

Alcohol Poisoning Death in New Mexico 1999-2003

Introduction

Alcohol poisoning results from the rapid ingestion of large quantities of alcohol, which can lead to very high blood alcohol concentrations and death. In the past several years, the highly publicized alcohol-poisoning deaths of college students in a number of states have focused much-needed national and state attention on the risks of binge drinking in the underage and college-age population. In a number of states, these events have led to the enactment of legislation and the institution of policy changes at state colleges and universities, aimed at reducing binge drinking and its consequences in the underage and college-age population.

Here in New Mexico, there were two alcohol poisoning deaths at New Mexico State University during the 2004-05 school year. The multiple occurrence of this relatively rare event on a single college campus in a single school year suggests that there is a serious public health threat that needs to be addressed. To date, there have been two large and well-attended community meetings in response to these events, but more specific policy responses or other interventions have yet to be completed. This report will present recent demographic and trend information on alcohol poisoning in New Mexico to help support the development of policies and interventions aimed at preventing future alcohol poisoning deaths in New Mexico.

Methods

All alcohol poisoning deaths that occurred in New Mexico and among New Mexico residents were identified from 1999 through 2003, using data provided by the Office of the Medical Investigator (OMI) and the Toxicology Bureau of the Scientific Laboratory Division (SLD), New Mexico Department of Health. The cause and manner of death (unintentional, suicide, homicide or undetermined) were determined by OMI forensic pathologists and field investigators. This

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analysis included only decedents from unintentional alcohol poisoning, as determined by OMI. Decedents from ingestion of methanol, isopropyl alcohol, ethylene glycol and alcohol combined with other drugs were excluded (n=7). This case definition corresponds roughly to the underlying cause of death definition used in death certification.

The total alcohol poisoning death rate was calculated for the five-year period, 1999-2003. Rates were also calculated by decedent demographics for the same time period. Death rates were age-adjusted to the 2000 US standard population and expressed per 100,000 person years.

Results

There were 67 deaths due to alcohol poisoning in New Mexico from 1999-2003. These decedents were mostly male (76.1%) with a median age of 42 years. Forty-three percent of decedents were American Indian, 35.8% were Hispanic and 20.9% were White. More than half (55.2%) of these decedents lived in metropolitan areas of New Mexico, with 32.8% from Bernalillo County. The median blood alcohol concentration (BAC) was 0.40 mg/dL, available for 64 decedents (Table 1).

Table 1 also presents age-adjusted and age-specific death rates due to alcohol poisoning from 1999-2003. The New Mexico death rate from alcohol poisoning for these five years was 0.7 per 100,000 persons. Males had a higher death rate than females (1.2 versus 0.3 per 100,000). Decedents aged 35-44 and 45-54 years had the highest death rates from alcohol poisoning, 1.7 per 100,000. The death rate among American Indians was 3.9 per 100,000, while lower death rates were observed

for Hispanics (0.7) and Whites (0.3). In examining alcohol poisoning by decedent residence, the death rates were highest in the northeast (1.1 deaths per 100,000), followed by the northwest (1.0), Bernalillo County (0.8), southwest (0.5) and southeast (0.3).

Discussion

In New Mexico, as in the United States overall, alcohol-poisoning deaths occur disproportionately among middle-aged males of non-White race. While the demographic profile of alcohol poisoning in New Mexico is consistent with the United States (1), New Mexico's overall alcohol poisoning death rate is three times the national rate, and New Mexico's sub-population rates are 2-4 times the national rates across most demographic categories. In both New Mexico and the U.S., age-specific alcohol-poisoning death rates peak in the 35-44 and 45-54 age categories; however, New Mexico's rates are 2-3 times the U.S. rates in these categories. In both New Mexico and the U.S., the male alcohol poisoning death rate is 3 to 4.5 times the female rate; however, New Mexico's male rate is two-and-a-half times the U.S. male rate, and New Mexico's female rate is almost four times the U.S. female rate. Finally, both New Mexico and the U.S. report a substantially (1.5 to 3 times) higher rate for Hispanic males than for White non-Hispanic males; however, New Mexico's Hispanic male rate is twice the national Hispanic male rate. Meanwhile, New Mexico's American Indian male rate is more than six times the Hispanic male rate and almost nineteen times the White non-Hispanic male rate. Unfortunately, no national comparison is possible, since rates weren't reported for the U.S. American Indian population.

During 1999-2003 alcohol poisoning was a more serious problem in the northern half of New Mexico than in the southern half. The Northwest region had a rate 3 times higher than the Southeast region (the region with the lowest alcohol-poisoning death rate); and the Northeast region had a rate 3.2 times the Southeast rate. The high Northwest region rate is driven by the elevated American Indian rates mentioned above. The high Northeast region rate is driven by relatively high rates in both the American Indian and Hispanic populations.

Between 2001 and 2003 the annual number of alcohol poisoning deaths in New Mexico more than doubled

(from 10 to 21). This increase was due to increased deaths in the Northwest region and Bernalillo County among the population aged 25-54. The increase was not due to increased deaths among the underage/college-age population.

