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Pediatrics 2009;123;1477-1484
DOI: 10.1542/peds.2008-2176

ARTICLE

Age of Drinking Onset, Alcohol Use Disorders, Frequent Heavy Drinking, and Unintentionally Injuring Oneself and Others After Drinking

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The authors have indicated they have no financial relationships relevant to this article to disclose.

What's Known on This Subject

Cross-sectional survey analyses have indicated that early age of drinking onset is associated with a greater likelihood of ever being injured under the influence of alcohol and being in motor vehicle crashes after drinking.

What This Study Adds

Earlier age of drinking onset is prospectively associated with respondents unintentionally injuring themselves or other people when they were under the influence of alcohol, controlling for recent alcohol dependence/abuse, frequency of heavy drinking, and numerous other variables.

ABSTRACT

OBJECTIVE. To explore whether early age of drinking onset is prospectively associated with respondents unintentionally injuring themselves and others when respondents were under the influence of alcohol, controlling for current alcohol dependence/abuse, frequency of consuming 5 drinks per occasion, and other demographic characteristics.

METHODS. From 2001 to 2002, in-person interviews were conducted with a national multistage probability sample of 43 093 adults aged 18 years older. From 2004 to 2005, of 39 959 eligible respondents, 34 653 were reinterviewed. The cumulative 2-survey response rate was 70.2%. Respondents were asked the age at which they first started drinking (not counting tastes or sips), diagnostic questions for alcohol dependence and abuse, questions about behaviors that increase risk of injury, and whether respondents, when under the influence of alcohol, injured themselves or someone else as a driver in a motor vehicle crash or in some other way.

RESULTS. Logistic regression analyses revealed that the younger respondents were when they started drinking, the greater the likelihood that, between the 2 surveys, they experienced alcohol dependence/abuse, drank 5 drinks per occasion at least weekly drove under the influence of alcohol, and placed themselves in situation after drinking where they could be hurt. After controlling for those injury risk and sociodemographic characteristics, respondents who began drinking at earlier ages remained more likely between the 2 surveys to have, under the influence of alcohol, unintentionally injured themselves and someone else. More than one third of those injuries occurred when respondents 25 years of age were under the influence, although only 7% of respondents were 25 years of age. Persons other than respondents experienced 20% of those unintentional injuries, more than one third of them in traffic.

CONCLUSION. Delaying drinking onset may help reduce unintentional alcohol-related injuries that drinkers may inflict on themselves and others. *Pediatrics* 2009;123:1477–1484

www.pediatrics.org/cgi/doi/10.1542/peds.2008-2176

doi:10.1542/peds.2008-2176

Key Words
alcohol-related disorders, unintentional injury, injury prevention, prospective study

Abbreviations
DSM-IV—*Diagnostic Statistical Manual of Mental Disorders Fourth Edition*
NIAAA—National Institute on Alcohol Abuse and Alcoholism
NESARC—National Epidemiologic Survey on Alcohol and Related Conditions
AUDADIS-IV—Alcohol Use Disorder and Associated Disabilities Interview Schedule DSM-IV
OR— odds ratio
CI— confidence interval

Accepted for publication Oct 15, 2008

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In 2005, 117 752 people died of unintentional injuries in the United States, the fifth leading cause of death,[1] and the leading cause of death for people aged 1 to 44.[2] Alcohol consumption increases the likelihood people will be injured in activities, including driving,[3,4] swimming, walking, and boating.[5] A case-crossover study (in which patients served as their own controls) found a ninefold increase in the odds of injury among patients consuming 5 to 6 drinks during the 6 hours preceding the injury.[6] Annually, more than 28 000 unintentional injury deaths are attributable to alcohol,[7] and 17 000 (40%) traffic deaths, 300 000 (11%) traffic injuries,[8] and 1.4 million emergency department injury visits are alcohol-related.[9] Of traffic crash fatalities involving drinking drivers, 40% were other people: passengers, persons in other vehicles, pedestrians, or cyclists.[10] Among nontraffic unintentional injury deaths in 331 medical examiner studies, 38% had blood alcohol levels of 0.01% or higher.[11]

