

Alcohol and Cancer in the United States

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NCI Webinar

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Carbone Cancer Center
UNIVERSITY OF WISCONSIN
SCHOOL OF MEDICINE AND PUBLIC HEALTH

Definitions

- 1 drink = ~14 g pure alcohol (1.5 oz distilled spirits, 5 oz wine, 12 oz regular beer)
 - *varies by country
- High risk drinking = binge and heavy drinking
- Binge drinking = 4+ females at one occasion, 5+ males
 - 13% of US adults in the last year
- Heavy drinking = 8+ per week females, 15 + per week males
- Moderate drinking = up to 1/d for females,
up to 2/d males

"Excessive drinking"
includes **heavy drinking** &
binge drinking.

For WOMEN:

Heavy drinking is
8+ drinks per week

Binge drinking is
4+ drinks in 2-3 hours

For MEN:

Heavy drinking is
15+ drinks per week

Binge drinking is
5+ drinks in 2-3 hours

12 ounces of
beer
(5% alcohol)

OR

8 ounces of
malt liquor
(7% alcohol)

OR

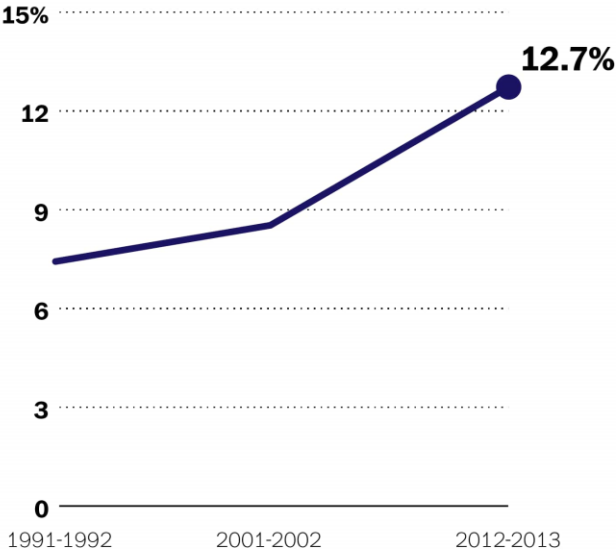
5 ounces of
wine
(12% alcohol)

OR

1.5 ounces of
hard liquor
(40% alcohol)

Alcoholism is on the rise

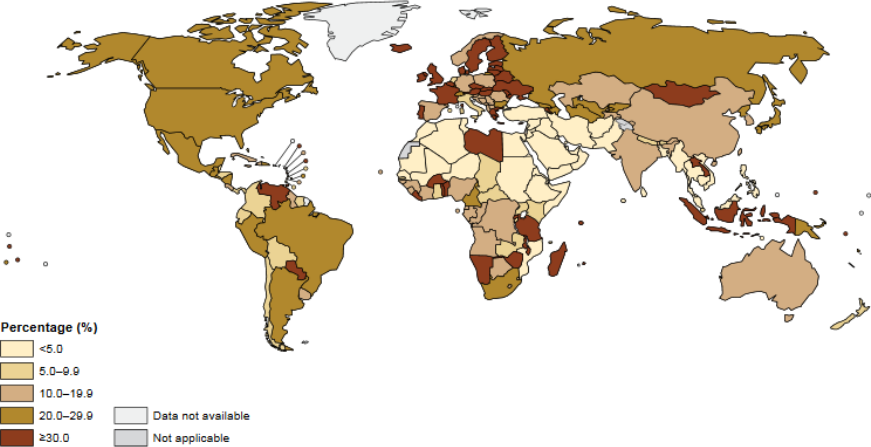
Rate of alcohol use disorder (alcoholism) among U.S. adults age 18 and older



WAPQ.ST/WONKBLOG

Source: Grant et. al., 2017

Figure 7. Prevalence of heavy episodic drinking among current drinkers (%; 15+ years), 2010



Grant, Chou,
Saha, et al,
JAMA
Psychiatry, 2017

Global status report on alcohol and health WHO 2014

Alcohol and Cancer: A Statement of the American Society of Clinical Oncology

Noelle K. LoConte, Abenaa M. Brewster, Judith S. Kaur, Janette K. Merrill, and Anthony J. Alberg

ABSTRACT

Alcohol drinking is an established risk factor for several malignancies, and it is a potentially modifiable risk factor for cancer. The Cancer Prevention Committee of the American Society of Clinical Oncology (ASCO) believes that a proactive stance by the Society to minimize excessive exposure to alcohol has important implications for cancer prevention. In addition, the role of alcohol drinking on outcomes in patients with cancer is in its formative stages, and ASCO can play a key role by generating a research agenda. Also, ASCO could provide needed leadership in the cancer community on this issue. In the issuance of this statement, ASCO joins a growing number of international organizations by establishing a platform to support effective public health strategies in this area. The goals of this statement are to:

- Promote public education about the risks between alcohol abuse and certain types of cancer;
- Support policy efforts to reduce the risk of cancer through evidence-based strategies that prevent excessive use of alcohol;
- Provide education to oncology providers about the influence of excessive alcohol use and cancer risks and treatment complications, including clarification of conflicting evidence; and
- Identify areas of needed research regarding the relationship between alcohol use and cancer risk and outcomes.

J Clin Oncol 36:83-93. © 2017 by American Society of Clinical Oncology

INTRODUCTION

The importance of alcohol drinking as a contributing factor to the overall cancer burden is often underappreciated. In fact, alcohol drinking is an established risk factor for several malignancies. As a potentially modifiable risk factor for cancer, addressing high-risk alcohol use is one strategy to reduce the burden of cancer. For example, in 2012, 5.5% of all new cancer occurrences and 5.8% of all cancer deaths worldwide were estimated to be attributable to alcohol.¹ In the United States, it has been estimated that 3.5% of all cancer deaths are attributable to drinking alcohol.² Alcohol is causally associated with oropharyngeal and larynx cancer, esophageal cancer, hepatocellular carcinoma, breast cancer, and colon cancer.³ Even modest use of alcohol may increase cancer risk, but the greatest risks are observed with heavy, long-term use.

Despite the evidence of a strong link between alcohol drinking and certain cancers, ASCO has not previously addressed the topic of alcohol and cancer. In addition, alcohol drinking is a potentially modifiable risk factor that can be targeted

with preventive interventions at both the policy and the individual levels. Here, we provide an overview of the evidence of the links between alcohol drinking and cancer risk and cancer outcomes. The areas of greatest need for future research are highlighted. On the basis of this evidence and guidelines adopted by other cancer-focused organizations, ASCO-endorsed strategies for the reduction of high-risk alcohol consumption are presented.

