

computer data files produced by the National Center for Health Statistics (NCHS), which uses classifying codes implemented in the *International Classification of Diseases, Ninth Revision (ICD-9)* (World Health Organization [WHO] 1978). Data from a 3-year period were used to increase the reliability of the calculations presented here. Alcohol poisoning death rates by age, sex, and race/ethnicity were calculated using population data from the U.S. Census Bureau (1999) as denominators. Denominator data for estimating alcohol poisoning death rates by marital status and educational attainment were taken from unpublished tabulations prepared by the Housing and Household Economic Statistics Division, U.S. Census Bureau, for NCHS (see Technical Notes in Peters et al. 1998; Hoyert et al. 1999; Murphy 2000).

Deaths attributed to unintentional alcohol poisoning were identified by the ICD-9 code E860, which includes seven subclassifications (E860.0 through E860.9) (WHO 1978).⁴ This study did not include deaths from intentional self-poisoning or exposure to alcohol because such deaths are not specifically coded by ICD-9.⁵

In an earlier study, Caces and colleagues (1991) included "excessive blood level of alcohol" (ICD-9 code 790.3) in their analysis. This code falls within a nonspecific category (790 codes) that documents the existence of blood alcohol without indicating specific BAC levels (NCHS 1995). The underlying causes for deaths with a contributing cause of excessive blood level of alcohol⁶ are very different from those with a contributing cause of accidental alcohol poisoning. Therefore, the code "excessive blood level of alcohol" (790.3) was excluded from the analysis described in this paper.

In most cases, the 3-year annual average of each descriptive statistic was used to simplify the result of the findings for presentation purposes. To make comparisons across sociodemographic groups, age-adjusted death rates were calculated using the 1940 standard population.⁷ Age-specific death rates provide a basis for detailed study of the variation of mortality rates across age groups.

RESULTS

Alcohol Poisoning Reported as an Underlying Cause

Table 1 shows the distribution of deaths from unintentional alcohol poisoning from 1996 through 1998, classified by

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type of alcohol. The data show that the annual average number of deaths for which alcohol poisoning was listed as underlying cause was about 317 from 1996 through 1998. The data also indicate that slightly less than half of alcohol poisoning deaths were attributed to ethanol in alcoholic beverages (E860.0) and to "other and unspecified ethyl alcohol and its products" (E860.1). About 40 percent of alcohol poisoning deaths were caused by unspecified alcohols; the remainders were attributable largely to methyl and isopropyl alcohols. These data do not specify routes of exposure and therefore do not support any conclusions as to the contribution of alcoholic beverages to alcohol poisoning death. However, it is clear that excessive drinking was not the sole cause of alcohol poisoning deaths.⁸

Alcohol Poisoning Reported as a Contributing Cause

Accidental alcohol poisoning was coded as a contributing factor in 3,229 deaths during 1996 through 1998 (table 2). The five most common underlying causes of death in these cases, accounting for 89 percent of the total, were classified as other types of accidental drug poisoning.⁹ The underlying cause of 39 percent of these 3,229 deaths was listed as "other drugs" (E858), a category that includes central appetite suppressants. Approximately 36 percent had an underlying cause related to accidental poisoning by "analgesics, antipyretics, or antirheumatics," which

⁴All of the disease classification codes in this article are taken from this source.

⁵With the implementation of ICD-10, alcohol poisoning codes are further classified by three categories: accidental, intentional, and undetermined intent.

⁶In 1998, there were five deaths from "excessive blood level of alcohol" based on underlying cause alone. However, there were an additional 933 deaths with excessive blood level of alcohol coded as one of the contributing causes. Deaths from motor vehicle accidents (E810-E825 codes) accounted for 47 percent of these deaths; deaths from other accidents and adverse effects (E800-E809, E826-E849 codes)—accidental poisoning, drowning, and falls—accounted for 22 percent of these deaths; suicide (E950-E959 codes) accounted for 16 percent; homicide (E960-E978 codes) accounted for 4 percent; and diseases and mental disorders (001-799 codes) and other undetermined injuries (E980-E999 codes) accounted for 11 percent.

⁷The 1940 standard population has been conventionally used when age-adjusting death rates prior to data year 1999.

