

Alcohol-Related Hospitalizations During the Initial COVID-19 Lockdown in Massachusetts: An Interrupted Time-Series Analysis

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Background: The effect of initial COVID-19 pandemic-associated lockdowns on alcohol-related hospitalizations remains uncertain. This study compares alcohol-related hospitalizations at a US Department of Veterans Affairs (VA) system in Massachusetts before, during, and after the initial COVID-19 lockdown.

Methods: This study is an interrupted time-series analysis at the VA Boston Healthcare System. Participants included all patients hospitalized on the medical, psychiatry, and neurology services at VA Boston Healthcare System from January 1, 2017, to December 31, 2020, excluding those under observation status. The period January 1, 2017, to March 9, 2020, was defined as prelockdown (the reference group); March 10, 2020, to May 18, 2020, was lockdown; and May 19, 2020, to December 31, 2020, was postlockdown. Alcohol-related hospitalizations were determined using *International*

Statistical Classification of Diseases, Tenth Revision primary diagnosis codes.

Results: We identified 27,508 hospitalizations during the study periods. There were 72 alcohol-related hospitalizations per 100,000 patient-months during the prelockdown period, 10 per 100,000 patient-months during the lockdown, and 46 per 100,000 patient-months in the postlockdown period. Compared with the prelockdown period, the adjusted rate ratio for daily alcohol-related hospitalizations during lockdown was 0.20 (95% CI, 0.10-0.39) vs 0.72 (95% CI, 0.57-0.92) after the lockdown. A similar pattern was observed for all-cause hospitalizations.

Conclusions: Our results suggest that COVID-19 pandemic lockdown measures were associated with fewer alcohol-related hospitalizations. Proactive outreach for vulnerable populations during lockdowns is needed.

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The United States' initial public health response to the COVID-19 pandemic included containment measures that varied by state but generally required closing or suspending schools, nonessential businesses, and travel (commonly called lockdown).¹ During these periods, hospitalizations for serious and common conditions declined.^{2,3} In Massachusetts, a state of emergency was declared on March 10, 2020, which remained in place until May 18, 2020, when a phased reopening of businesses began.

Although the evidence on the mental health impact of containment periods has been mixed, it has been suggested that these measures could lead to increases in alcohol-related hospitalizations.⁴ Social isolation and increased psychosocial and financial stressors raise the risk of relapse among patients with substance use disorders.⁵⁻⁷ Marketing and survey data from the US and United Kingdom from the early months of the pandemic suggest that in-home alcohol consumption and sales of alcoholic beverages increased, while consumption of alcohol outside the home decreased.⁸⁻¹⁰ Other research has shown an

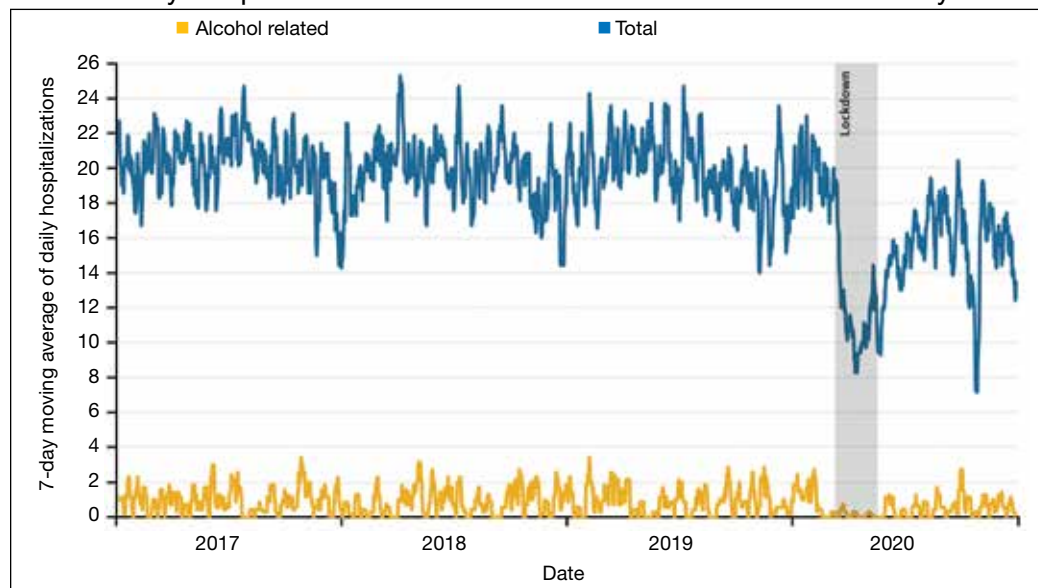
increase in the percentage—but not necessarily the absolute number—of emergency department (ED) visits and hospitalizations for alcohol-related diagnoses during periods of containment.^{11,12} At least 1 study suggests that alcohol-related deaths increased beginning in the lockdown period and persisting into mid-2021.¹³

