Key takeaways from included research:

- Increases in alcohol-related emergency department (ED) visits drove researchers to further examine the probability of death in the year after one or multiple alcohol-related ED visits. Researchers found a substantial elevation in the risk of mortality for individuals after 1 or more ED visits due to alcohol. The findings also suggest that a single ED visit due to alcohol, even in younger individuals, was associated with a substantial elevation in the risk of death and that most deaths were associated with a single visit.

- Mortality rates have greatly increased during the COVID-19 pandemic, leading researchers to examine whether certain diseases and health conditions have been disproportionately affected. Using projective modeling, researchers examined alcohol use disorder (AUD)-mortality rates in the US between 2012-2021 and found AUD-related mortality increased among all ages and sexes during the pandemic, with those aged 25 to 44 years having the steepest upward trend.

- A study was conducted in Australia to examine first and subsequent alcohol-related hospitalizations among youth. Researchers found highest probability of repeated alcohol-related hospitalization was in the first month after the initial discharge. Knowing this provides an opportunity to provide interventions to those at greatest risk for repeat hospitalization.

- Researchers suggest alcohol packaging to have large picture or text warnings to decrease the appeal or social acceptability of alcohol products, particularly among youth. A study done in the United Kingdom fund strong support for displaying warnings and health information to positively impact alcohol-related cognitions and behaviors.

- A cross-sectional study among children was conducted to examine the impacts of high levels of prenatal alcohol exposure and the associations with behavioral and cognitive problems. Researchers found that children with low levels of prenatal exposure had more behavioral problems suggesting that even small amounts of alcohol impact the brain structure in children.

ASSESSMENT OF AGE AND SEX DIFFERENCES IN RISK OF 1-YEAR MORTALITY AFTER EMERGENCY DEPARTMENT VISITS CAUSED BY ALCOHOL USE
April 2022

Introduction: In the past 2 decades, alcohol-related emergency department (ED) visits have increased in Canada and the US. Previous work has reported that the risk of death is increased among older adults with frequent ED visits related to alcohol. However, to our knowledge, data are lacking on the clinical importance of ED visits due to alcohol in young adults or individuals with infrequent or singular visits due to alcohol. We evaluated the probability of death in the year after 1 or more alcohol-related ED visits and the differences by age and sex.

Methods: This repeated cross-sectional study identified all ED visits due to alcohol and deaths from any cause for individuals aged 15 to 59 years in Ontario, Canada, between January 2003 and December 2017 using linked health administrative data through ICES. This study was approved by the privacy and legal offices of ICES and followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) reporting guideline.

We compared the risk of all-cause mortality over 365 days between the general population and individuals with an incident ED visit due to alcohol. Individuals were classified as having a total (including incident visit) of 1, 2, or 3 or more ED visits due to alcohol in the year after the initial visit. Each individual could contribute 1 year of follow-up, which began after their first point of eligibility (eMethods in the Supplement). Poisson models were used to calculate incidence rate ratios (IRRs) with 95% CIs for the risk of death in individuals with ED visits due to alcohol relative to the general population. We ran separate models stratified by age and sex. Data were analyzed from July 2021 through September 2021 using SAS, version 9.4 (SAS Institute).

Results: A total of 10 197 601 individuals were included (5 119 663 [50.2%] female; mean [SD] age, 36.**29** [15.50] years), of which 295 011 individuals (2.9% of all individuals in the study; 184 855 [62.7%] male; mean [SD] age, 32.7 [13.5] years) had 1 or more ED visits due to alcohol (Table). The percent of death within 1 year of 1 or more ED visits due to alcohol (2.0% [5840 of 295 001]) was 4 times greater (IRR, 4.1; 95% CI, 4.0-4.2) than the annual percent of death of individuals in the general population (0.5% [48 574 of 9 902 590]). Older adults, men, and a greater frequency of alcohol-related ED visits were associated with the greatest absolute increases in risk of death. The percent of 1-year mortality was 12.1% (335 of 2774) for men aged 45 to 59 years with 3 or more ED visits due to alcohol and 0.2% (121 of 59 375) for women aged 15 to 29 years with 1 alcohol-related ED visit. Younger age, women, and greater frequency of ED visits due to alcohol were associated with the greatest relative increases in risk of death (Figure).

Of the individuals with 1 or more ED visits due to alcohol, 265 398 (90%) had a single ED visit within 1 year. Furthermore, 4310 (73.8%) deaths occurred among individuals with a single alcohol-related ED visit.