⁸The way in which a person can be exposed to various types of alcohol can vary from ingestion and dermal exposure to inhalation (Litovitz et al. 1998). Ethyl alcohol is used to produce alcoholic beverages or antifreeze in automobile radiators; methyl alcohol is used to produce such industrial products as antifreeze or solvent for gums and lacquers; isopropyl alcohol is used as a rubbing alcohol; and fusel oil is a base for perfumes and fixatives (<http://www.encyarta.msn.com>). Because of its extreme toxicity, drinking even small amounts of methyl alcohol or inhaling or being overexposed to rubbing alcohol also can be fatal. For small children, even a mouthwash containing ethanol could be fatal (Litovitz et al. 1998, Case # 97, p. 491). Thus, unintentional alcohol poisoning encompasses a wide variety of cases, though excessive drinking appears to be the most frequent cause of death.

⁹Accidental poisoning by drugs, medicinal substances, and biologicals (E850-E858) includes (a) "accidental overdose of drug, wrong drug given or taken in error, and drug taken inadvertently"; and (b) "accidents in the use of drugs and biologicals in medical and surgical procedures." This classification excludes (a) "administration with suicidal or homicidal intent or intent to harm, or in circumstances classifiable to E980-E989" (injury undetermined whether accidentally or purposely inflicted); and (b) "correct drug properly administered in therapeutic or prophylactic dosage, as the cause of adverse effect classifiable to E930-E949" (drugs, medicinal, and biological substances causing adverse effects in therapeutic use) (see WHO 1978, p. 968).

Table 2 Top 10 Underlying Causes of Deaths for Which Accidental Alcohol Poisoning Was Coded as a Contributing Cause (ICD-9 Code: E860), United States, 1996-1998

Rank	ICD-9 Code	Number of Deaths	Yearly Average	Percent
		1996-1998	Number of Deaths 1996-1998	
1	Accidental poisoning by other drugs (E858)	1,258	419	39.0
2	Accidental poisoning by analgesics, antipyretics, and antirheumatics (E850)	1,154	385	35.7
3	Accidental poisoning by other drugs acting on central and autonomic nervous system (E855)	310	103	9.6
4	Accidental poisoning by tranquilizers (E853)	76	25	2.4
5	Accidental poisoning by other psychotropic agents (E854)	70	23	2.2
6	Diseases of the circulatory system (390-459)	57	19	1.8
7	Suicide and self-inflicted injury (E950-E959)	47	16	1.5
8	Accidental drowning and submersion (E910)	45	15	1.4
9	Motor vehicle traffic and nontraffic accidents (E810-E825)	38	13	1.2
10	Other external causes of accidents, injuries, and poisoning	28	9	0.9
	Subtotal*	3,083	1,027	95.7
	Total*	3,229	1,076	100.0

*Subtotal figures are totals for the top 10 underlying causes of death for which alcohol poisoning was coded as the contributing cause of death. Total figures include all deaths in which alcohol poisoning was given as the contributing cause.

Alcohol Poisoning Death Rate by Race/Ethnicity

Figure 2 shows annual average age-adjusted death rates from alcohol poisoning either as the underlying cause or as a contributing cause, broken down by sex and race/ethnicity. For both underlying and contributing causes, rates of unintentional alcohol poisoning mortality among males were higher for Hispanics (0.22 and 1.20 per 100,000 population, respectively) and non-Hispanic Blacks (0.30 and 0.82 per 100,000 population, respectively) than for non-Hispanic Whites (0.15 and 0.54 per 100,000 population, respectively). In contrast, the racial/ethnic difference was much smaller among females. For both underlying and contributing causes, rates for non-Hispanic Blacks (0.05 and 0.18 per 100,000 population, respectively) were higher than those for non-Hispanic Whites (0.04 and 0.11 per 100,000 population, respectively) and Hispanics (0.02 and 0.13 per 100,000 population, respectively). Hispanic males were at the highest risk for alcohol poisoning deaths among all groups in the figure. For Hispanic males, the total combined death rate from alcohol poisoning (both underlying and contributing causes) was more than nine times as high as the combined rate for Hispanic females (1.42 per 100,000 population for males, 0.15 per 100,000 for females) and about twice as high as the combined rate for non-Hispanic White males (0.69 per 100,000 population).

Alcohol Poisoning Death Rate by Marital Status

Figure 3 shows the annual average age-adjusted death rate from alcohol poisoning among adults ages 25 or older according to their marital status and sex. Death rates were lower for married than for unmarried people regardless of whether alcohol poisoning was the underlying or a contributing cause. For unmarried men and women, death rates were lowest among those who had never been married, higher among divorced people, and highest among the widowed.