Alcohol abuse and dependence are leading risk factors for injury.[12] Analyses of national surveys[13,14] and longitu-

dinal studies[15,16] found earlier age of drinking onset was strongly related to experiencing alcohol dependence during one's life. A study of monozygotic twins discordant on age of first drinking also identified this association,[17] despite earlier work[18] suggesting early drinking may be a noncausal marker for family or genetic predisposition to alcohol dependence. Persons aged 18 to 20, followed by those aged 21 to 24, have the highest prevalence of alcohol dependence.[19]

Cross-sectional national survey analyses revealed earlier drinking onset was associated with a greater likelihood of ever being injured and being in traffic accidents after drinking, after controlling for binge drinking (≥5 drinks per occasion), family history of alcoholism, demographic characteristics, and personal history of smoking, drug use, and alcohol dependence.[6,20] To our knowledge, this article is the first to prospectively explore whether earlier age of drinking onset is associated with respondents unintentionally injuring (1) themselves and (2) other people when respondents were under the influence of alcohol.

METHODS

The National Institute on Alcohol Abuse and Alcoholism (NIAAA) conducted the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC). In 2001–2002 (wave 1), under contract with the NIAAA, the US Census Bureau completed face-to-face interviews with a multi-stage probability sample of 43 093 adults aged 18 and older (mean age: 45, response rate 81%). The methods, quality control procedures, and test-retest reliability have been previously published.[21]

In 2004–2005 (wave 2), 34 653 of 39 959 respondents from the NESARC who had not died, become incapacitated, institutionalized, entered the military, or left the United States were reinterviewed (mean age: 48 years). The cumulative response rate over the 2 surveys was 70.2%. Sample weights were calculated to ensure wave 2 represented wave 1 survivors who remained in the noninstitutionalized US population.[22]

All potential NESARC respondents were informed in writing about the study purpose, that participation was voluntary, and federal laws protect the confidentiality of identifiable survey information. Only consenting respondents were interviewed. The research protocol for waves 1 and 2, including informed consent procedures, received ethical review and approval from the US Census Bureau and the US Office of Management and Budget.

Outcome Measures

Wave 2 respondents were asked, "Since your last interview, did you more than once: drive a motorcycle, truck, or other vehicle after having too much to drink?; get into situations while drinking or after drinking that increased your chances of getting hurt, like swimming, using machinery, or walking in a dangerous area or around heavy traffic?; drive a motorcycle, truck, or other vehicle and injure yourself in an accident while under the influence of alcohol?; accidentally injure someone else?; injure yourself in any other way, not counting motor vehicle accidents, while you were under the influence of alcohol; injure someone else?"

Drinking Onset

Respondents were asked in wave 1 their age when they first started drinking (not counting tastes or sips), categorized as <14, 14, 15, 16, 17, 18, 19, 20, and ≥21 years of age (the minimum legal drinking age in the United States).

Drinking Measures

Respondents were also asked, "How often in the past year did you drink 5 or more drinks in a single day? Since your last interview, has there ever been a period of at least 1 year when you drank more heavily than in the past 12 months? How old were you? During that period, about how often did you have 5 or more drinks in a single day?"

Alcohol Dependence and Abuse

The NESARC used the NIAAA's Alcohol Use Disorder and Associated Disabilities Interview Schedule, *Diagnostic Statistical Manual of Mental Disorders, Fourth Edition* (DSM-IV) version (AUDADIS-IV), a state-of-the-art, structured, diagnostic interview designed for use by nonclinician lay interviewers. Computer algorithms produced diagnoses of abuse and dependence consistent with DSM-IV criteria. Numerous national and international psychometric studies, including clinical reappraisals conducted by psychiatrists in clinical and general population samples, have documented good to excellent reliability and validity of the AUDADIS-IV alcohol abuse and dependence criteria.[23]

Diagnosis of a 12-month alcohol dependence required respondents satisfy 3 of the following 7 criteria in the past year or during any previous year: tolerance; the withdrawal syndrome or drinking to relieve or avoid withdrawal symptoms; drinking larger amounts or for a longer period than intended; persistent desire or unsuccessful attempts to cut down on drinking; spending a great deal of time obtaining alcohol, drinking, or recovering from the effects of drinking; giving up important social, occupational, or recreational activities in favor of drinking; and continued drinking despite physical or psychological problems caused by drinking. Alcohol dependence withdrawal criteria required at least 2 positive symptoms of withdrawal as defined by the DSM-IV alcohol withdrawal diagnosis.