Discussion: The findings of this study suggest a substantial elevation in the risk of mortality for individuals after 1 or more ED visits due to alcohol. The findings also suggest that a single ED visit due to alcohol, even in younger individuals, was associated with a substantial elevation in the risk of death and that most deaths were associated with a single visit.

A study limitation was the inability to identify the role of alcohol in each death. Whereas a single visit may be dismissed as a unique event, and patients may receive minimal follow-up after discharge from the ED, our data suggest that any ED visit due to alcohol is associated with future adverse events. Increases in delivery of interventions may be warranted because ED visits and deaths due to alcohol have been increasing in North America. Studies suggest that improving uptake of brief alcohol interventions delivered in the ED and increasing access to medical services for addiction may reduce harm associated with use of alcohol.

Source: Myran, D. T., Rhodes, E., Imsirovic, H., Fernando, S. M., Sood, M. M., & Tanuseputro, P. (2022). Assessment of Age and Sex Differences in Risk of 1-Year Mortality After Emergency Department Visits Caused by Alcohol Use. *JAMA network open, 5*(4), e225499-e225499. https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2790620

EVALUATION OF TRENDS IN ALCOHOL USE DISORDER–RELATED MORTALITY IN THE US BEFORE AND DURING THE COVID-19 PANDEMIC
May 2022

Introduction: The US mortality rate has surged during the COVID-19 pandemic. Therefore, it is imperative to identify diseases and health conditions that have been affected disproportionately. Mounting evidence indicates that alcohol sales, alcohol consumption, and complications of alcohol use have increased during the pandemic. However, there are limited data on nationwide alcohol use disorder (AUD)–related mortality. Here, we use projective modeling to evaluate AUD-related mortality rates in the US from 2012 to 2021, with a focus on trends during the COVID-19 pandemic.

Methods: This cross-sectional study used deidentified publicly available data, so informed consent and institutional review board approval were not required in accordance with the Common Rule. The study followed the STROBE reporting guideline.

We obtained deidentified data from the National Vital Statistics System (NVSS) through the Centers for Disease Control and Prevention Wide-Ranging Online Data for Epidemiologic Research (CDC WONDER) database.4 The NVSS database registers more than 99% of deaths in the US, and this study used data updated to January 22, 2022.5 We included decedents with AUD, defined by International Classification of Diseases, Tenth Revision diagnosis codes, as one cause of death (multiple causes were possible). Age-standardized mortality rates were estimated with the indirect method using the 2000 US Census as the standard population. We performed linear regression analysis to determine 2020 and 2021 projected mortality rates based on trends between 2012 and 2019. We quantified the association of the pandemic with AUD-related deaths by calculating percentage differences between the projected and observed mortality rates. To enrich robustness, we also performed a sensitivity analysis by setting AUD as the underlying (primary) cause of death. Statistical analyses were performed using the CDC WONDER database (age standardization), R version 4.0.2 (data cleaning and management), and PyCharm version 3.9.0 (modeling analysis).

Results: There were 343 384 AUD-related deaths between 2012 and 2021. We stratified these deaths into decedent groups by age (25 to 44 years, 56 985 [16.6%]; 45 to 64 years, 192 346 [56.0%]; and ≥65 years, 94 053 [27.4%]) and by sex (266 755 men [77.7%]). By comparing observed and projected mortality rates, we noticed a surge in AUD mortality both overall and among all subgroups during the pandemic (Figure and Table). The observed AUD-related mortality rates increased by 24.79% in 2020 and 21.95% in 2021 vs the projected rates. Increased mortality rates were evident even when AUD was set as the underlying cause of death (30.74% in 2020 vs 28.77% in 2021).

In this study, the youngest age group (25-44 years) demonstrated the largest increase in AUD mortality (40.47% in 2020 vs 33.95% in 2021) across all age groups. The increase was similar for both sexes (approximately 24.65% for women and men in 2020 vs 20.08% and 22.41% in 2021, respectively). Less than 10.00% of excess deaths overall and among all subgroups were attributable to COVID-19 infection (Figure).

Discussion: In this cross-sectional study, we used data from 2012 to 2019 to project 2020 and 2021 mortality rates and found that AUD-related mortality rates increased among all ages and sexes during the pandemic. Younger persons, particularly those aged 25 to 44 years, had the steepest upward trend. The small proportion of COVID-19–related deaths suggests that excess deaths were more likely attributable to indirect effects of the pandemic such as stay-at-home policies and reduced medical and social resources for patients with AUD.