EPIDEMIOLOGY OF ALCOHOL USE

Beyond oncology, alcohol use and abuse together pose a significant public health problem. According to the Centers for Disease Control and Prevention, approximately 88,000 deaths were attributed to excessive alcohol use in the United States between 2006 and 2010.⁴ Approximately 3.3 million deaths worldwide result from the harmful use of alcohol each year.⁵ Population surveys demonstrate that 12% to 14% of adults have a current alcohol use disorder and that 29% have had such a disorder at some point in their lifetime.^{6,7} In addition to alcohol use disorder,

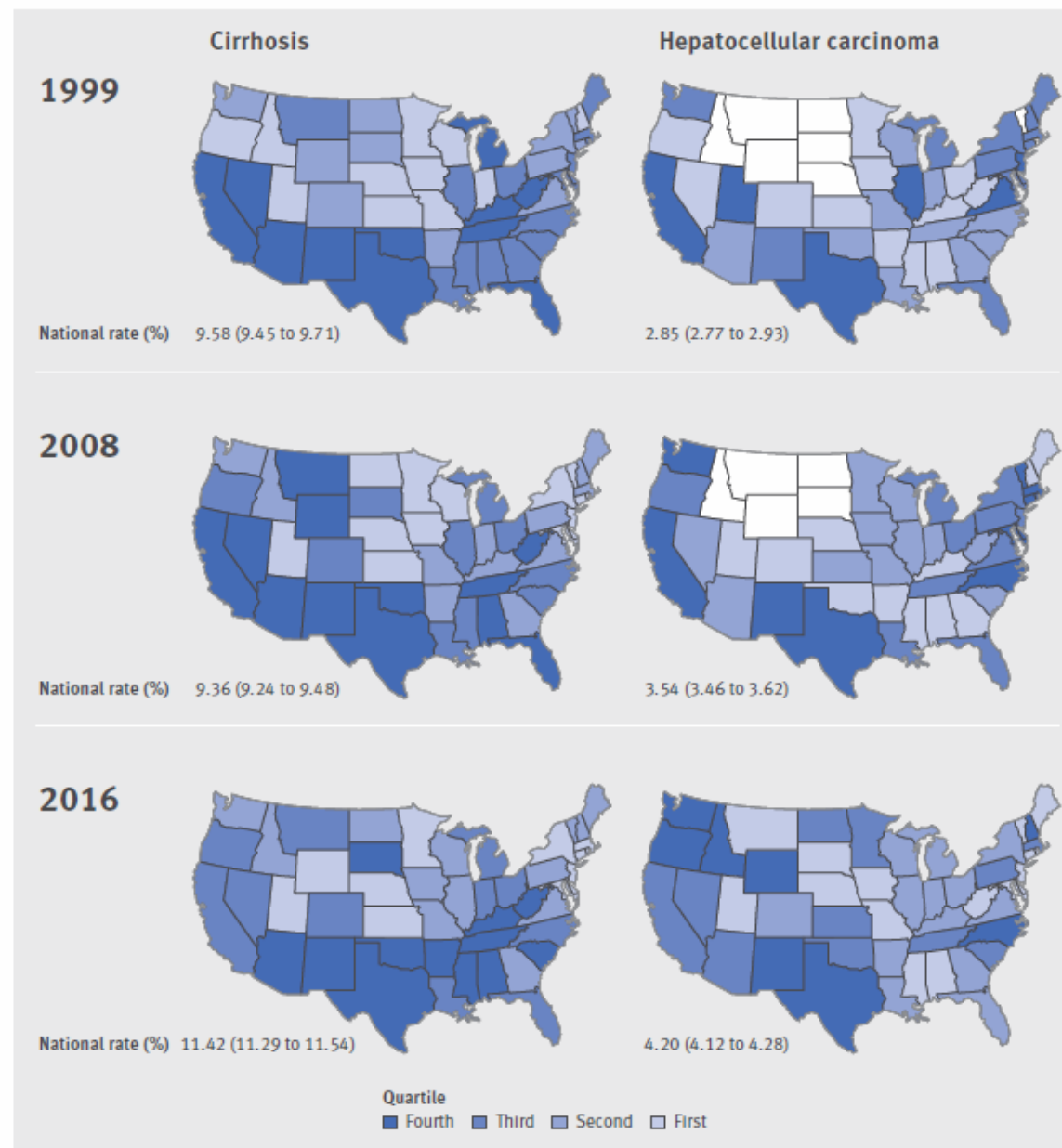
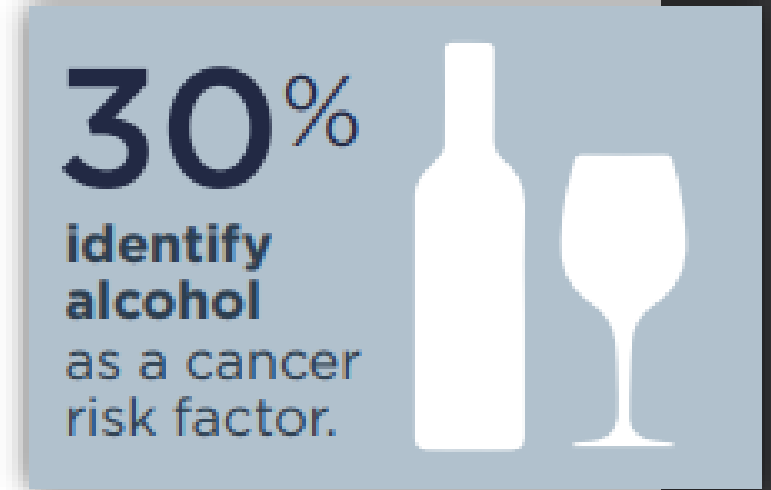


Fig 2 | Age adjusted mortality (per 100 000 Americans) attributable to cirrhosis and hepatocellular carcinoma in each state for the first (1999), middle (2008), and last (2016) year of study. States in white imply data that are unreliable or suppressed to protect patient identity

Why put this statement out now?