Alcohol abuse reflects repetitive problems linked to alcohol not involving withdrawal or tolerance.[23] Diagnosis of abuse required respondents to repeatedly meet 1 of the following 4 criteria associated with alcohol use: failure to meet major role obligations at work, school, or home; alcohol use in hazardous situations; legal problems; and persistent social or interpersonal problems.[23] Dependence and abuse were examined during the wave 1 survey year, the wave 2 survey year, and the interval between the waves.

Other Covariates

Covariates selected for the analyses were, in previous research, independently associated with either heavy drinking, alcohol dependence, experiencing motor vehicle crashes or injuries after drinking, or other risky behavior, such as fighting after drinking and suicide attempts.[6,16,20,24,25] Problem behavior theory suggests early-onset drinkers more often engage in various behaviors that place themselves and others at risk for injury.[26,27] Family history of alcohol problems was positive if first-degree relatives (mother, father, sister, brother, son, or daughter) had an alcohol problem. Antisocial behavior was positive if respondents reported ≥3 antisocial behaviors before age 15, and depression was based on meeting DSM-IV criteria before age 14. Test-retest reliability of AUDADIS-IV measures for depression and antisocial behaviors were good ($\kappa = 0.65$ and 0.67, respectively).[28]

Respondents were asked if they ever or in the past year used sedatives, tranquilizers, pain killers, stimulants, marijuana, cocaine, hallucinogens, inhalants, heroin, or other medicines. Cigarette users were persons who ever smoked 100 cigarettes.

Statistical Analysis

Statistical analyses were performed by using SUDAAN software (Research Triangle Institute, Research Triangle Park, NC) to account for weighting, cluster, and the multilevel survey design. Analyses focused on respondents who had at least 1 drink since the wave 1 interview.

Bivariate analyses explored distributions across age of drinking onset (ages ≤14, 15–16, 17–18, 19–20, and ≥21 years) for alcohol abuse/dependence diagnosis (none, abuse, dependence), drinking ≥5 drinks during the heaviest drinking period since the last interview (at least weekly, less than weekly, never), driving under the influence, and getting into risky situations, injuring oneself, and injuring others after drinking since the last interview (all yes/no). Design-based χ^2 tests evaluated statistical significance of these distributions.

Multinomial logistic regression models with proportional odds studied the association between age of drinking onset and, since the last interview, experiencing alcohol dependence/abuse, the frequency of drinking ≥5 drinks during the heaviest drinking period, driving under influence of alcohol, and placing oneself in a risky situation, while controlling for age, gender, race/ethnicity, marital status, education, poverty level, family history of alcoholism, personal smoking and drug use history, childhood depression, and antisocial behavior. In the models, we included the interval between waves 1 and 2 to offset the effect of unequal time lapse. Odd ratios (ORs) and 95% confidence intervals (CIs) were derived to differentiate the impact of age of drinking onset on these variables.

Poisson regression models studied the associations between age of drinking onset and injuries to oneself or others since the last interview while the respondents were under the influence of alcohol, because those were relatively rare study events. The model has the advantage of giving direct estimation of relative risk. We fitted models controlling for demographic characteristics mentioned above, as well as alcohol-related variables in wave 1 and between waves 1 and 2 (drinking ≥5 drinks per occasion, alcohol abuse/dependence, driving motor vehicles, and getting into risky situations under the influence of alcohol). We derived relative risks for each age level of drinking onset and 95% CIs as well as for other confounders.