Our study is limited by potential misclassification bias in death certificate data. However, AUD is typically underrecognized, and we would expect such factors to result in lower observed death rates. Our findings suggest that the pandemic may have had a disproportionate association with AUD-related deaths and subgroups with high vulnerability and that tailored strategies are needed for AUD prevention and intervention to combat this public health crisis.

Source: Yeo, Y. H., He, X., Ting, P. S., Zu, J., Almario, C. V., Spiegel, B. M., & Ji, F. (2022). Evaluation of Trends in Alcohol Use Disorder–Related Mortality in the US Before and During the COVID-19 Pandemic. *JAMA Network Open, 5*(5), e2210259-e2210259. https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2791852

In the News: Sean Salai. (2022, May 4). Young adults led surge in alcohol-related deaths during COVID, study shows. *The Washington Times*. https://www.washingtontimes.com/news/2022/may/4/young-adults-led-surge-alcohol-related-deaths-duri/

YOUNG PEOPLE WITH PRIOR HEALTH SERVICE CONTACTS HAVE INCREASED RISK OF REPEATED ALCOHOL-RELATED HARM HOSPITALISATIONS
April 2022

Introduction: After a first alcohol-related hospitalisation in youth, subsequent hospitalisations may demonstrate an increased risk of further alcohol-related hospitalisations, but there is no existing data on this.

Methods: A retrospective longitudinal study between July 1992 and June 2017 using linked hospital administrative data identified 23 464 Western Australian young people [9009 (38.4%) females and 14 455 (61.6%) males], aged 12–24 years hospitalised for at least one alcohol-related harm (ARH) episode of care. Cox regression was used to estimate hazard ratios (HR) between risk factors and repeated alcohol-related hospitalisation after the first discharge for ARH.

Results: Of those admitted for an alcohol-related hospitalisation (n = 23 464), 21% (n = 4996) were readmitted for ARH. This high-risk sub-group comprised 46% (n = 16 017) of the total alcohol-related admissions (n = 34 485). After the first discharge for ARH, 16% (804) of people who experienced an alcohol-related readmission were readmitted within 1 month, and 51.8% (2589) were readmitted within 12 months. At increased risk of readmission were Aboriginal people and those with prior health service contacts occurring before their first alcohol-related hospitalisation, including illicit drug hospitalisations, mental health contacts and, in a sub-analysis, emergency department presentations.

Discussion and Conclusions: The probability of a repeated ARH hospitalisation was highest in the first month after initial discharge. There is a high-risk sub-group of young people more likely to have a repeat ARH hospitalisation. This represents an opportunity to provide interventions to those most at risk of repeated ARH.

Source: Sims, S. A., Pereira, G., Preen, D., Fatovich, D., & O'Donnell, M. (2022). Young people with prior health service contacts have increased risk of repeated alcohol-related harm hospitalisations. *Drug and Alcohol Review*. https://doi.org/10.1111/dar.13467

THE ROLE OF ALCOHOL PACKAGING AS A HEALTH COMMUNICATIONS TOOL: AN ONLINE CROSS-SECTIONAL SURVEY AND EXPERIMENT WITH YOUNG ADULT DRINKERS IN THE UNITED KINGDOM
April 2022

Introduction: Alcohol packaging is a potentially valuable means of communicating product and health-related information, with growing academic and political interest in its role as a health communications vehicle.

Methods: An online cross-sectional survey and experiment were conducted with a non-probability sample of 18–35-year-old drinkers in the United Kingdom (n = 1360). The survey assessed exposure to, and engagement with, current messaging on packs, and support for displaying product and health-related information. For the randomised experiment, participants were shown, and asked questions about, a vodka bottle with either no warnings (control), small text warnings, large text warnings or pictorial (image-and-text) warnings; the main binary outcome measures were negative product appeal and social acceptability, and positive cognitive and behavioural impact.

Results: Two-fifths of the sample rarely or never saw on-pack health-related information, with almost three-quarters rarely or never reading or looking closely at this. There was strong support for displaying a range of product and health-related information (e.g. units, ingredients) on packs. Relative to the control, products with warnings were more likely to be perceived as unappealing and socially unacceptable, and to positively impact alcohol-related cognitions and behaviours. For example, pictorial warnings were 10 times as likely to positively influence cognitions and behaviours (AOR = 10.01, 95% CI: 8.09, 17.46).