Because earlier studies suggest that lockdown periods are associated with increased alcohol consumption and relapse of alcohol use disorder, we hypothesized that the spring 2020 lockdown period in Massachusetts would be associated temporally with an increase in alcohol-related hospitalizations. To evaluate this hypothesis, we examined all hospitalizations in the US Department of Veterans Affairs (VA) Boston Healthcare System (VABHS) before, during, and after this lockdown period. VABHS includes a 160-bed acute care hospital and a 50-bed inpatient psychiatric facility.

METHODS

We conducted an interrupted time-series analysis including all inpatient hospitalizations at VABHS from January 1, 2017, to

FIGURE Daily Hospitalizations in the Veteran Affairs Boston Healthcare System



December 31, 2020, to compare the daily number of alcohol-related hospitalizations across 3 exposure groups: prelockdown (the reference group, 1/1/2017-3/9/2020); lockdown (3/10/2020-5/18/2020); and postlockdown (5/19/2020-12/31/2020).

The VA Corporate Data Warehouse at VABHS was queried to identify all hospitalizations on the medical, psychiatry, and neurology services during the study period. Hospitalizations were considered alcohol-related if the *International Statistical Classification of Diseases, Tenth Revision (ICD-10)* primary diagnosis code (the main reason for hospitalization) was defined as an alcohol-related diagnosis by the VA Centralized Interactive Phenomics Resource (eAppendix 1, available online at doi:10.1278/fp.0404). This database, which has been previously used for COVID-19 research, is a catalog and knowledge-sharing platform of VA electronic health record-based phenotype algorithms, definitions, and metadata that builds on the Million Veteran Program and Cooperative Studies Program.^{14,15} Hospitalizations under observation status were excluded.

To examine whether alcohol-related hospitalizations could have been categorized as COVID-19 when the conditions were co-occurring, we identified 244 hospitalizations coded with a primary *ICD-10* code for COVID-19 during the lockdown and post-

lockdown periods. At the time of admission, each hospitalization carries an initial (free text) diagnosis, of which 3 had an initial diagnosis related to alcohol use. The population at risk for alcohol-related hospitalizations was estimated as the number of patients actively engaged in care at the VABHS. This was defined as the number of patients enrolled in VA care who have previously received any VA care; patients who are enrolled but have never received VA care were excluded from the population-at-risk denominator. Population-at-risk data were available for each fiscal year (FY) of the study period (9/30-10/1); the following population-at-risk sizes were used: 38,057 for FY 2017, 38,527 for FY 2018, 39,472 for FY 2019, and 37,893 for FY 2020.

The primary outcome was the daily number of alcohol-related hospitalizations in the prelockdown, lockdown, and postlockdown periods. A sensitivity analysis was performed using an alternate definition of the primary outcome using a broader set of alcohol-related *ICD-10* codes (eAppendix 2, available online at doi:10.1278/fp.0404).

Statistical Analysis

To visually examine hospitalization trends during the study period, we generated a smoothed time-series plot of the 7-day moving average of the daily number of all-cause

hospitalizations and the daily number of alcohol-related hospitalizations from January 1, 2017, to December 31, 2020. We used multivariable regression to model the daily number of alcohol-related hospitalizations over prelockdown (the reference group), lockdown, and postlockdown. In addition to the exposure, we included the following covariates in our model: day of the week, calendar date (to account for secular trends), and harmonic polynomials of the day of the year (to account for seasonal variation).¹⁶

We also examined models that included the daily total number of hospitalizations to account for the reduced likelihood of hospital admission for any reason during the pandemic. We used generalized linear models with a Poisson link to generate rate ratios and corresponding 95% CIs for estimates of the daily number of alcohol-related hospitalizations. We estimated the population incidence of alcohol-related hospitalizations per 100,000 patient-months for the exposure periods using the population denominators previously described. All analyses were performed in Stata 16.1.

RESULTS

During the study period, 27,508 hospitalizations were available for analysis. The 7-day moving average of total daily hospitalizations and total daily alcohol-related hospitalizations over time for the period January 1, 2017, to December 31, 2020, are shown in the Figure. Compared with the prelockdown period, the 7-day average of hospitalizations per day for all hospitalizations and alcohol-related hospitalizations decreased substantially during the lockdown and did not return to the prelockdown baseline during the postlockdown period.