RESULTS

Injuries and Drinking Between Waves 1 and 2

Since wave 1, of respondents who drank alcohol, 3% reported getting into situations after drinking that increased their chances of getting hurt, 13% drove under the influence, 2% were injured, and 1% injured someone else under the influence of alcohol. One in 5 people injured after respondents were drinking were in traffic crashes. More than one third of these injuries occurred when respondents younger than age 25 were under the influence, although only 7% of respondents were that young. When respondents were under the influence, 20% of those injured were other people, more than one third in traffic crashes.

Since the wave 1 survey, 3% of respondents met alcohol dependence and 6% met alcohol abuse criteria. During their heaviest drinking period, 12% consumed ≥5 drinks per occasion at least weekly, and 23% less often.

Notable drinking problem turnover occurred between surveys. Only 9% and 10%, respectively, of respondents meeting alcohol dependence or abuse criteria during wave 1 did so during wave 2. On the other hand, of those dependent on or abusing alcohol in wave 2, 92% and 93%, respectively, met neither criteria in wave 1. Similar turnover was seen for frequency of consuming ≥5 drinks, driving under the influence, and respondents being in risky situations after drinking (data available on request).

Bivariate Analyses

Table 1 reports the ages at which respondents began drinking. Respondents who started drinking at younger ages were significantly more likely since wave 1 to experience alcohol use disorders, consume ≥5 drinks per occasion at least weekly, drive under the influence of alcohol, put themselves in risky situations after drinking (Table 1), and injure themselves and others under the influence (Table 2).

Multivariate Analyses

Logistic regression analyses revealed that the younger respondents began drinking, the greater their likelihood of meeting alcohol dependence and abuse criteria, drinking ≥5 drinks per occasion at least weekly, driving under the influence of alcohol, and putting themselves in risky situations after drinking (Table 3). In addition, the younger respondents began drinking, the greater their likelihood between waves 1 and 2 when under the influence of alcohol of injuring themselves (Table 4, mod-

TABLE 1 Alcohol Use Disorders, Heavy Drinking, and Risks After Drinking, According to Age of Drinking Onset

Age of Drinking Onset, y	*n* (%)	Alcohol Dependence, %[a]	Alcohol Abuse, %[a]	Drank ≥5 Drinks at Least Weekly, %[a]	Drank ≥5 Drinks Less Than Weekly, %[a]	Drove Under the Influence of Alcohol, %[a]	Put Self in Risky Situation After Drinking, %[a]
≤14	2092 (7)	14	12	23	30	21	9
15–16	4096 (14)	9	15	20	32	21	7
17–18	8519 (28)	5	11	14	27	14	3
19–20	4360 (15)	3	8	11	21	11	2
≥21	10 926 (36)	3	5	7	15	7	1

[a] $P < .0001$.

TABLE 2 Injuries to Self or Another Under the Influence of Alcohol, According to Age of Drinking Onset

Age of Drinking Onset, y	Unintentionally Injured Self, %[a]	Unintentionally Injured Another Person, %[a]
≤14	5.8	2.2
15–16	4.0	0.8
17–18	2.2	0.5
19–20	1.6	0.5
≥21	0.7	0.2

[a] χ^2 $P < .0001$.

els 1 and 2) and someone else (Table 5, models 1 and 2). These relationships were statistically significant after controlling for numerous respondent characteristics as well as during the year preceding wave 1 and between waves 1 and 2, having experienced alcohol dependence or abuse, frequency of consuming ≥5 drinks, driving under the influence, or putting oneself in risky situations after drinking (Tables 4 and 5 report other covariates significantly associated with injuries to self or others).