- National Cancer Opinion Survey
 - ASCO and Harris online poll 4,016 US adults
 - 4% had cancer themselves
 - 32% had an immediate family member with cancer
- Only 30% were aware of alcohol as cancer risk factor
 - (78% for tobacco and 66% for sun/UV)
- Only 38% limit their alcohol consumption to reduce cancer risk



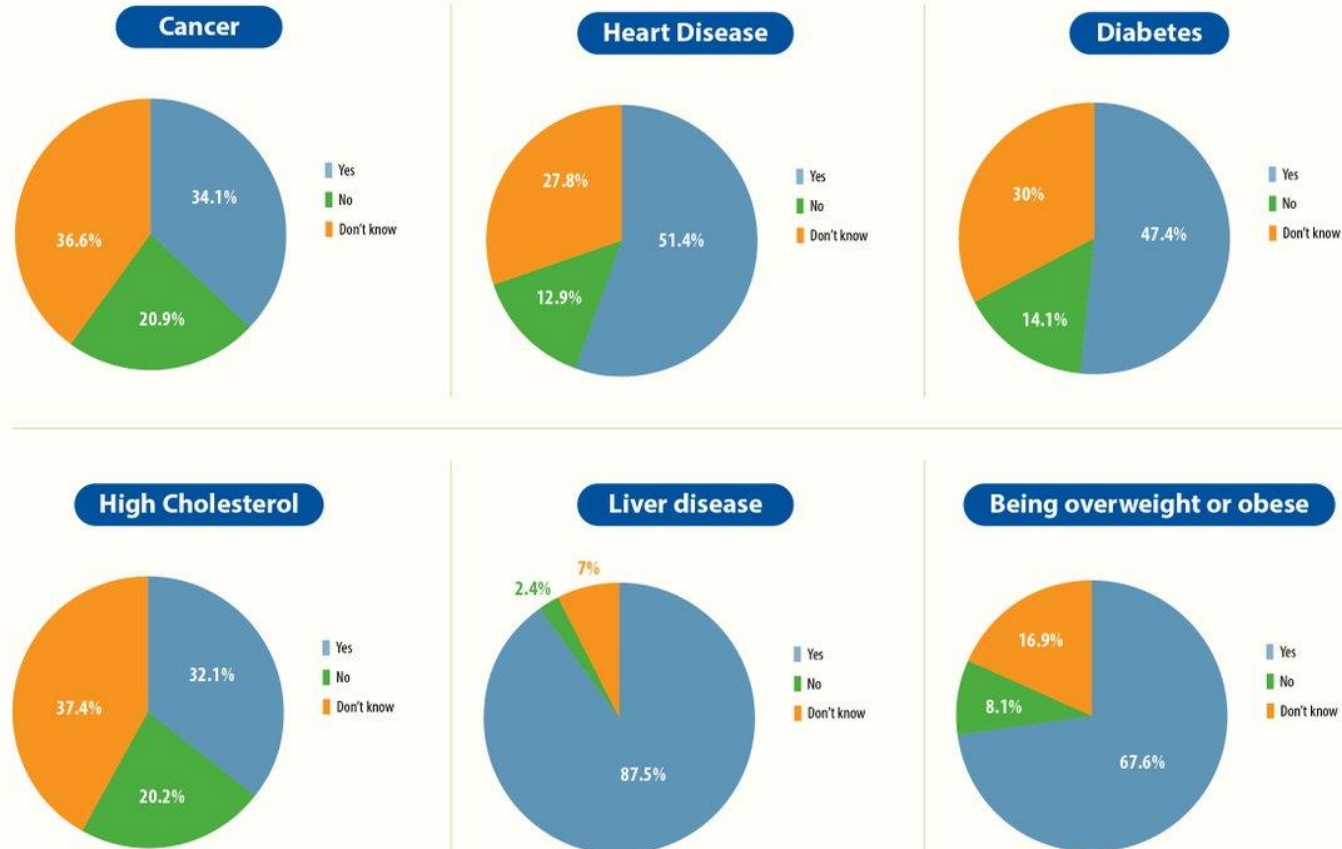
Discussion

In a review of 32 studies and surveys conducted across 16 countries, we found a great deal of variability in awareness about the link between alcohol consumption and cancer risk. Awareness appeared to be highest in the United Kingdom, Morocco, and Australia, although awareness in these countries is still modest from a public health standpoint. A major



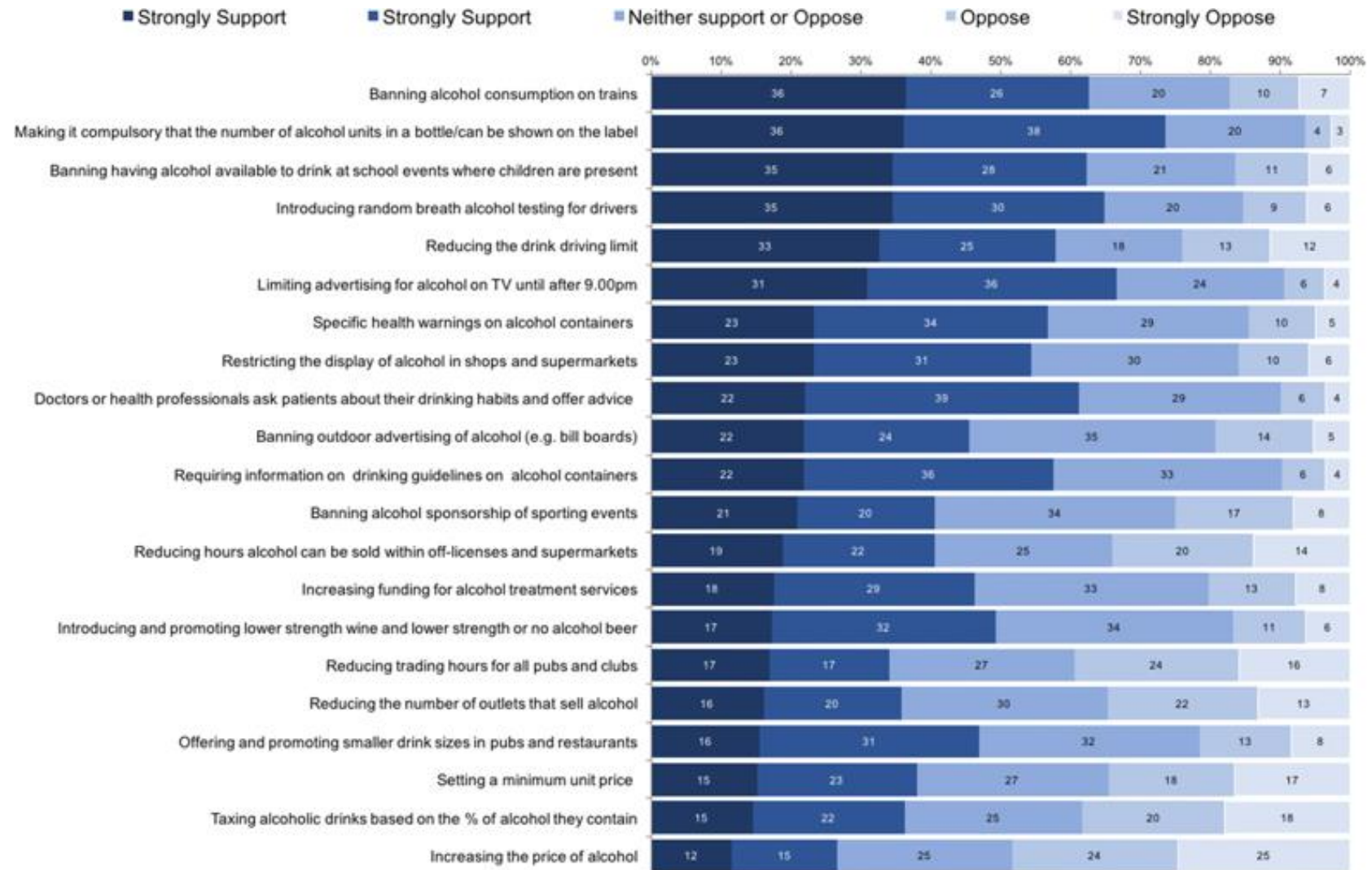
More evidence of a lack of awareness

Which of the following health conditions do you think can result from drinking too much alcohol?