The incidence of alcohol-related hospitalizations in the population dropped from 72 per 100,000 patient-months to 10 per 100,000 patient-months during the lockdown period and increased to 46 per 100,000 patient-months during the postlockdown period (Table). Compared with the 3-year prelockdown period, the rate ratio for daily alcohol-related hospitalizations during the lockdown period decreased to 0.20 (95% CI, 0.10-0.39). In the postlockdown period, the rate ratio for daily alcohol-related hospital-

izations increased, but to only 0.72 (95% CI, 0.57-0.92) compared with the prepandemic baseline.

Our results were not substantially different when we ran a sensitivity analysis that excluded the total daily number of admissions from our model. Compared with the prelockdown period, the rate ratio for the number of alcohol-related hospitalizations during the lockdown period was 0.16 (95% CI, 0.08-0.30), and the rate ratio for the postlockdown period was 0.65 (95% CI, 0.52-0.82). We conducted an additional sensitivity analysis using a broader definition of the primary outcome to include all alcohol-related diagnosis codes; however, the results were unchanged.

DISCUSSION

During the spring 2020 COVID-19 lockdown period in Massachusetts, the daily number of VABHS alcohol-related hospitalizations decreased by nearly 80% compared with the prelockdown period. During the postlockdown period, the daily number of alcohol-related hospitalizations increased but only to 72% of the prelockdown baseline by the end of December 2020. A similar trend was observed for all-cause hospitalizations for the same exposure periods.

These results differ from 2 related studies on the effect of the COVID-19 pandemic on alcohol-related hospitalizations.^{10,11} In a retrospective study of ED visits to 4 hospitals in New York City, Schimmel and colleagues reported that from March 1 to 31, 2020 (the initial COVID-19 peak), hospital visits for alcohol withdrawal increased while those for alcohol use decreased.¹⁰ However, these results are reported as a percentage of total ED visits rather than the total number of visits, which are vulnerable to spurious correlation because of concomitant changes in the total number of ED visits. In their study, the absolute number of alcohol-related ED visits did not increase during the initial 2020 COVID-19 peak, and the number of visits for alcohol withdrawal syndrome declined slightly (195 in 2019 and 180 in 2020). However, the percentage of visits increased from 7% to 10% because of a greater decline in total ED visits. This pattern of decline in the number of alcohol-related ED visits, accompanied by an increase in the

TABLE Total vs Alcohol-Related Hospitalizations at Veterans Affairs Boston Healthcare System Before, During, and After Lockdown

Criteria	Prelockdown	Lockdown	Postlockdown
Days	1163	70	226
Total admissions			
No.	23,176	826	3506
Monthly, mean	605	361	473
Per 100,000 patient-months	1567	952	1247
Alcohol-related admissions			
No.	1068	9	130
Monthly, mean	28	4	18
Per 100,000 patient-months	72	10	46
Per month, %	4.6	1.1	4.0
Relative risk for alcohol-related admissions (95% CI)	1.0 (reference)	0.20 (0.10-0.39)	0.72 (0.57-0.92)

percentage of alcohol-related ED visits, has been observed in at least 1 nationwide surveillance study.¹⁷ This apparent increase does not reflect an absolute increase in ED visits for alcohol withdrawal syndrome and represents a greater relative decline in visits for other causes during the study period.

Sharma and colleagues reported an increase in the percentage of patients who developed alcohol withdrawal syndrome while hospitalized in Delaware per 1000 hospitalizations during consecutive 2-week periods during the pandemic in 2020 compared with corresponding weeks in 2019.¹¹ The greatest increase occurred during the last 2 weeks of the Delaware stay-at-home order. The Clinical Institute Withdrawal Assessment of Alcohol Scale, revised (CIWA-Ar) score of > 8 was used to define alcohol withdrawal syndrome. The American Society of Addiction Medicine does not recommend using CIWA-Ar to diagnose alcohol withdrawal syndrome because the scale was developed to monitor response to treatment, not to establish a diagnosis.¹⁸

Although the true population incidence of alcohol-related hospitalizations is difficult to estimate because the size of the population at risk (ie, the denominator) often is not known, the total number of hospitalizations is not a reliable surrogate.¹⁹ Individuals hospitalized for nonalcohol causes are no longer at risk for alcohol-related hospitalization.

In our study, we assume the population at risk during the study period is constant and model changes in the absolute number—rather than percentage—of alcohol-

related ED visits. These absolute estimates of alcohol-related hospitalizations better reflect the true burden on the health care system and avoid the confounding effect of declining total ED visits and hospitalizations that could lead to artificially increased percentages and spurious correlation.²⁰ The absolute percentage of alcohol-related hospitalizations also decreased during this period; therefore, our results are not sensitive to this approach.