The data also show that marital status had a stronger impact on the risk for alcohol poisoning death for males than for females. When alcohol poisoning was the underlying cause, the annual average age-adjusted death rate for widowed males (1.45 deaths per 100,000 population) was about 13 times the rate for married males (0.11 per 100,000 population), whereas the rate for the widowed females (0.28 deaths per 100,000 population) was about 7 times the rate for married females (0.04 deaths per 100,000 population). When alcohol poisoning was coded as a contributing cause, the age-adjusted death rate for widowed males (3.42 deaths per 100,000 population) was about 10 times as high as for married males (0.34 deaths per 100,000), whereas the rate for widowed females (0.5 deaths per 100,000 population) was about 6 times the rate for married females (0.09 deaths per 100,000 population).

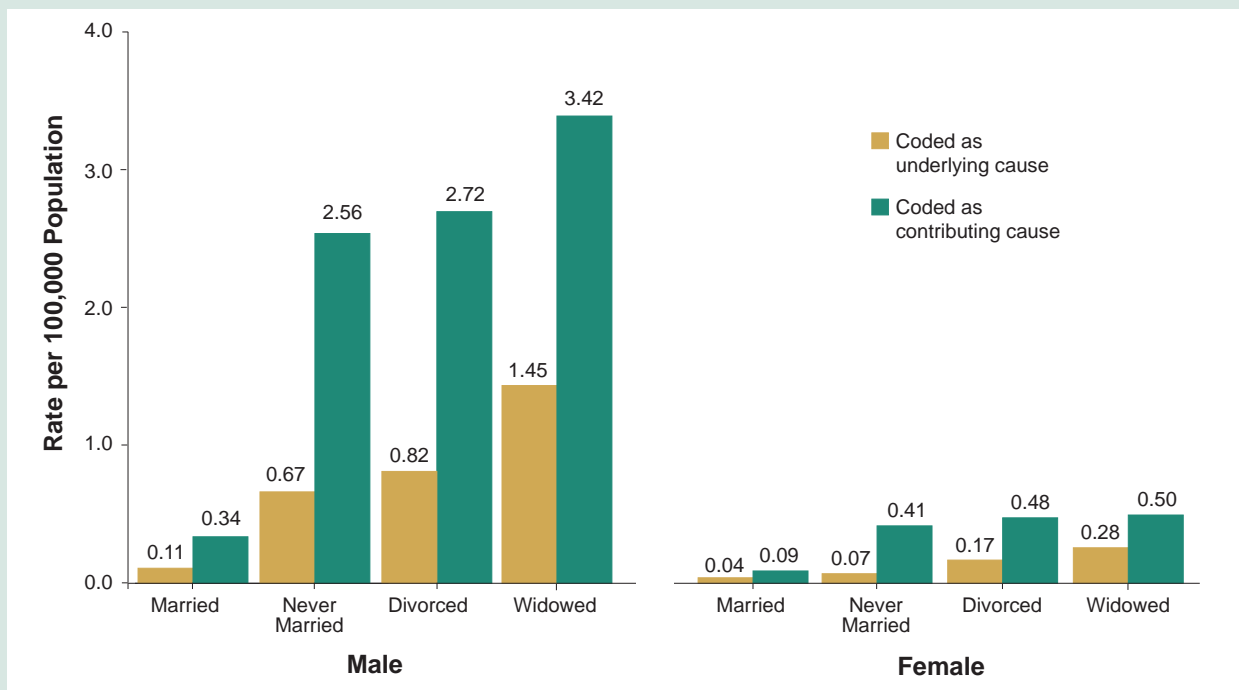


Figure 3 Annual average age-adjusted death rate of accidental alcohol poisoning (ICD-9 code: E860), by sex and marital status, for ages 25 years and over, United States, 1996-1998.