Although deaths to underage and college-age decedents represent a relatively small proportion of the total deaths from alcohol poisoning, this population is nonetheless very important from a prevention standpoint. These alcohol-poisoning deaths represent only the "tip of the iceberg" of adverse outcomes associated with binge drinking in this population. Prevention efforts targeted at underage and college-age binge drinking will reduce not only alcohol-poisoning deaths, but also the considerably larger burden of deaths in this age group due to alcohol-related motor vehicle crashes.

Various preventive initiatives can be targeted to underage and college age groups. These range in effectiveness from less effective (e.g., health education initiatives that teach responsible drinking behaviors or alternatives to drinking); to somewhat effective (e.g., law enforcement interdiction of procurers and servers of alcohol to minors; law enforcement intervention in illegal underage drinking); to most effective (alcohol excise tax increases, which, by raising the cost of drinking, have proven to be an effective strategy for limiting underage drinking) (2, 3). Additional prevention strategies are available to school administrators seeking to limit legal drinking on college campuses. These include prohibiting on-campus drinking, and increasing punishments for drinking violations. The efficacy of specific initiatives targeted to collegiate drinking is still being evaluated. Finally, inasmuch as one of the two recent college student deaths in New Mexico was (similar to other recent deaths around the country) the outcome of binge drinking associated with turning the legal drinking age, special interventions may be warranted to address increasingly lethal rites of passage associated with binge drinking.

Meanwhile, the fact remains that the majority of alcohol poisoning deaths occur in older age groups for whom alcohol poisoning may be the outcome of a particularly heavy chronic drinking episode, rather than of sporadic binge drinking. The prevention options available for older individuals are less numerous, since drinking is legal; since the drinking behaviors of adults, especially chronic heavy drinkers, tend to be

more difficult to change; and since there are a limited number of venues where at-risk drinkers may be identified and engaged in an intervention. One of the main initiation points for intervention is currently the DWI arrest.

Environmental strategies that attempt to reduce alcohol consumption are another potential approach to reducing alcohol poisoning. Municipalities in northwestern New Mexico have tried a range of measures aimed at curbing the availability of cheap, high-alcohol beverages, as well as sales practices that encourage public intoxication. Raising alcohol excise taxes is also considered to be a cost-effective strategy for limiting adult binge and chronic heavy drinking (2).

As was the case with the underage and college-age population, alcohol poisoning deaths among adults should be seen as a marker for the much greater burden of death associated with other acute and chronic alcohol-related conditions. The very high relative rates of alcohol poisoning death among New Mexico's adult American Indian population mirror this group's extremely high death rates from chronic conditions such as alcohol-related chronic liver disease. We must focus our preventive efforts on the reduction of adult problem drinking, with the understanding that any significant reduction in adult binge or chronic drinking will reduce not only alcohol poisoning death, but also the entire range of alcohol-related adult deaths.

Recommendations

1. Continue surveillance of alcohol poisoning deaths in New Mexico.
2. Collaborate with state and private colleges and universities to develop effective binge-drinking prevention programs for New Mexico's college-age population.
3. Study the circumstances of adult alcohol poisoning death to better understand the context of adult alcohol poisoning, and to identify prevention opportunities.
4. Collaborate with tribal governments and organizations and IHS to develop effective strategies for reducing adult binge and chronic heavy drinking in New Mexico's most high-risk populations.

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The New Mexico Epidemiology Report

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The New Mexico Epidemiology Report
(ISSN No. 87504642) is published
monthly by the

Epidemiology and Response Division
New Mexico Department of Health

1190 St. Francis Dr.

P.O. Box 26110, Santa Fe, NM 87502

Toll-Free Reporting Number:
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Table 1. Alcohol poisoning deaths and rates, New Mexico, 1999-2003¹

	Deaths (%)	Death rates²
Total	67 (100)	0.7
Female	16 (23.9)	0.3
Male	51 (76.1)	1.2
Median age (1 st , 3 rd IQR)	42 (35, 49)	
Age grouping		<i>Age-specific rates</i>
05-14	2 (3.0)	0.1
15-24	7 (10.4)	0.5
25-34	7 (10.4)	0.6
35-44	24 (35.8)	1.7
45-54	21 (31.3)	1.7
55-64	4 (6.0)	0.5
65-74	2 (3.0)	0.3
Race/ethnicity		
White	14 (20.9)	0.3
Hispanic	24 (35.8)	0.7
American Indian	29 (43.3)	3.9
Region of residence		
Bernalillo	22 (32.8)	0.8
NW	19 (28.4)	1.0
NE	15 (22.4)	1.1
SW	7 (10.4)	0.5
SE	4 (6.0)	0.3
Median BAC (1 st , 3 rd IQR) ³	0.40 (0.33, 0.46)	
Year of death		
1999	4 (6.0)	
2000	17 (25.4)	
2001	10 (14.9)	
2002	15 (22.4)	
2003	21 (31.3)	

¹ Methanol and isopropyl intoxication (n=4), ethylene glycol (n=1) and mixed drug intoxication deaths (n=2) were excluded.

² Death per 100,000; all rates are age-adjusted to 2000 US standard population, calculated using population denominators from 2001 (midpoint year for 1999-2003); except for age-specific rates, which are per 100,000 population in the specific age group as of 2001.

³ Data for blood alcohol concentration was available for 64 decedents.