Several factors could have contributed to the decrease in alcohol-related hospitalizations. Our findings suggest that patient likelihood to seek care and clinician threshold to admit patients for alcohol-related conditions are influenced by external factors, in this case, a public health lockdown. Although our data do not inform why hospitalizations did not return to prelockdown levels, our experience suggests that limited bed capacity and longer length of stay might have contributed. Other hypotheses include a shift to outpatient care, increased use of telehealth (a significant focus early in the pandemic), and avoiding care for less severe alcohol-related complications because of lingering concerns about exposure to COVID-19 in health care settings reported early in the pandemic. Massachusetts experienced a particularly deadly outbreak of COVID-19 in the Soldiers' Home, a long-term care facility for veterans in Holyoke.²¹

Evidence suggests that in-home consumption of alcohol increased during lockdowns.⁸⁻¹⁰ Our results show that during

this period hospitalizations for alcohol-related conditions decreased at VABHS, a large urban VA medical system, while alcohol-related deaths increased nationally.¹³ Although this observation is not evidence of causality, these outcomes could be related.

In the 2 decades before the pandemic, alcohol-related deaths increased by about 2% per year.²² From 2019 to 2020, there was a 25% increase that continued through 2021.¹³ Death certificate data often are inaccurate, and it is difficult to determine whether COVID-19 had a substantial contributing role to these deaths, particularly during the initial period when testing was limited or unavailable. Nonetheless, deaths due to alcohol-associated liver disease, overdoses involving alcohol, and alcohol-related traffic fatalities increased by > 10%.^{13,23} These trends, along with a decrease in hospitalization for alcohol-related conditions, suggest missed opportunities for intervention with patients experiencing alcohol use disorder.

Limitations

In this study, hospitalizations under observation status were excluded, which could underestimate the total number of hospitalizations related to alcohol. We reasoned that this effect was likely to be small and not substantially different by year. *ICD-10* codes were used to identify alcohol-related hospitalizations as any hospitalization with an included *ICD-10* code listed as the primary discharge diagnosis code. This also likely underestimated the total number of alcohol-related hospitalizations. An *ICD-10* code for COVID-19 was not in widespread use during our study period, which prohibited controlling explicitly for the volume of admissions due to COVID-19. The prelockdown period only contains data from the preceding 3 years, which might not be long enough for secular trends to become apparent. We assumed the population at risk remained constant when in reality, the net movement of patients into and out of VA care during the pandemic likely was more complex but not readily quantifiable. Nonetheless, the large drop in absolute number of alcohol-related hospitalizations is not likely to be sensitive to this change. In the absence of an objective measure of care-

seeking behavior, we used the total daily number of hospitalizations as a surrogate for patient propensity to seek care. The total daily number of hospitalizations also reflects changes in physician admitting behavior over time. This allowed explicit modeling of care-seeking behavior as a covariate but does not capture other important determinants such as hospital capacity.

CONCLUSIONS

In this interrupted time-series analysis, the daily number of alcohol-related hospitalizations during the initial COVID-19 pandemic-associated lockdown period at VABHS decreased by 80% and remained 28% lower in the postlockdown period compared with the prepandemic baseline. In the context of evidence suggesting that alcohol-related mortality increased during the COVID-19 pandemic, alternate strategies to reach vulnerable individuals are needed. Because of high rates of relapse, hospitalization is an important opportunity to engage patients experiencing alcohol use disorder in treatment through referral to substance use treatment programs and medication-assisted therapy. Considering the reduction in alcohol-related hospitalizations during lockdown, other strategies are needed to ensure comprehensive and longitudinal care for this vulnerable population.

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Disclaimer

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Medical Communications Inc., the US Government, or any of its agencies.

Ethics and consent

The study was reviewed by Veterans Affairs Boston Institutional Review Board and determined to be exempt.