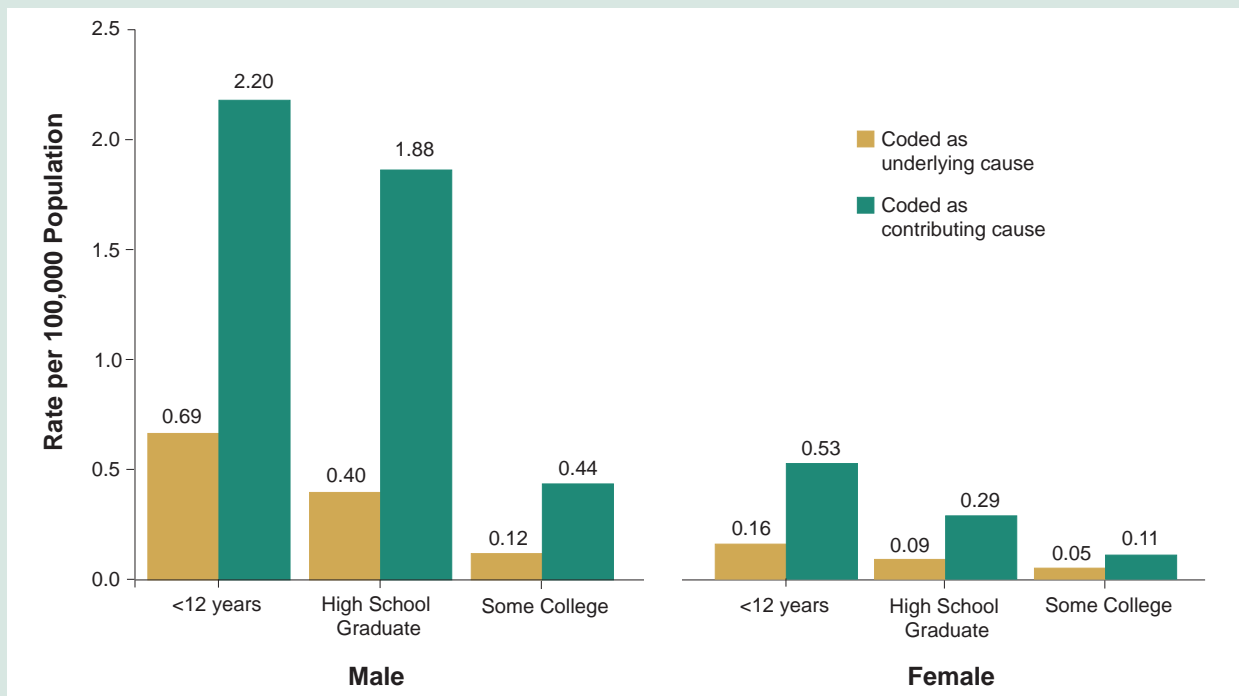


Figure 4 Annual average age-adjusted death rates of accidental alcohol poisoning (ICD-9 code: E860), by sex and educational attainment, among population ages 25-64 years, United States, 1996-1998.

Underage Drinking Prevention Materials

NIAAA has developed materials specifically addressing the problem of underage drinking. These materials may be ordered in quantities for school and other educational programs.



“With So Many Things to Do, No Wonder Most Kids Choose Not to Drink.” Aimed at middle-school underage drinking prevention programs, the selections in this colorful poster’s vending machine represent the many activities kids can choose to do instead of drinking. The poster directs students to the National Institute on Alcohol Abuse and Alcoholism/Substance Abuse and Mental Health Services Administration’s adolescent drinking prevention Web site at www.thecoolspot.gov



“Make a Difference: Talk to Your Child About Alcohol” is a research-based guide geared to parents and caregivers of young people ages 10 to 14. Research shows that parents have an enormous impact on their children’s behavior. This booklet

covers a number of topics, from strategies to prevent underage drinking to recognizing the warning signs of a drinking problem. The booklet is available in both English and Spanish.



“Are You Working on Your GPA or Your BAC?— Top Ten Myths About Alcohol.” Geared to college-age students, this poster includes a tablet of tear-off sheets featuring 10 of the most common myths about drinking. Some of those myths are:

“I can sober up quickly if I have to,” “Beer doesn’t have as much alcohol as hard liquor,” “It’s okay for me to drink to keep up with my boyfriend,” and “I can manage to drive well enough after a few drinks.” Research-based facts are given to correct these common misconceptions.

To order, write to: National Institute on Alcohol Abuse and Alcoholism, Publications Distribution Center, P.O. Box 10686, Rockville, MD 20849–0686. Fax: (703) 312–5230. Full text of “Make a Difference: Talk to Your Child About Alcohol” is available on NIAAA’s Web site (www.niaaa.nih.gov).