DISCUSSION

In 2007, *The Surgeon General's Call to Action to Prevent and Reduce Underage Drinking*[21] was issued and noted that alcohol is the most widely used substance of abuse among America's youth. Approximately 10% of 9- to 10-year-old children drink,[29] and nearly one third of high school students started drinking before age 13.[30] Youth aged 12 through 20 who consume alcohol average 5 drinks per occasion ~6 times per month. Binge drinking (≥5 drinks consumed by males and ≥4 drinks by females over a 2-hour period),[31] typically produces a blood alcohol content of 0.08% or higher, the legal intoxication level for adults in every state. Annually nationwide, ~2600 persons <21 years of age die from alcohol-attributable unintentional injuries.[3]

This study prospectively replicates cross-sectional findings[6,20] that early drinking onset is associated with respondents currently experiencing alcohol dependence, more frequently consuming ≥5 drinks per occasion, driving under the influence of alcohol, and putting themselves in risky situations after drinking, which are strong predictors of experiencing alcohol-related injuries. After further controlling for those behaviors, earlier onset drinkers were more likely to have unintentionally injured themselves and others when respondents were under the influence of alcohol. These associations were independent of a host of respondent sociodemographic characteristics and cigarette or drug use.

To our knowledge, this is the first study linking early age of drinking onset to unintentionally injuring other people. This has substantial public health significance parallel to studies that identified negative effects of smoking on other people (secondhand effects), which stimulated greater societal pressure and countermeasures to reduce tobacco use.

Several methodologic issues should be considered in interpreting these results. First, early-onset drinkers more often drank heavily and experienced alcohol dependence. Their greater alcohol exposure may account for their greater likelihood of injuring themselves and others after drinking. They also more often drove motor vehicles after drinking too much and put themselves in risky situations after drinking. Analytically controlling for their greater alcohol exposure and risk-taking after drinking weakened, but did not eliminate, the significantly higher odds that early-onset drinkers would unintentionally injure themselves or others.

The significant associations may have persisted, because this study's questions did not fully capture risk-taking after drinking. Future research should examine whether early-onset drinkers are, after drinking, also more likely to speed, run red lights, not yield to pedestrians, or wear safety belts when driving, and whether, after drinking, they more often carry weapons, drink in crowded, noisy bars, smoke in bed, and walk in poorly lit, isolated areas.

Also, to explore whether drinking patterns other than those initially analyzed produce greater injury risk, we repeated logistic regression analyses on injury outcomes, substituting frequency of consuming ≥10 for ≥5 drinks. Among drinkers since the last interview, 2% consumed ≥10 drinks at least weekly, and 11% less often. Persons who consumed ≥10 vs ≥5 drinks per occasion were more likely to have driven after drinking too much (16% vs 8%, respectively) and placed themselves in risky situations after drinking (45% vs 30%, respectively). This reanalysis negligibly affected odds of early drinkers injuring themselves after drinking (data available on request). However, the OR of persons who began drinking before age 14 injuring someone else was 1.9 (95% CI: 0.9–3.8), just below statistical significance. A regression analysis parallel to those in Table 3 controlling for the same covariates found persons who began drinking at ≤14, 15 to 16, 17 to 18, and 19 to 20 years of age, relative to ≥21 years of age, had, respectively,

TABLE 3 Alcohol Dependence, Heavy Drinking, and Risky Behavior After Drinking Between NESARC Waves 1 and 2, According to Age of Drinking Onset