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eAppendix 1 Primary *ICD-10* Diagnosis Codes Defining an Alcohol-Related Diagnosis Based on the VA Centralized Interactive Phenomics Resource (CIPHER) Definition

ICD10	Name
F10	Alcohol-related disorders
F10.1	Alcohol abuse
F10.10	Alcohol abuse, uncomplicated
F10.120	Alcohol abuse with intoxication, uncomplicated
F10.129	Alcohol abuse with intoxication, unspecified
F10.14	Alcohol abuse with alcohol-induced mood disorder
F10.150	Alcohol abuse with alcohol-induced psychotic disorder with delusions
F10.151	Alcohol abuse with alcohol-induced psychotic disorder with hallucinations
F10.159	Alcohol abuse with alcohol-induced psychotic disorder, unspecified
F10.180	Alcohol abuse with alcohol-induced anxiety disorder
F10.181	Alcohol abuse with alcohol-induced sexual dysfunction
F10.182	Alcohol abuse with alcohol-induced sleep disorder
F10.188	Alcohol abuse with other alcohol-induced disorder
F10.19	Alcohol abuse with unspecified alcohol-induced disorder
F10.2	Alcohol dependence
F10.20	Alcohol dependence, uncomplicated
F10.21	Alcohol dependence, in remission
F10.22	Alcohol dependence with intoxication
F10.220	Alcohol dependence with intoxication, uncomplicated
F10.229	Alcohol dependence with intoxication, unspecified
F10.230	Alcohol dependence with withdrawal, uncomplicated
F10.232	Alcohol dependence with withdrawal with perceptual disturbance
F10.239	Alcohol dependence with withdrawal, unspecified
F10.24	Alcohol dependence with alcohol-induced mood disorder
F10.250	Alcohol dependence with alcohol-induced psychotic disorder with delusions
F10.251	Alcohol dependence with alcohol-induced psychotic disorder with hallucinations
F10.259	Alcohol dependence with alcohol-induced psychotic disorder, unspecified
F10.26	Alcohol dependence with alcohol-induced persisting amnestic disorder
F10.27	Alcohol dependence with alcohol-induced persisting dementia
F10.280	Alcohol dependence with alcohol-induced anxiety disorder
F10.281	Alcohol dependence with alcohol-induced sexual dysfunction
F10.282	Alcohol dependence with alcohol-induced sleep disorder
F10.288	Alcohol dependence with other alcohol-induced disorder
F10.29	Alcohol dependence with unspecified alcohol-induced disorder
F10.920	Alcohol use, unspecified with intoxication, uncomplicated
F10.929	Alcohol use, unspecified with intoxication, unspecified
F10.94	Alcohol use, unspecified with alcohol-induced mood disorder
F10.950	Alcohol use, unspecified with alcohol-induced psychotic disorder with delusions
F10.951	Alcohol use, unspecified with alcohol-induced psychotic disorder with hallucinations

F10.959	Alcohol use, unspecified with alcohol-induced psychotic disorder, unspecified
F10.96	Alcohol use, unspecified with alcohol-induced persisting amnestic disorder
F10.97	Alcohol use, unspecified with alcohol-induced persisting dementia
F10.980	Alcohol use, unspecified with alcohol-induced anxiety disorder
F10.981	Alcohol use, unspecified with alcohol-induced sexual dysfunction
F10.982	Alcohol use, unspecified with alcohol-induced sleep disorder
F10.988	Alcohol use, unspecified with other alcohol-induced disorder
F10.99	Alcohol use, unspecified with unspecified alcohol-induced disorder
G62.1	Alcoholic polyneuropathy
K29.2	Alcoholic gastritis
K29.20	Alcoholic gastritis without bleeding
K29.21	Alcoholic gastritis with bleeding
K70	Alcoholic liver disease
K70.0	Alcoholic fatty liver
K70.1	Alcoholic hepatitis
K70.10	Alcoholic hepatitis without ascites
K70.11	Alcoholic hepatitis with ascites
K70.2	Alcoholic fibrosis and sclerosis of liver
K70.3	Alcoholic cirrhosis of liver
K70.30	Alcoholic cirrhosis of liver without ascites
K70.31	Alcoholic cirrhosis of liver with ascites
K70.40	Alcoholic hepatic failure without coma
K70.41	Alcoholic hepatic failure with coma
K70.9	Alcoholic liver disease, unspecified
R78.0	Finding of alcohol in blood
Z65	Problems related to other psychosocial circumstances
Z65.0	Conviction in civil and criminal proceedings without imprisonment
Z65.1	Imprisonment and other incarceration
Z65.2	Problems related to release from prison
Z65.3	Problems related to other legal circumstances
Z65.4	Victim of crime and terrorism
Z65.5	Exposure to disaster, war, and other hostilities
Z65.8	Other specified problems related to psychosocial circumstances
Z65.9	Problem related to unspecified psychosocial circumstances

Abbreviation: *ICD-10, International Statistical Classification of Diseases, Tenth Revision.*

eAppendix 2 Primary *ICD-10* Diagnosis Codes Defining an Alcohol-Related Diagnosis Incorporating all Alcohol-Related *ICD-10* Codes