Data source: HINTS, National Cancer Institute, HINTS-FDA 2017. All data are Estimated US Adult Population.

Awareness of alcohol as a carcinogen increases support for alcohol control policies



Bates, Holmes, Gavens, BMC
Public Health 2017.

Epidemiology of alcohol use

- Globally alcohol causes 5.5% of new cancer diagnoses
 - Up from 3.6%
- Globally alcohol causes 5.8% of all cancer deaths
 - Up from 3.6%
- In US, 3.2-3.7% of cancer deaths are attributable to alcohol
 - Approximately 21,000 per year
 - Absolute numbers: breast (5518-7310), H+N (2347-4497), esophagus (1233-2716), CRC (1987-5467)

Predictors of heavy alcohol use

- Youth drinking
 - 22.8% of US youth 12-20 yo currently drink, 13% heavy or binge drink, 6% have DSM IV alcohol use disorder
- Younger age
- Male gender (RR 2.4)
- Not being married (RR 1.4)
- Genetics
- Race/ethnicity
- Sexual orientation (RR 2.55)
- Smoking (RR 3.4)

Drinking guidelines

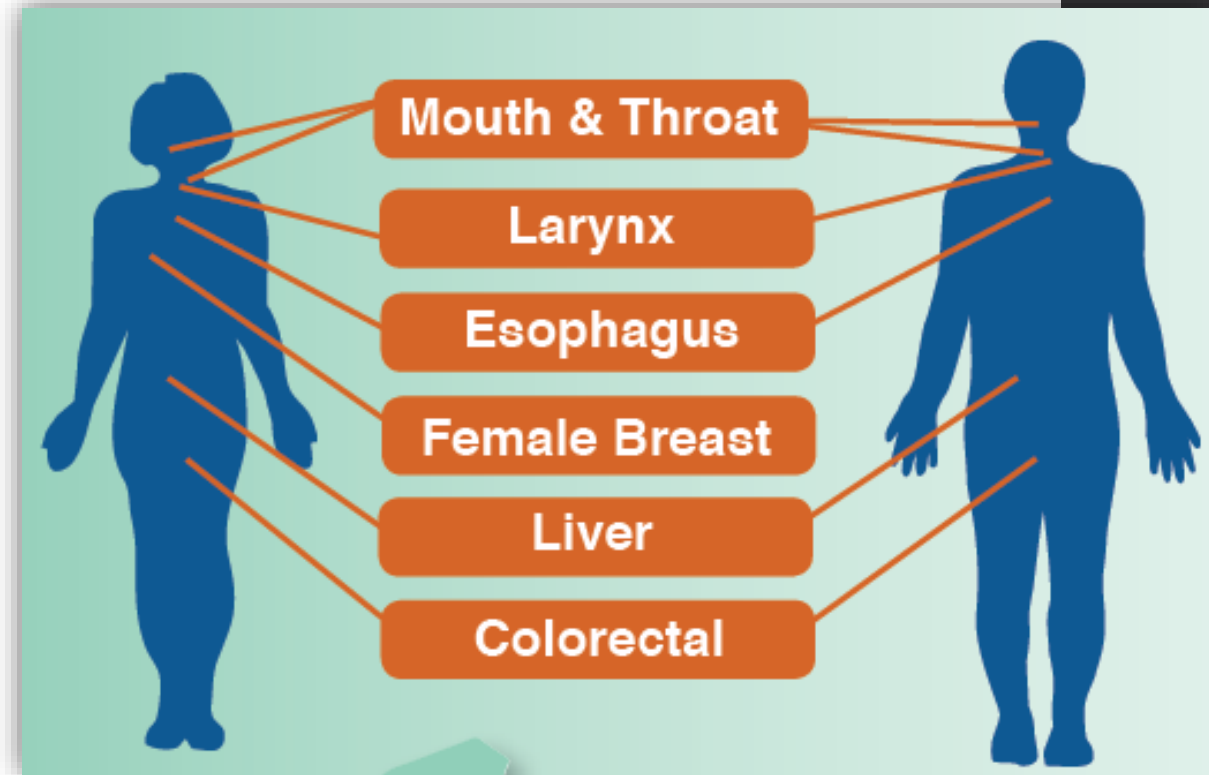
- American Cancer Society
- American Heart Association
- US Department of Health and Human Services
- All basically the same:
 - No more than 2/d for males and 1/d for females and no binging
 - No drinking under legal age
 - If you don't drink, do not start for any reason
 - Never drink while pregnant



Kushi LH et al, CA Cancer J Clin, 2012. DeSalvo KB, JAMA, 2016. American Heart Assoc www.heart.org. NIAAA: Rethinking Drinking.

What cancers?

- Oral cavity/pharynx/larynx
 - Esophagus (squamous cell)
 - Female breast
 - Colorectum
 - Liver
 - (Maybe: lung, pancreas, gastric)
-
- **Take home point: “The more a person drinks, and the longer the period of time, the greater their risk of development of cancer, especially head and neck cancers”**



Magnitude of the association

0-1 drink/d

2-4
drinks/d

4+
drinks/d

Table 1. Summary of Relative Risks From a Meta-Analysis for the Association Between Amount of Alcohol Drinking and Risk of Cancer

Type of Cancer	Relative Risk (95% CI)			
	Nondrinker	Light Drinker	Moderate Drinker	Heavy Drinker
Oral cavity and pharynx	1.0 (referent)	1.13 (1.0 to 1.26)	1.83 (1.62 to 2.07)	5.13 (4.31 to 6.10)
Esophageal squamous cell carcinoma	1.0 (referent)	1.26 (1.06 to 1.50)	2.23 (1.87 to 2.65)	4.95 (3.86 to 6.34)
Larynx	1.0 (referent)	0.87 (0.68 to 1.11)	1.44 (1.25 to 1.66)	2.65 (2.19 to 3.19)
Liver	1.0 (referent)	1.00 (0.85 to 1.18)	1.08 (0.97 to 1.20)	2.07 (1.66 to 2.58)
Female breast	1.0 (referent)	1.04 (1.01 to 1.07)	1.23 (1.19 to 1.28)	1.61 (1.33 to 1.94)
Colorectum	1.0 (referent)	0.99 (0.95 to 1.04)	1.17 (1.11 to 1.24)	1.44 (1.25 to 1.65)

NOTE. Adapted from results of Bagnardi et al (2015).²⁸

Does decreasing alcohol use decrease cancer risk?