	Alcohol Dependence/ Abuse, OR (95% CI)[a]	Frequency of ≥5 Drinks During Heaviest Drinking Period, OR (95% CI)[b]	Drove Under the Influence of Alcohol, OR (95% CI)	Put Self in Risky Situation After Drinking, OR (95% CI)
Age of drinking onset, y				
≤14	2.0 (1.6–2.4)	2.1 (1.8–2.4)	1.8 (1.4–2.2)	2.0 (1.4–3.0)
15–16	2.0 (1.7–2.4)	2.2 (1.9–2.5)	2.3 (1.9–2.7)	2.2 (1.5–3.0)
17–18	1.6 (1.4–1.9)	1.8 (1.6–2.0)	1.7 (1.5–2.0)	1.4 (1.1–2.0)
19–20	1.3 (1.1–1.6)	1.4 (1.2–1.6)	1.5 (1.2–1.8)	1.1 (0.7–1.8)
≥21	1.0	1.0	1.0	1.0
Age, y				
20–24	1.9 (1.6–2.4)	4.7 (4.0–5.5)	1.6 (1.2–2.0)	6.5 (4.2–10.0)
25–29	2.1 (1.8–2.6)	4.1 (3.6–4.7)	1.7 (1.4–2.1)	4.2 (2.8–6.3)
30–34	1.6 (1.3–1.9)	3.3 (2.9–3.8)	1.6 (1.3–1.9)	3.4 (2.6–5.7)
35–39	1.8 (1.5–2.1)	2.8 (2.5–3.1)	1.7 (1.5–2.1)	3.8 (2.5–5.6)
40–49	1.5 (1.3–1.8)	2.3 (2.0–2.5)	1.6 (1.4–1.8)	2.9 (2.0–4.3)
≥50	1.0	1.0	1.0	1.0
Male	2.5 (2.2–2.8)	3.4 (3.1–3.6)	2.5 (2.2–2.8)	2.6 (2.1–3.3)
White	1.0	1.0	1.0	1.0
Black	0.8 (0.7–1.0)	0.6 (0.5–0.7)	0.9 (0.7–1.0)	0.4 (0.3–0.6)
Hispanic	0.8 (0.7–1.0)	1.2 (1.0–1.3)	0.8 (0.6–1.0)	0.6 (0.5–0.9)
Never married	1.7 (1.5–2.0)	1.6 (1.4–1.8)	1.6 (1.4–1.9)	1.8 (1.3–2.3)
Separated/divorced	1.6 (1.4–1.8)	1.4 (1.2–1.5)	1.6 (1.4–1.8)	1.6 (1.2–2.1)
Smoking				
Current	2.0 (1.8–2.2)	2.4 (2.2–2.6)	1.7 (1.5–1.9)	1.9 (1.5–2.3)
Past	1.7 (1.1–2.7)	1.8 (1.2–2.5)		1.6 (0.8–3.5)
Never	1.0	1.0	1.0	1.0
Drug use				
Current	3.4 (2.9–4.0)	2.4 (2.1–2.8)	3.0 (2.6–3.6)	3.7 (2.9–4.7)
Past	2.8 (2.2–3.7)	1.5 (1.2–1.8)	2.2 (1.7–2.9)	4.9 (3.3–7.2)
Never	1.0	1.0	1.0	1.0
Education				
High school	1.3 (1.1–1.6)			
College	1.3 (1.1–1.6)			
<High school	1.0			
Family history of alcoholism	1.5 (1.3–1.6)	1.1 (1.0–1.2)	1.3 (1.1–1.4)	1.7 (1.3–2.0)
Antisocial behavior before age 15	1.4 (1.2–1.6)		1.3 (1.1–1.5)	1.7 (1.3–2.3)
Major depression before age 14			0.7 (0.5–1.0)	

All regressions controlled for age, gender, education, marital status, current and previous tobacco and drug use, family history of alcoholism, antisocial behavior, and major depression in childhood. All of these relationships were also statistically significant when respondents were reporting on the wave 1 survey year (data available upon request).

[a] Coded as dependence, abuse, or none.

[b] Coded as ≥1 per week, <1 per week, or none.

greater odds of more frequently consuming ≥10 drinks (OR: 2.1 [95% CI: 1.7–2.7], OR: 2.1 [95% CI: 1.7–2.5], OR: 1.7 [95% CI: 1.4–2.0], and OR: 1.4 [95% CI: 1.1–1.7], respectively), which in turn, was associated with greater odds of injuring someone else after drinking (OR: 4.5 [95% CI: 1.2–17.0]). Thus, early-onset drinkers more often consumed ≥10 drinks per occasion, which in turn, increased their risk of injuring others after drinking.

Second, poor recall and social desirability biases may foster under-reporting of drinking, risky behavior, and injuries. Replication this study with chemical alcohol consumption markers and official motor vehicle crash and injury records would be useful. Longitudinal studies starting in childhood should prospectively measure drinking onset and other predictors of injury risk.

Third, a study strength was respondents were asked whether they were injured or injured other people specifically after drinking. Respondents were asked if they drove after drinking too much, and heavier drinkers may believe they can drink more and still drive safely. It would be preferable to ask how much respondents drank during a specific period before driving or experiencing crashes or injuries.

