.

**Conclusions:** Service utilization data suggest that EDs are critical locations for reservation-based suicide prevention. Suicide screening for all ED patients could increase early identification and treatment of this at-risk group.

Published by Elsevier Inc. on behalf of Society for Adolescent Health and Medicine.

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 IMPLICATIONS AND CONTRIBUTION

Suicide is a significant concern among American Indian youth. In a sample of American Indian adolescents who attempted suicide, most had been to the emergency department in the year before the suicide attempt. Emergency departments are well-positioned to screen and intervene with reservation-based American Indian youth.

Reservation-based American Indian (AI) adolescents have suicide rates 4–15 times those of national samples [1]. American Indian adolescents experience notable health care disparities, including decreased access to well-child visits [2] and mental health treatment [3], as well as increased visits to emergency departments (EDs) [4] and injury-related hospitalization and death [5]. On reservations, the ED is often the primary source of medical care. Consequently, screening in ED settings may be a critical strategy to increase identification of individuals at risk for

suicide and decrease suicide attempts and deaths [6,7]. However, there are no known studies on ED use among AI adolescents at risk for suicide.

The current study is the first of its kind to investigate reservation-based ED use in a sample of AI adolescents who attempted suicide. Patterns of ED use in the time before suicide attempt were explored to illuminate specific opportunities for screening and early identification.

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 Methods

## Study procedures

Participants were White Mountain Apaches (Apache), aged 13–19 years, who had made a suicide attempt within the past

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3 months. Participants were identified by the tribally mandated Apache Suicide Surveillance and Prevention System [1,8] and consented to a series of studies examining suicide risk factors and brief intervention approaches (M. Cwik, in review). Participants (aged 18–19 years) or a legal guardian (for participants aged 13–17 years) consented to an Indian Health Service medical record review; 22 of 94 (23%) of those approached declined participation. Apache Research Assistants used a form created by the study team to extract medical record data including ED presenting problems and dates of service. The study protocols were approved by relevant tribal, Indian Health Services, and university research review boards.

### Data analysis

The first three ED visit presenting problems were coded using the diagnosis grouping system developed by the Pediatric Emergency Care Applied Research Network Core Data Project, based on International Classification of Diseases–Ninth Revision codes [9]. Imprecise or invalid complaints (40 of 1,582; 3%) as well as patients leaving against medical advice (118 of 1,582; 7%) were excluded from final analysis. Codes occurring in fewer than 20 ED visits in the total sample were coded as “Other.” E-codes, which designate external causes of injury, were included as “Psychiatric” when the visit was for deliberate self-harm; all other E-codes were coded as “Trauma.” All visits with a Psychiatric code were further coded for suicidal ideation or self-harm. Emergency department visits before, but not including, the date of the index suicide attempt were analyzed using univariate statistics in IBM SPSS 21 (Armonk, NY).

### Results

Medical records for 72 participants were analyzed. Sixty percent were female, with a mean age of 16.7 years (standard deviation, .9 years). A total of 1,424 ED visits were coded. Lifetime ED visits per participant ranged from 2 to 52 (median, 18). Table 1 displays the frequency of presenting problems in each category by year before the index attempt (designated by the first problem in the medical record). Most common primary presenting

**Table 1**  
Emergency department visit primary presenting problem (n [%]), by year before index suicide attempt

Presenting problem	Total	<1	1–5	5–10	≥10
Ears, nose, and throat; dental and mouth	404 (28)	35 (21)	83(23)	70 (26)	216 (35)
Trauma	324 (23)	47 (28)	105 (29)	84 (31)	88 (14)
Gastrointestinal	109 (8)	7 (4)	17 (5)	17 (6)	68 (11)
Respiratory	106 (7)	2 (1)	10 (3)	7 (3)	87 (14)
Dermatologic	96 (7)	13 (8)	35 (10)	22 (8)	26 (4)
Psychiatric	40 (3)	14 (8)	23 (6)	2 (1)	1 (<1)
Systemic states	86 (6)	4 (2)	10 (3)	19 (7)	53 (9)
Urinary tract	30 (2)	3 (2)	6 (2)	13 (5)	8 (1)
Musculoskeletal	24 (2)	6 (4)	15 (4)	2 (1)	1 (<1)
Diseases of eye	20 (1)	5 (3)	9 (2)	1 (<1)	5 (1)
Other <sup>a</sup>	185 (13)	33 (20)	54 (15)	34 (14)	61 (10)
Total	1,424	169	367	274	614

<sup>a</sup> “Other” category included presenting problems that occurred in <20 visits and included toxicologic emergencies; genital and reproductive diseases; fluid and electrolyte disorders; hematologic diseases; allergic, immunologic, and rheumatologic diseases; neurologic diseases; child abuse; circulation and cardiovascular diseases; and endocrine, metabolic, and nutritional diseases.

problems in the year before the index attempt were trauma (28%; n = 47), ears, nose, and throat (21%; n = 35), and psychiatric (8%; n = 14). These presenting problems were common across all time periods, with the exception of early childhood.