- Yes, for head and neck and esophageal cancer
 - Appears to take 20 years
- Unclear for other cancers
 - Especially conflicting for breast cancer risk
 - No effect in BRCA carriers, for example
- Critical area of needed further research

Jarl J, Addiction, 2012. Rehm J, Int J Cancer, 2007. Marron M, Int J Epidemiol 2010. AA Kiadaliri, Plos One 2013, MacDonald, Curr Breast Cancer Rep 2014, Dennis, Breast, 2010, Cybulski, Breast Cancer Res Treat, 2015.

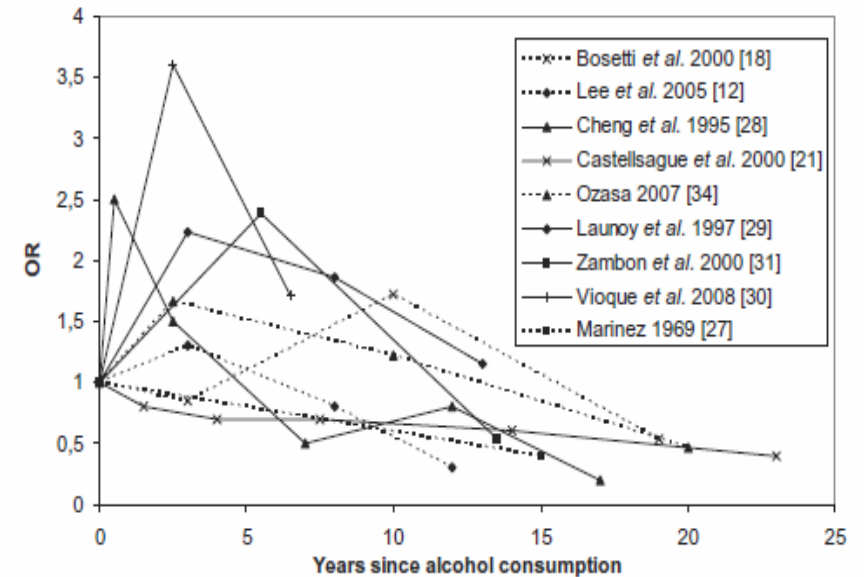
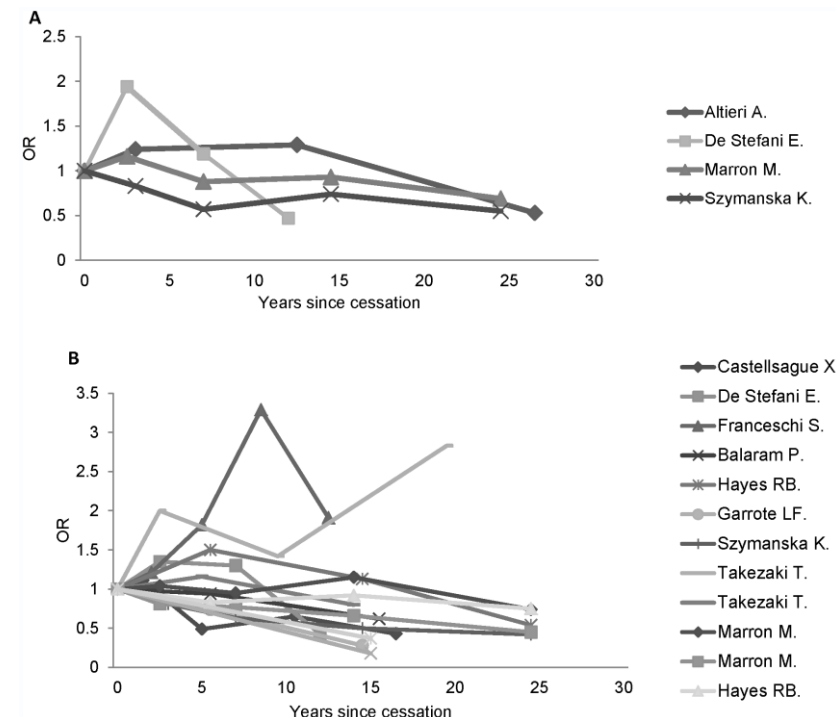


Figure 1 Risk of oesophageal cancer following drinking cessation, studies included in the meta-analysis; OR: odds ratio

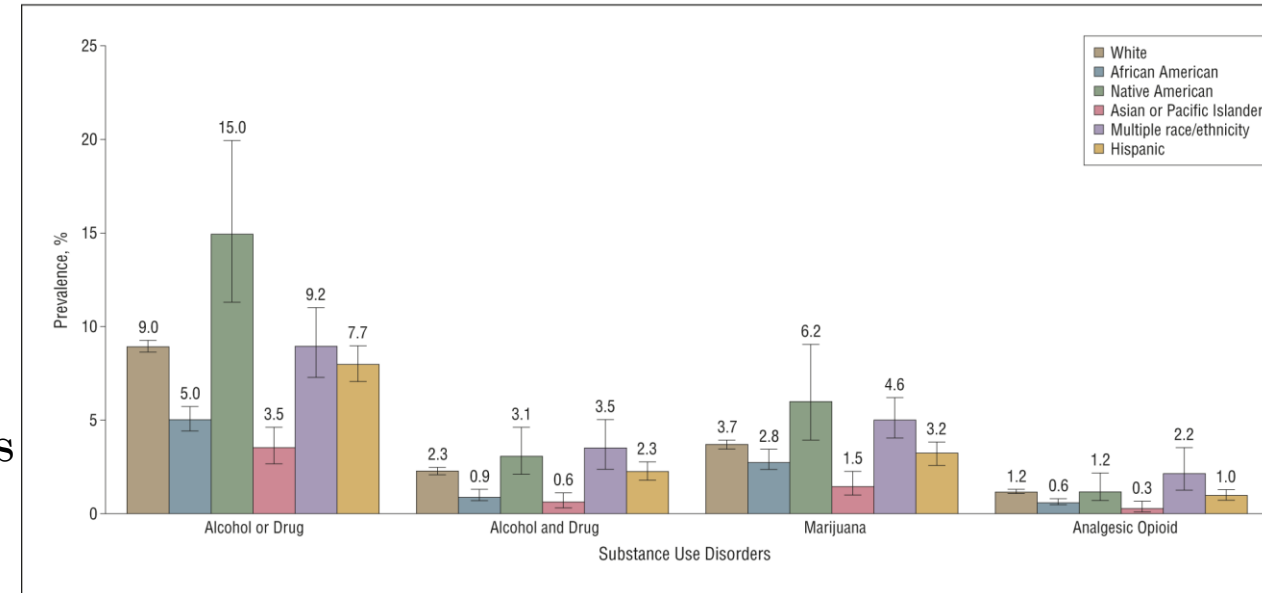


Mechanisms

- Group 1 carcinogen by WHO
- Acetaldehyde direct contact to tissues
 - ALDH2 variants (rs671)*2
- Lower folate concentrations/absorption
- Increased estrogens/androgens
 - “window” theory for younger women
- Cirrhosis