Fourth, studies should explore whether early-onset drinkers are greater risk-takers and more likely to experience crashes and injuries even when sober.

Fifth, potential confounding variables such as genetics, disinhibitory behavior patterns, and other psychiatric disorders may be related to early drinking, heavier drinking, risky behavior, and alcohol-related motor vehicle crashes and injuries. Children who experience physical, sexual, or psychological abuse or whose parents exhibited psychiatric symptoms more often start drinking earlier.[32] Although this analysis controlled for family history of alcoholism, many children born to nonalcoholic parents may be raised in environments

TABLE 4 Predictors of Unintentionally Injuring Self After Drinking Between Waves 1 and 2

	Model 1: Drinking and Risky Behaviors the Year Before Wave 1, OR (95% CI)	Model 2: Drinking and Risky Behaviors Between Waves 1 and 2, OR (95% CI)
Age of drinking onset, y		
≤14	3.0 (2.0–4.6)	1.6 (1.1–2.4)
15–16	2.7 (1.8–3.9)	1.5 (1.1–2.2)
17–18	2.0 (1.3–3.0)	1.5 (1.0–2.1)
19–20	1.7 (1.0–2.8)	1.5 (0.9–2.4)
≥21	1.0	1.0
Age, y		
20–24	3.7 (2.3–5.8)	1.9 (1.2–2.7)
25–29	2.6 (1.6–4.1)	1.3 (0.9–2.0)
30–34	2.5 (1.6–4.0)	1.4 (0.9–2.2)
35–39	2.3 (1.4–3.7)	1.3 (0.9–2.2)
40–49	1.3 (0.9–2.0)	0.8 (0.6–1.2)
≥50	1.0	1.0
Male	1.4 (1.1–1.9)	NS
Never married	2.2 (1.6–2.9)	1.4 (1.1–1.8)
Separated/divorced	2.2 (1.6–3.0)	1.6 (1.2–2.1)
Married	1.0	1.0
Current smoker	1.4 (1.1–1.8)	NS
Drug use		
Current	4.0 (3.0–5.2)	1.6 (1.3–2.1)
Past	4.6 (3.1–6.7)	1.8 (1.3–2.5)
Never	1.0	1.0
Family history of alcoholism	1.5 (1.2–1.9)	NS
Alcohol[a]		
Dependence	—	6.5 (4.1–10.3)
Abuse	—	2.6 (1.6–4.1)
Neither	—	1.0
Frequency[a]		
≥5 drinks per occasion	—	
≥1 per wk	—	6.2 (3.5–11.0)
<1 per wk	—	5.1 (3.0–8.5)
Neither	—	1.0
Put self in risky situation after drinking[a]	—	1.9 (1.5–2.4)
Drove under the influence of alcohol[a]	—	1.4 (1.1–1.8)

NS indicates not significant.

[a] Alcohol dependence/abuse, frequency of consuming ≥5 drinks per occasion/during heaviest drinking period, putting oneself in a risky situation after drinking, and driving under the influence of alcohol during the year before wave 1 did not predict injuring oneself between waves 1 and 2.

TABLE 5 Predictors of Unintentionally Injuring Someone Else After Drinking Between Waves 1 and 2

	Model 1: Drinking and Risky Behaviors the Year Before Wave 1, OR (95% CI)	Model 2: Drinking and Risky Behaviors Between Waves 1 and 2, OR (95% CI)
Age of drinking onset, y		
≤14	4.4 (2.1–9.1)	2.4 (1.2–4.8)
15–16	1.9 (0.9–4.1)	1.1 (0.5–2.5)
17–18	1.4 (0.7–3.2)	1.0 (0.5–2.3)
19–20	2.0 (0.9–4.1)	1.8 (0.9–3.7)
≥21	1.0	1.0
Age, y		
20–24	3.7 (1.4–9.5)	
25–29	3.9 (1.6–9.1)	
30–34	2.0 (1.6–6.3)	
35–39	2.6 (0.9–7.4)	
40–49	1.5 (0.6–3.8)	
≥50	1.0	
Male	2.4 (1.4–3.9)	
Never married	2.8 (1.6–5.2)	2.6 (1.4–4.9)
Separated/divorced	1.7 (0.9–3.2)	1.2 (0.6–2.3)
Married	1.0	1.0
Drug use		
Current	5.7 (3.3–10.0)	2.9 (1.7–5.0)
Former	5.0 (2.0–12.2)	2.7 (1.2–6.0)
Never	1.0	1.0
Frequency of drinking[a]		
≥5 drinks per occasion		
At least once per wk		17.6 (6.4–48.7)
< 1 per wk		9.2 (3.0–28.0)
Never		1.0
Put self in risky situation after drinking[a]		5.1 (3.2–8.3)