ICD-10	Name
F10	Alcohol-related disorders
F10.1	Alcohol abuse
F10.10	Alcohol abuse, uncomplicated

F10.120	Alcohol abuse with intoxication, uncomplicated
F10.129	Alcohol abuse with intoxication, unspecified
F10.14	Alcohol abuse with alcohol-induced mood disorder
F10.150	Alcohol abuse with alcohol-induced psychotic disorder with delusions
F10.151	Alcohol abuse with alcohol-induced psychotic disorder with hallucinations
F10.159	Alcohol abuse with alcohol-induced psychotic disorder, unspecified
F10.180	Alcohol abuse with alcohol-induced anxiety disorder
F10.181	Alcohol abuse with alcohol-induced sexual dysfunction
F10.182	Alcohol abuse with alcohol-induced sleep disorder
F10.188	Alcohol abuse with other alcohol-induced disorder
F10.19	Alcohol abuse with unspecified alcohol-induced disorder
F10.2	Alcohol dependence
F10.20	Alcohol dependence, uncomplicated
F10.21	Alcohol dependence, in remission
F10.22	Alcohol dependence with intoxication
F10.220	Alcohol dependence with intoxication, uncomplicated
F10.229	Alcohol dependence with intoxication, unspecified
F10.230	Alcohol dependence with withdrawal, uncomplicated
F10.232	Alcohol dependence with withdrawal with perceptual disturbance
F10.239	Alcohol dependence with withdrawal, unspecified
F10.24	Alcohol dependence with alcohol-induced mood disorder
F10.250	Alcohol dependence with alcohol-induced psychotic disorder with delusions
F10.251	Alcohol dependence with alcohol-induced psychotic disorder with hallucinations
F10.259	Alcohol dependence with alcohol-induced psychotic disorder, unspecified
F10.26	Alcohol dependence with alcohol-induced persisting amnestic disorder
F10.27	Alcohol dependence with alcohol-induced persisting dementia
F10.280	Alcohol dependence with alcohol-induced anxiety disorder
F10.281	Alcohol dependence with alcohol-induced sexual dysfunction
F10.282	Alcohol dependence with alcohol-induced sleep disorder
F10.288	Alcohol dependence with other alcohol-induced disorder
F10.29	Alcohol dependence with unspecified alcohol-induced disorder
F10.920	Alcohol use, unspecified with intoxication, uncomplicated
F10.929	Alcohol use, unspecified with intoxication, unspecified
F10.94	Alcohol use, unspecified with alcohol-induced mood disorder
F10.950	Alcohol use, unspecified with alcohol-induced psychotic disorder with delusions
F10.951	Alcohol use, unspecified with alcohol-induced psychotic disorder with hallucinations
F10.959	Alcohol use, unspecified with alcohol-induced psychotic disorder, unspecified
F10.96	Alcohol use, unspecified with alcohol-induced persisting amnestic disorder
F10.97	Alcohol use, unspecified with alcohol-induced persisting dementia
F10.980	Alcohol use, unspecified with alcohol-induced anxiety disorder
F10.981	Alcohol use, unspecified with alcohol-induced sexual dysfunction
F10.982	Alcohol use, unspecified with alcohol-induced sleep disorder
F10.988	Alcohol use, unspecified with other alcohol-induced disorder
F10.99	Alcohol use, unspecified with unspecified alcohol-induced disorder

G62.1	Alcoholic polyneuropathy
K29.2	Alcoholic gastritis
K29.20	Alcoholic gastritis without bleeding
K29.21	Alcoholic gastritis with bleeding
K70	Alcoholic liver disease
K70.0	Alcoholic fatty liver
K70.1	Alcoholic hepatitis
K70.10	Alcoholic hepatitis without ascites
K70.11	Alcoholic hepatitis with ascites
K70.2	Alcoholic fibrosis and sclerosis of liver
K70.3	Alcoholic cirrhosis of liver
K70.30	Alcoholic cirrhosis of liver without ascites
K70.31	Alcoholic cirrhosis of liver with ascites
K70.40	Alcoholic hepatic failure without coma
K70.41	Alcoholic hepatic failure with coma
K70.9	Alcoholic liver disease, unspecified
R78.0	Finding of alcohol in blood
Z65	Problems related to other psychosocial circumstances
Z65.0	Conviction in civil and criminal proceedings without imprisonment
Z65.1	Imprisonment and other incarceration
Z65.2	Problems related to release from prison
Z65.3	Problems related to other legal circumstances
Z65.4	Victim of crime and terrorism
Z65.5	Exposure to disaster, war, and other hostilities
Z65.8	Other specified problems related to psychosocial circumstances
Z65.9	Problem related to unspecified psychosocial circumstances
E24.4	Alcohol-induced pseudo-Cushing's syndrome
F10.11	Alcohol abuse, in remission
F10.12	Alcohol abuse with intoxication
F10.121	Alcohol abuse with intoxication delirium
F10.13	Alcohol abuse, with withdrawal
F10.130	Alcohol abuse with withdrawal, uncomplicated
F10.131	Alcohol abuse with withdrawal delirium
F10.132	Alcohol abuse with withdrawal with perceptual disturbance
F10.139	Alcohol abuse with withdrawal, unspecified
F10.15	Alcohol abuse with alcohol-induced psychotic disorder
F10.18	Alcohol abuse with other alcohol-induced disorders
F10.221	Alcohol dependence with intoxication delirium
F10.23	Alcohol dependence with withdrawal
F10.231	Alcohol dependence with withdrawal delirium
F10.25	Alcohol dependence with alcohol-induced psychotic disorder
F10.28	Alcohol dependence with other alcohol-induced disorders
F10.9	Alcohol use, unspecified
F10.92	Alcohol use, unspecified with intoxication