Disparities in alcohol use and cancers

- American Indian and Alaska Natives
 - 12 yo+ binge rate 28%
 - Alcohol plays a role in 11% of AN/AI deaths
- Blacks and Hispanics have higher rates of abstinence, but when either population does drink, more alcohol is consumed and binge rates are higher
 - Both groups may be more sensitive to developing alcohol-related liver disease
 - This needs further research
- Socioeconomic status
 - Higher is worse
- LGBTQI
 - 2-3x higher rates of alcohol use, abuse, alcoholism
- Women less likely to use alcohol treatment services



Effects of drinking on recurrence and mortality

- Increased head and neck cancer mortality, second cancer and recurrence in drinkers
 - Cancer specific mortality among moderate drinkers after diagnosis RR 1.79, heavy drinkers 3.63
 - 3x increased risk of secondary H+N cancer if continue to drink
- Breast cancer unclear effect (see table)
- Area of needed further research

Study	N	Special pop'n	Effect size recurrence
Collab Br Ca Study	22,980	None	0.85
Danish	1,052	>2 drinks/d	1.65
After BrCa Pooling Project	9,329	None	0.83 (NS)
After BrCa Pooling Project	7,027	ER+, postmeno	1.19

How does alcohol affect cancer treatment?

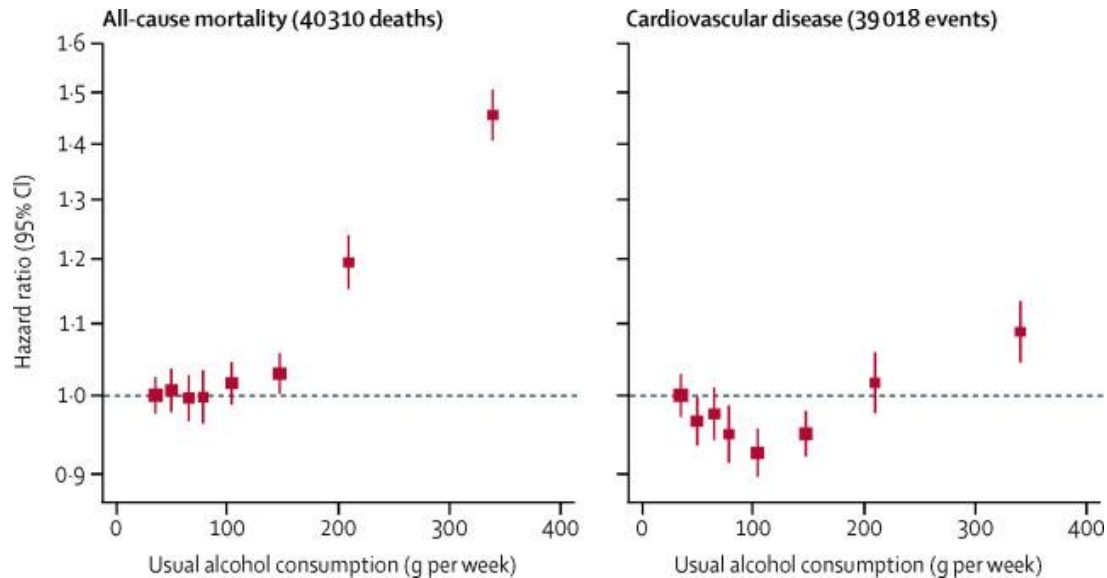
- Increased risk of osteoradionecrosis of the jaw (head and neck cancer)
- Longer hospitalizations
- Increased surgical procedures
- Prolonged recovery
- Higher health care costs
- Higher 30 d mortality after lung cancer surgery (RR 1.99)
- Higher anastomotic complications (colorectal)
- Increased comorbidities from prior alcohol use which increases surgical risk

Barriers

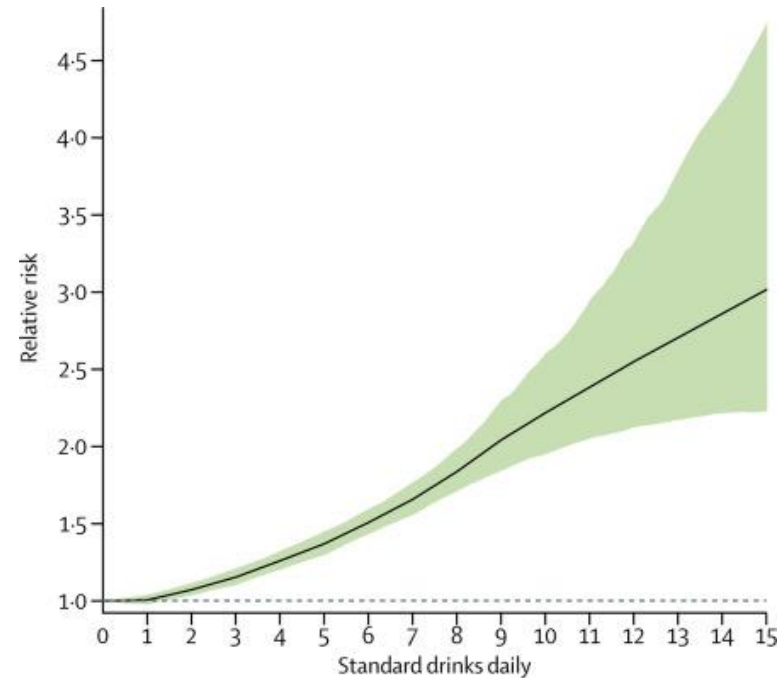
- Low provider knowledge
- Providers that use alcohol are less likely to counsel patients about alcohol
- Burnout strongly associated with alcohol use
- “Heart health” myth continues



No wonder people are confused!