Discussion and Conclusions: Alcohol packaging could have an important role in delivering health messaging. Large pictorial or text warnings may help counteract the appeal and social acceptability of alcohol products and increase awareness of risks, potentially supporting a reduction in consumption and related harms.

Source: Jones, D., Moodie, C., Purves, R. I., Fitzgerald, N., & Crockett, R. (2022). The role of alcohol packaging as a health communications tool: An online cross-sectional survey and experiment with young adult drinkers in the United Kingdom. *Drug and Alcohol Review*. https://doi.org/10.1111/dar.13469

EVALUATION OF BRAIN ALTERATIONS AND BEHAVIOR IN CHILDREN WITH LOW LEVELS OF PRENATAL ALCOHOL EXPOSURE
April 2022

Importance: High levels of prenatal alcohol exposure (PAE) are associated with widespread behavioral and cognitive problems as well as structural alterations of the brain. However, it remains unclear whether low levels of PAE affect brain structure and function, and prior studies generally have not had well-matched control populations (eg, for sociodemographic variables).

Objective: To compare structural brain alterations and behavioral changes in children with lower levels of PAE with those of well-matched controls with no PAE.

Design, Setting, and Participants: In this cross-sectional study, participants were selected from the Adolescent Brain Cognitive Development study. Children with PAE were compared with controls matched for age, sex, family income, maternal educational level, and caregiver status. Neither group had prenatal exposure to other adverse substances (eg, tobacco, cannabis, illicit drugs). Data were collected from September 1, 2016, to November 15, 2018, and analyzed from October 14, 2020, to February 14, 2022.

Exposures: Diffusion tensor imaging, resting-state functional magnetic resonance imaging (MRI), and Child Behavior Checklist (CBCL) administration.

Main Outcomes and Measures: Fractional anisotropy (FA); mean, axial, and radial diffusivity from diffusion tensor imaging; brain functional signal variations from functional MRI; and several scores, including internalizing and externalizing behavior problems, from the CBCL. Spearman correlation coefficients between diffusion tensor imaging and functional MRI measures and the CBCL scores were calculated.

Results: A total of 270 children were included in the analysis (mean [SD] age, 9.86 [0.46] years; 141 female [52.2%] and 129 male [47.8%]), consisting of 135 children with PAE (mean [SD] age, 9.85 [0.65] years; 73 female [54.1%] and 62 male [45.9%]) (mean exposure, 1 drink/wk) and 135 unexposed controls (mean [SD] age, 9.87 [0.04] years; 68 female [50.4%] and 67 male [49.6%]). Children with PAE had lower mean (SD) FA in white matter of the left postcentral (0.35 [0.05] vs 0.36 [0.04]; mean difference, −0.02 [95% CI, −0.03 to −0.01]), left inferior parietal (0.31 [0.07] vs 0.33 [0.06]; mean difference, −0.03 [95% CI, −0.04 to −0.01]), left planum temporale (0.26 [0.04] vs 0.28 [0.03]; mean difference, −0.02 [95% CI, −0.03 to −0.01]), left inferior occipital (0.30 [0.07] vs 0.32 [0.05]; mean difference, −0.03 [95% CI, −0.04 to −0.01]), and right middle occipital (0.30 [0.04] vs 0.31 [0.04]; mean difference, −0.01 [95% CI, −0.02 to −0.01]) areas compared with controls, and higher FA in the gray matter of the putamen (0.22 [0.03] vs 0.21 [0.02]; mean difference, 0.01 [95% CI, 0.005-0.02]). Externalizing behavior scores were higher (worse) in children with PAE than in controls (mean [SD], 45.2 [9.0] vs 42.8 [9.0]; mean difference, 2.39 [95% CI, 0.30-4.47]). Several of these regions had significant group-behavior interactions, such that the higher FA was associated with less problematic behaviors in controls (ρ range, −0.24 to −0.08) but no associations were present in the PAE group (ρ range, 0.02-0.16).

Conclusions and Relevance: In this cross-sectional study, children with low levels of PAE had lower FA and more behavioral problems compared with a well-matched control group. These results suggest that PAE, even in small amounts, has a measurable effect on brain structure in children.

Source: Long, X., & Lebel, C. (2022). Evaluation of Brain Alterations and Behavior in Children With Low Levels of Prenatal Alcohol Exposure. *JAMA Network Open, 5*(4), e225972-e225972. https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2790703