[a] Alcohol dependence/abuse, frequency of consuming ≥5 drinks per occasion/during heaviest drinking period, putting oneself in a risky situation after drinking, and driving under the influence of alcohol during the year before wave 1 did not predict injuring others between waves 1 and 2.

allowing youth access to alcohol. Also, heavy drinking by peers and siblings may contribute to earlier and heavier drinking in more risky situations.

These methodologic considerations notwithstanding, this study reinforces the need to delay drinking onset and reduce underage drinking. Recent reviews have identified interventions that reduce underage drinking and associated problems.[33–35] Although concerns persist about what diagnostic questions and clinical interventions are most developmentally appropriate and effective for adolescents,[35] clinical trials indicate screening, brief counseling interventions, and treatment can reduce drinking and related negative consequences among adolescents and college students.[34,36,37] School and family interventions, particularly in combination, can reduce underage drinking.[31,35,38–40] Also, the legal drinking age of 21 reduced drinking, alcohol-related traffic deaths, and other unintentional injury deaths among persons younger than 21 years of age.[41–44] A national analysis found the law was also associated with reduced drinking among persons aged 21 to 25.[44] Comprehensive multilevel community interventions that include drinking age enforcement have reduced youth access to alcohol and related harms,[45–48] as have state coalition interventions.[49] Longitudinal research is needed to examine whether interventions that delay or reduce adolescent drinking can reduce alcohol dependence and related injuries among adult drinkers and others.

CONCLUSIONS

Our results underscore the need to prevent early drinking onset and injuries to drinkers and that achieving this objective may also help prevent potential drinkers from unintentionally injuring other people.

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PUTTING TWITTER'S WORLD TO USE

"San Francisco—The first reaction many people have to Twitter is befuddlement. Why would they want to read short messages about what someone ate for breakfast? It's a reasonable question. Twitter unleashes the diarist in its 14 million users, who visited its site 99 million times last month to read posts tapped out with cellphones and computers. Individually, many of those 140-character 'tweets' seem inane. Soon, machines could twitter as much as people. Corey Menscher, a graduate student at New York University, developed the Kickbee, an elastic band with vibration sensors that his pregnant wife wore to alert Twitter each time the baby kicked: 'I kicked Mommy at 08:52 PM on Fri, Jan 2!' Mr Menscher is now considering selling the product. Pairing sensors with Twitter leads some to think Twitter could be used to send home security alerts or tell doctors when a patient's blood sugar or heart rate climbs too high. In the aggregate, such real-time data streams could aid medical researchers. Already doctors use Twitter to ask for help and share information about procedures. At Henry Ford Hospital in Detroit, surgeons and residents twittered throughout a recent operation to remove a brain tumor from a 47-year-old man who has seizures. The news-gathering promise of Twitter was most evident during the terrorist attacks in Mumbai last November and when a jetliner landed in the Hudson River in January. People were twittering from the scenes before reporters arrived. The attention the service received helped it nearly double the number of new users in the last month, making Twitter the third-largest online social network, behind Facebook and MySpace, according to Compete, a Web analytics company."

Miller CC. *New York Times*. April 14, 2009
Noted by JFL, MD

Age of Drinking Onset, Alcohol Use Disorders, Frequent Heavy Drinking, and Unintentionally Injuring Oneself and Others After Drinking

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Pediatrics 2009;123;1477-1484
DOI: 10.1542/peds.2008-2176