Associations of usual alcohol consumption with all-cause mortality and the aggregate of cardiovascular disease in current drinkers (from Wood 2018)



Weighted relative risk for all attributable causes, by drinks consumed per day (from GBD 2018)

Public health strategies endorsed in ASCO statement to decrease high-risk alcohol consumption

- Clinical strategies of alcohol screening and brief intervention
- Regulate alcohol outlet density
- Increase alcohol taxes and prices
- Enhance enforcement of laws prohibiting sales to minors
- Restrict youth exposure to alcohol advertising
- Resist privatization of retail alcohol sales in communities with current government control
- Include alcohol control strategies in comprehensive cancer control plans

Logical partner: CDC state Comprehensive Cancer Control Programs

A collaborative and strategic approach that brings partners together to combine, share, and coordinate resources to reduce the burden of cancer across the whole continuum from prevention through end of life.

WI Comprehensive Cancer Work

- Action Plan – Increasing awareness of the connection
- Policy Agenda – Supporting environmental approaches to reduce excessive drinking (aligned with ASCO recommendations)

Wisconsin Comprehensive Cancer Control **Plan** **2015-2020**



WI CANCER COUNCIL | wicancer.org

Alcohol & Cancer

You asked. We've answered.

Does alcohol use really cause cancer?

Yes. Alcohol increases your risk for at least sixteen types of cancer:

- > mouth
- > female breast
- > throat
- > liver
- > voice box
- > colorectal
- > esophagus



Alcohol may be a risk factor for other cancers, such as pancreatic, gastric, and lung cancer, but more research is needed.

How much do I need to drink to raise my cancer risk?

Any amount of alcohol—even low levels of drinking—increases your risk for cancer. But the more you drink and the longer you drink, the higher your risk. This is especially true for head and neck cancers.

Is alcohol as important as other cancer risk factors?

Yes. Alcohol use has a greater effect on your cancer risk than occupational hazards, UV radiation, or protective behaviors like physical exercise and breastfeeding (while tobacco use, diet, and obesity are greater risk factors).

Does the type of alcohol I drink matter?

No. The type of alcohol you drink—wine, beer, or liquor—does not matter when it comes to cancer risk.

How exactly does alcohol cause cancer?

Researchers have identified many ways alcohol can cause cancer.

FOR EXAMPLE:

- When alcohol breaks down in your body, the process produces something called acetaldehyde, which is a carcinogen.
- Alcohol can impair your body's ability to break down and absorb certain nutrients associated with cancer risk.
- For women, alcohol can increase your body's levels of estrogen, which has links to breast cancer.

If you smoke and drink, your cancer risk is greater than for people who only smoke or drink.

>> Only 30% of Americans know alcohol use can cause cancer, according to a recent study. In Wisconsin, the damaging effects of drinking can get overlooked in our state's alcohol-friendly environment. The facts can be hard to parse—what does “heavy drinking” mean? How much is a “drink” anyway?

Here you'll find straightforward answers to your questions.

>> For more information:
 Wisconsin Cancer Council
info@wicancer.org
[WiCancer.org](#)
[Facebook.com/WiCancerCouncil](#)
[Twitter.com/WiCancerCouncil](#)

Together, we will reduce the burden of cancer in Wisconsin.

>> Alcohol use contributes to about 3.5% of all cancer deaths and 15% of breast cancer deaths in the U.S.

Did you know? More than 30% of adults in Wisconsin do not drink regularly.

Addressing High-Risk Drinking to Reduce Cancer Burden in Wisconsin

Alcohol has been shown to cause
7 different cancers:

- Mouth & Throat
- Larynx
- Esophagus
- Female Breast
- Liver
- Colorectal

The **MORE**
alcohol a person drinks,
the **HIGHER** their
risk for cancer.

in WISCONSIN

High-risk drinking
is a **PROBLEM**.

Wisconsin ranks **3rd**
nationally in rates of
heavy and binge drinking.

Heavy Drinking for
Women = **8+** Men = **15+**
drinks per week

Binge Drinking for
Women = **4+** Men = **5+**
drinks on one occasion

WE can decrease
alcohol-related
cancers in
Wisconsin.

DECREASE
alcohol
consumption.

DISCOURAGE
underage
drinking

SUPPORT
policies that
discourage high
risk alcohol uses.

ENCOURAGE
healthcare providers
to discuss the health
risks of alcohol use
with patients.

Together...Reducing the burden of CANCER in Wisconsin
wiscancer.org

State Resource:
National Institute for Research on Cancer (NIH) Monographs on the Evaluation of the Carcinogenic Risk of Chemicals: Alcohol, Alcohol Consumption and Acetaldehyde. National Toxicology Program Report No. 609. NTP Tech Rep. NIH Publication (NIH) 10-1056. Available at: <http://www.niehs.nih.gov/research/docs/default-source/monographs/carcinogens/alcohol.pdf>. Accessed April 1, 2015.
American Cancer Society. Alcohol and Cancer. 2010. The American Cancer Society. Available at: http://www.cancer.org/docroot/CCHR/toc.jsp?cid=CCHR_000001. Accessed April 1, 2015.
World Health Organization. Global Status Report on Alcohol and Health. Geneva: World Health Organization; 2014. Available at: http://www.who.int/substance_abuse/publications/global_alcohol_report/en/. Accessed April 1, 2015.

WISCONSIN
Cancer Center
Program



**The more you drink,
the greater your risk.**

Pinkwashing



SUPPORTING BREAST CANCER AWARENESS

CASA DEL MATADOR™

RESTAURANT TEQUILA BAR

Tacos! Tequila! Tatas!

Friday, October 14th | The Village in Meridian
All day food and drink specials and silent auction!

Your support helps to provide mammograms to women in need through the Saint Alphonsus Breast Care Fund

 Saint Alphonsus

Future directions for ASCO

- Annual meeting education session at 2018 annual meeting
- Educational Book manuscript
- Podcasts and video chat
- Participation in alcohol control symposiums

Media attention



▶

3:41

+ QUEUE

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EATING AND HEALTH

Drinking Alcohol Can Raise Cancer Risk. How Much Is Too Much?

June 19, 2018 - 5:01 PM ET
Heard on All Things Considered

ALLISON AUBREY



[nytimes.com](https://www.nytimes.com)

Cancer Doctors Cite Risks of Drinking Alcohol

6-8 minutes

Image



CreditCreditTony Cenicola/The New York Times

The American Society of Clinical Oncology, which represents many of the nation's top cancer doctors, is calling attention to the ties between alcohol and cancer. In a [statement published Tuesday](#) in

Mother Jones

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Alcohol Raises Cancer Risk. Does Quitting Lower It?

The answer is an emphatic "probably."