F10.921	Alcohol use, unspecified with intoxication delirium
F10.93	Alcohol use, unspecified with withdrawal
F10.930	Alcohol use, unspecified with withdrawal, uncomplicated
F10.931	Alcohol use, unspecified with withdrawal delirium
F10.932	Alcohol use, unspecified with withdrawal with perceptual disturbance
F10.939	Alcohol use, unspecified with withdrawal, unspecified
F10.95	Alcohol use, unspecified with alcohol-induced psychotic disorder
F10.98	Alcohol use, unspecified with other alcohol-induced disorders
G31.2	Degeneration of nervous system due to alcohol
G72.1	Alcoholic myopathy
I42.6	Alcoholic cardiomyopathy
K70.4	Alcoholic hepatic failure
K85.2	Alcohol induced acute pancreatitis
K85.20	Alcohol induced acute pancreatitis without necrosis or infection
K85.21	Alcohol induced acute pancreatitis with uninfected necrosis
K85.22	Alcohol induced acute pancreatitis with infected necrosis
K86.0	Alcohol-induced chronic pancreatitis
O35.4	Maternal care for (suspected) damage to fetus from alcohol
O35.4XX0	Maternal care for (suspected) damage to fetus from alcohol, not applicable or unspecified
O35.4XX1	Maternal care for (suspected) damage to fetus from alcohol, fetus 1
O35.4XX2	Maternal care for (suspected) damage to fetus from alcohol, fetus 2
O35.4XX3	Maternal care for (suspected) damage to fetus from alcohol, fetus 3
O35.4XX4	Maternal care for (suspected) damage to fetus from alcohol, fetus 4
O35.4XX5	Maternal care for (suspected) damage to fetus from alcohol, fetus 5
O35.4XX9	Maternal care for (suspected) damage to fetus from alcohol, other fetus
O99.31	Alcohol use complicating pregnancy, childbirth, and the puerperium
O99.310	Alcohol use complicating pregnancy, unspecified trimester
O99.311	Alcohol use complicating pregnancy, first trimester
O99.312	Alcohol use complicating pregnancy, second trimester
O99.313	Alcohol use complicating pregnancy, third trimester
O99.314	Alcohol use complicating childbirth
O99.315	Alcohol use complicating the puerperium
P04.3	Newborn affected by maternal use of alcohol
Q86.0	Fetal alcohol syndrome (dysmorphic)
T51	Toxic effect of alcohol
T51.0	Toxic effect of ethanol
T51.0X	Toxic effect of ethanol
T51.0X1	Toxic effect of ethanol, accidental (unintentional)
T51.0X1A	Toxic effect of ethanol, accidental (unintentional), initial encounter
T51.0X1D	Toxic effect of ethanol, accidental (unintentional), subsequent encounter
T51.0X1S	Toxic effect of ethanol, accidental (unintentional), sequela
T51.0X2	Toxic effect of ethanol, intentional self-harm
T51.0X2A	Toxic effect of ethanol, intentional self-harm, initial encounter
T51.0X2D	Toxic effect of ethanol, intentional self-harm, subsequent encounter