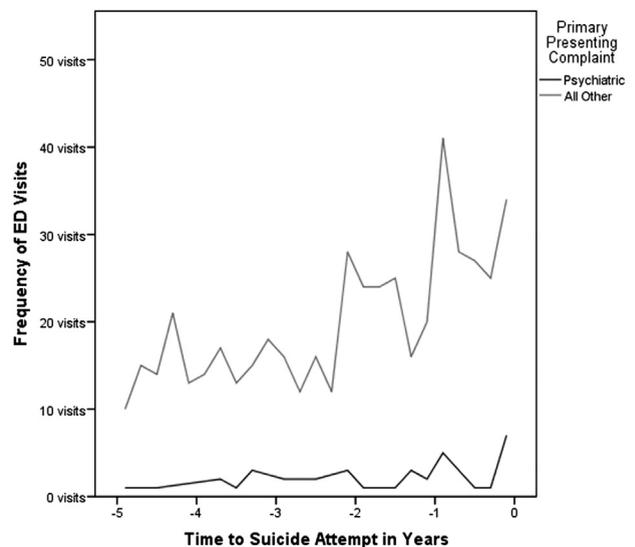
Figure 1 presents the frequency of ED visits across the 5 years before the index attempt. Two categories of ED visits are plotted using linear interpolation: (1) psychiatric visits, which included visits for self-harm; and (2) all other ED visits.

In the year before the index suicide attempt, 59 of 72 participants (82%) had had an ED visit for any reason, with no significant difference by gender ( $\chi^2 = .02$ ;  $p = .88$ ). Thirty-four participants (41%) had an ED visit with “Trauma” and 19 (26%) had an ED visit with “Psychiatry” coded in the first three presenting concerns in this period. Suicidal thoughts or self-harm were coded for five of these participants (7%; four of five were female).

### Discussion

Data from Apache adolescent medical records indicate substantial contact (82%) with the local ED in the year before a suicide attempt. In comparison, according to the National Health Interview Survey, just 22% of AI/Alaska Native youth (under 18 years of age) had made an ED visit in 2011 [10] and 65% of Apache children (aged 9–17 years) had made an ED visit in 2012 (Indian Health Service, personal communication). Therefore, Apache adolescents who attempt suicide appear to be a population with increased ED use, particularly in the year preceding a suicide attempt. Trauma and injury-related ED visits were the most common presenting problems during this period.

Results suggest that screening AI adolescent patients in ED settings may proactively identify those at risk for future suicidal behavior. Implementation considerations include appropriate patient selection, the availability of validated screening instruments, and training of non-mental health personnel. Most ED visits in the 5 years before suicide attempt were for non-psychiatric reasons and few were for suicidal thoughts or behavior. Screening all adolescent patients, regardless of



**Figure 1.** Frequency of emergency department (ED) visits in the year before the index suicide attempt, by primary presenting problem.

problem, could have substantially increased identification in this sample. The sensitivity and specificity of the screening instrument would affect the resulting burden on ED resources, highlighting the need for appropriate screening instruments for reservation-based AI adolescents.

Limitations to this study include the small sample size, the absence of a control group, and imprecision in coding of presenting problems (118; 7% of codes were invalid and distinctions between suicide attempts and non-suicidal self-injury could not be made). Psychiatric presenting problems could also have been underestimated by medical staff without extensive psychiatric training. These limitations are outweighed by the exclusively AI sample within a population experiencing significant suicide burden and health care disparities, who are rarely the focus of ED research. In addition, most lifetime service use was captured because there are no other primary care facilities on the Apache reservation.

The 2012 National Strategy for Suicide Prevention advocates early identification and management of suicidal patients in ED settings [6]. Future directions should include prospective investigation of ED use among AI adolescents who have attempted suicide with a non-attempter comparison group. American Indian reservation-based populations may benefit from further research to develop and evaluate appropriate ED-based suicide screening instruments and brief interventions.

#### Acknowledgments

The authors respectfully acknowledge the White Mountain Apache youth, families, and community members for their courage in addressing suicidal behavior and their innovation in pioneering surveillance strategies. They are grateful to the White Mountain Apache Health Board and Tribal Council for their historic commitment to research and their critical review of the research project and manuscript. The authors thank Dr. Marc Traeger, Indian Health Service, for assistance with this analysis. They acknowledge Madison Anderson for assistance with data entry on this project. Finally, they acknowledge their Apache

research assistants for tireless efforts and dedication to help people in their community.

#### Funding Sources

The authors are grateful for grant support from the following: the Native American Research Centers in Health Initiative/National Institute of General Medical Science (Grant U26IHS300013/03), the Substance Abuse and Mental Health Services Administration (Grants 4SM057835–03 and U79SM059250), and MACRO International (Subcontract/Enhanced Evaluation, Grant 35126-8S-1137).

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