STEPHANIE MENCIMER MAY 7, 2018 6:00 AM



Alcohol Raises Cancer Risk. Does Quitting Lower It? f



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Alcohol is a carcinogen. As *Mother Jones* reported last month, alcohol-related cancers are estimated to kill about 20,000 Americans every year. That depressing news prompted some readers to announce that they would quit

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How Giving Up Summer Happy Hour Saved My Sanity and My Health



JUNE 19, 2018 4:28 PM
by LIANA SATENSTEIN

MOST



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73 Questions with Lady

VOGUE

FASHION BEAUTY CULTURE LIVING RUNWAY VIDEO VOGUE



Photographed by Wayne Messer, Vogue, March 1989



I never was a big drinker until I was. Sure, I had my high school bad-kid phase when I'd crush four beers once a week in the woods. And in college I did my fair

The Lancet editorial

Editorial

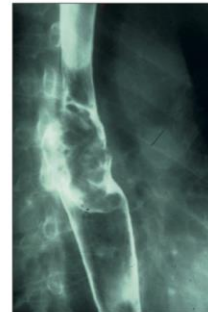
Alcohol and cancer

The Nov 7 publication of *Alcohol and Cancer: a Statement of the American Society of Clinical Oncology* (ASCO) emphasises the prominence of alcohol as a proven cause of many cancers. This view is not novel and comes exactly 30 years after a working group of the International Agency for Research on Cancer determined that alcoholic beverages were carcinogenic to humans. It has been echoed by other cancer societies since then but seemingly ignored by the wider medical community and by society. The influential endorsement by ASCO provides a powerful impetus to act on decades of evidence that alcohol harms health.

Alcohol is causally linked to upper aerodigestive tract cancers (oral cavity, pharynx, larynx, oesophagus) and those of the colon, liver, and female breast. Associations exist for many other types of cancer, but the precise role of alcohol requires further research to be fully disentangled from ecological and lifestyle factors. Historical assertions

Europe is the region of greatest consumption and has the heaviest burden of alcohol-related cancers. One estimate of annual consumption in the UK for 2016 was 12 L of pure alcohol for individuals aged 15 years or older. Populations in eastern Europe drank even more. Beyond cancer, alcohol has widespread and insidious effects throughout the body and mind, leading to profound adverse social consequences. The Global Burden of Disease Study 2016 ranked alcohol as the seventh leading cause for disability-adjusted life-years (4.2%) and death (5.2%). In the UK, where classification of alcohol-specific deaths has been narrowed, there were 7327 registered deaths in 2016, an age-standardised rate of 11.7 per 100 000.

The ASCO statement takes the health consequences of alcohol beyond the dawn of understanding to the full light of day: alcohol is an undeniable menace to health. Yet it is also culturally bound to the behaviours of almost 2 billion people, for whom, in the coming weeks,



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CNRI/Science Photo Library

Alcohol and Cancer: A Statement of the American Society of Clinical Oncology

Overview of attention for article published in Journal of Clinical Oncology, November 2017



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Published in	Journal of Clinical Oncology, November 2017
DOI	10.1200/jco.2017.76.1155 ↗
Pubmed ID	29112463 ↗
Authors	Noelle K. LoConte, Abenaa M. Brewster, Judith S. Kaur, Janette K. Merrill, Anthony J. Alberg
Abstract	Alcohol drinking is an established risk factor for several malignancies, and it is a potentially... [show]

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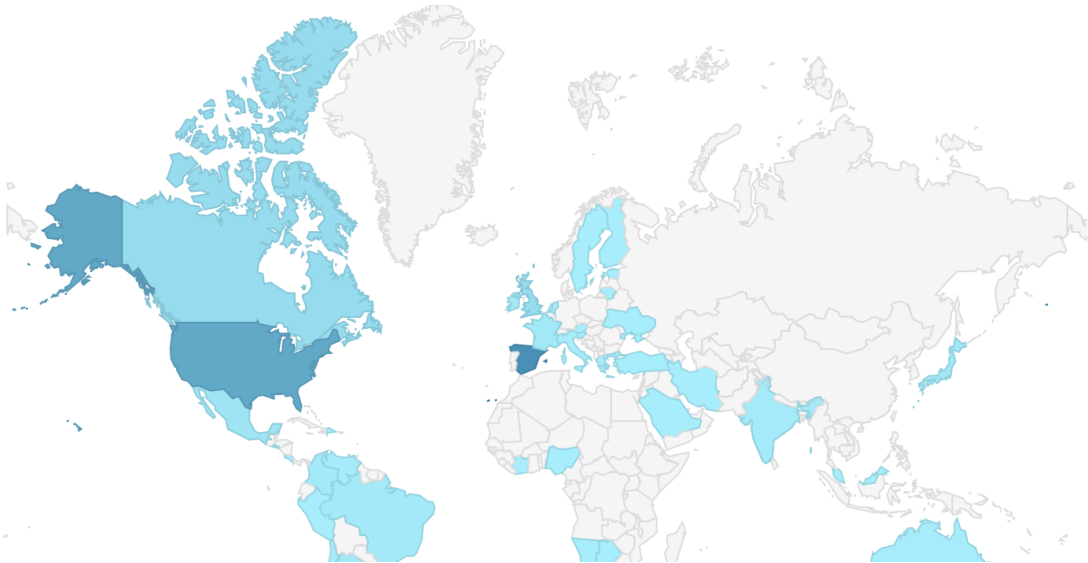
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MENDELEY READERS

ATTENTION SCORE IN CONTEXT

The data shown below were collected from the profiles of **538** tweeters who shared this research output. [Click here to find out more about how the information was compiled.](#)



Take home points

- Talking points
 - Alcohol use increases the risk of at least seven different cancers.
 - Even low levels of drinking can increase cancer risk, but the greatest risk is with heavy, long-term use.
 - Policy strategies that are shown to reduce excessive drinking – heavy, underage, and binge drinking - have the potential to decrease the burden of cancer across Wisconsin.
 - To reduce your cancer risk, drink less. If you do not drink, do not start.
- There is a hunger out there to discuss this issue – let's capitalize on that. But let's also be consistent in our messaging

Areas of suggested future research

- How does decreasing alcohol use affect future cancer risk?
- Evaluate increased sensitivities to alcohol-related liver disease from alcohol in Black and Hispanic populations.
- What effect does continuing to drink have on cancer and cancer recurrence, especially for non-head and neck cancers?
- What effect does drinking have on cancer care delivery (chemotherapy dose intensity, side effects, radiation side effects and effectiveness)?

Thank you!

Online resources:

- Patient facing podcasts at Cancer.Net <https://www.cancer.net/blog/2017-11/did-you-know-drinking-alcohol-increases-cancer-risk>
 - Second one coming soon
 - Video coming soon
- ASCO Educational Book manuscript (freely available) http://ascopubs.org/doi/full/10.1200/EDBK_200093
- Sample FAQ: https://wicancer.org/wp-content/uploads/Alcohol-and-Cancer-FAQ_design_FINAL.pdf
- Good “Science Friday” podcast about alcohol and cancer and the complexities of doing trials in this space: <https://www.sciencefriday.com/segments/will-we-ever-know-how-moderate-drinking-affects-our-health/>