T51.0X2S	Toxic effect of ethanol, intentional self-harm, sequela
T51.0X3	Toxic effect of ethanol, assault
T51.0X3A	Toxic effect of ethanol, assault, initial encounter
T51.0X3D	Toxic effect of ethanol, assault, subsequent encounter
T51.0X3S	Toxic effect of ethanol, assault, sequela
T51.0X4	Toxic effect of ethanol, undetermined
T51.0X4A	Toxic effect of ethanol, undetermined, initial encounter
T51.0X4D	Toxic effect of ethanol, undetermined, subsequent encounter
T51.0X4S	Toxic effect of ethanol, undetermined, sequela
T51.1	Toxic effect of methanol
T51.1X1A	Toxic effect of methanol, accidental (unintentional), initial encounter
T51.2	Toxic effect of 2-Propanol
T51.2X1A	Toxic effect of 2-Propanol, accidental (unintentional), initial encounter
T51.3	Toxic effect of fusel oil
T51.8	Toxic effect of other alcohols
T51.8X	Toxic effect of other alcohols
T51.8X1	Toxic effect of other alcohols, accidental (unintentional)
T51.8X1A	Toxic effect of other alcohols, accidental (unintentional), initial encounter
T51.8X1D	Toxic effect of other alcohols, accidental (unintentional), subsequent encounter
T51.8X1S	Toxic effect of other alcohols, accidental (unintentional), sequela
T51.8X2	Toxic effect of other alcohols, intentional self-harm
T51.8X2A	Toxic effect of other alcohols, intentional self-harm, initial encounter
T51.8X2D	Toxic effect of other alcohols, intentional self-harm, subsequent encounter
T51.8X2S	Toxic effect of other alcohols, intentional self-harm, sequela
T51.8X3	Toxic effect of other alcohols, assault
T51.8X3A	Toxic effect of other alcohols, assault, initial encounter
T51.8X3D	Toxic effect of other alcohols, assault, subsequent encounter
T51.8X3S	Toxic effect of other alcohols, assault, sequela
T51.8X4	Toxic effect of other alcohols, undetermined
T51.8X4A	Toxic effect of other alcohols, undetermined, initial encounter
T51.8X4D	Toxic effect of other alcohols, undetermined, subsequent encounter
T51.8X4S	Toxic effect of other alcohols, undetermined, sequela
T51.9	Toxic effect of unspecified alcohol
T51.91	Toxic effect of unspecified alcohol, accidental (unintentional)
T51.91XA	Toxic effect of unspecified alcohol, accidental (unintentional), initial encounter
T51.91XD	Toxic effect of unspecified alcohol, accidental (unintentional), subsequent encounter
T51.91XS	Toxic effect of unspecified alcohol, accidental (unintentional), sequela
T51.92	Toxic effect of unspecified alcohol, intentional self-harm
T51.92XA	Toxic effect of unspecified alcohol, intentional self-harm, initial encounter
T51.92XD	Toxic effect of unspecified alcohol, intentional self-harm, subsequent encounter
T51.92XS	Toxic effect of unspecified alcohol, intentional self-harm, sequela
T51.93	Toxic effect of unspecified alcohol, assault
T51.93XA	Toxic effect of unspecified alcohol, assault, initial encounter
T51.93XD	Toxic effect of unspecified alcohol, assault, subsequent encounter

T51.93XS	Toxic effect of unspecified alcohol, assault, sequela
T51.94	Toxic effect of unspecified alcohol, undetermined
T51.94XA	Toxic effect of unspecified alcohol, undetermined, initial encounter
T51.94XD	Toxic effect of unspecified alcohol, undetermined, subsequent encounter
T51.94XS	Toxic effect of unspecified alcohol, undetermined, sequela
Y90	Evidence of alcohol involvement determined by blood alcohol level
Y90.0	Blood alcohol level of less than 20 mg/100 ml
Y90.1	Blood alcohol level of 20-39 mg/100 ml
Y90.2	Blood alcohol level of 40-59 mg/100 ml
Y90.3	Blood alcohol level of 60-79 mg/100 ml
Y90.4	Blood alcohol level of 80-99 mg/100 ml
Y90.5	Blood alcohol level of 100-119 mg/100 ml
Y90.6	Blood alcohol level of 120-199 mg/100 ml
Y90.7	Blood alcohol level of 200-239 mg/100 ml
Y90.8	Blood alcohol level of 240 mg/100 ml or more
Y90.9	Presence of alcohol in blood, level not specified
Z02.83	Encounter for blood-alcohol and blood-drug test
Z63.72	Alcoholism and drug addiction in family
Z71.4	Alcohol abuse counseling and surveillance
Z71.41	Alcohol abuse counseling and surveillance of alcoholic
Z71.42	Counseling for family member of alcoholic
Z81.1	Family history of alcohol abuse and dependence

Abbreviation: *ICD-10, International Statistical Classification of Diseases, Tenth Revision.*