Cancer & Excessive Alcohol Use

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What Am I Going to Talk About Today?

- Alcohol
- Alcohol and Cancer
- What Can We Do?
Modifiable behavioral risk factors are leading causes of actual mortality in the United States.

Excessive alcohol consumption is the third leading actual cause of death in the U.S.

In 2006-2010, New Mexico had the highest alcohol-attributable death rate in the nation.

Mokdad AH, JAMA, 2004; Stahre M., Prev Chronic Dis, 2014. Actual causes of death include smoking, physical activity and nutrition, and alcohol
New Mexico Leads the Nation in Alcohol-Attributable Death

Average annual alcohol-attributable death rate* by state, United States, 2006-2010

New Mexico: 51.2

U.S. total: 27.9

*Deaths per 100,000 population, age-adjusted to the 2000 U.S. standard population

Stahre M., Prev Chronic Dis, 2014
Excessive Alcohol Consumption as a Public Health Concern

- An average of four people die of alcohol-attributable causes per day in New Mexico
- The alcohol-attributable death rate increased 46% in New Mexico from 1999 to 2016
Excessive Alcohol Consumption as a Public Health Concern

- New Mexico has one of the highest per capita costs of excessive alcohol use
- $2.2 billion ($2.77 per drink or an average of $1,084 per person) in 2010
- 41% of these costs were paid by government
- 75% of these costs are from binge drinking

Excessive Alcohol Consumption Definitions

- **Binge drinking**
  - ≥ 4 drinks per occasion for women or ≥ 5 drinks per occasion for men

- **Heavy drinking**
  - Defined as consuming ≥ 8 drinks per week for women or ≥ 15 drinks per week for men

- **Any consumption by pregnant women or people younger than age 21**

www.cdc.gov/alcohol/fact-sheets/alcohol-use.htm
Drinking alcohol is one of the most common modifiable risk factors for cancer.

- 49% of adults drink alcohol
- 15% of adults are binge drinkers
- 6% of adults are heavy drinkers
Alcohol Use among New Mexico Youth

- 26.1% of high school youth drink alcohol
- 20.1% of high school youth regularly drank alcohol before age 13
- 14.6% of high school youth report binge drinking
  - 5 or more drinks on an occasion
Dietary Guidelines for Americans: Alcohol Use

If you choose to drink, do so in moderation:

**FOR WOMEN**, up to 1 drink a day

**FOR MEN**, up to 2 drinks a day

**DON'T DRINK AT ALL** if you are under the age of 21, or if you are or may be pregnant, or have health problems that could be made worse by drinking.

**NO ONE** should begin drinking or drink more frequently based on potential health benefits.
Definition of A Standard Drink

What is a “standard drink” in the US?

12 ounces of beer
5% Alcohol

8 ounces of malt liquor
7% Alcohol

5 ounces of wine
12% Alcohol

1.5 ounces of distilled spirits
40% alcohol (80 proof)
e.g., vodka, whiskey, gin, rum

SOURCE: National Institute for Alcohol Abuse and Alcoholism.
Alcohol & Cancer
Expert Reports

- International Agency for Research on Cancer (IARC)
- World Cancer Research Fund (WCRF)/American Institute of Cancer Research (AICR)
  - Continuous Update Project
- In 2015, Roswall et al. reviewed the two most recent reports

IARC has classified ethanol and acetaldehyde (ethanol metabolite) as “group 1 carcinogens”
- Highest level of evidence for a carcinogenic effect in both humans and animals
- Mechanisms include:
  - Direct effect on the cells in which conversion to acetaldehyde occurs (liver cells, saliva, large intestine)
Alcohol as a Carcinogen

Mechanisms continued:

- Promotes production of reactive oxygen species and can alter DNA methylation
- Has hormonal effects, including increasing estradiol levels
- Facilitates uptake of other carcinogens (e.g. from tobacco)
- May propel existing cancers through immunosuppression and angiogenesis, and decrease the effect of chemotherapeutics

Roswall N., JPMPH, 2015
Alcohol use increases the risk of cancer:

- Oral cavity, pharynx & larynx
- Esophagus
- Breast
- Liver*
- Colon & rectum*

An average of 20 cancer deaths per year in New Mexico are considered alcohol-attributable.

*IARC classified the research for liver and CRC as convincing, WCRF/AICR classified the research for liver and CRC in women as probable (men as convincing)
Cancer Risk Increases with Each Drink

Adapted from Table 1, Parkin DM, Br J Cancer 2011
Oral Cavity, Pharynx & Larynx

- 25% increase in risk for each drink consumed per week
- People with relatively high intakes (>60 g/day) have approximately 3x the risk of developing cancer compared to non-drinkers
  - Especially for women
- After alcohol cessation, the time until normalization of the risk is more than 10 years
- IARC and WCRF/AICR:
  - Causal relationship
  - Dose-dependent
  - No lower threshold

Roswall N., JPMPH, 2015
Association with alcohol is primarily for squamous cell carcinoma

4% increase in risk for each drink consumed per week
  - Meta-analysis of 20 case-control studies

Recent studies have consistently found a 3-8 fold increased risk with a high alcohol intake

There may be a cumulative lifetime effect
  - Higher risk with a longer duration of drinking or an earlier age of alcohol initiation

After cessation, risk begins to decrease after 5 years, and approaches the risk of non-drinkers after 15 years

Synergistic interaction with tobacco smoking
Breast Cancer

- 7–10% increase in risk for each drink consumed per day for adult women
- The risk of breast cancer is increased by 4–15% for light alcohol consumption
  - ≤1 drink/day or ≤12.5 g/day
- Menarche to first pregnancy represents a window of time when breast tissue is particularly susceptible to carcinogens
- Approximately 4–10% of breast cancers are attributable to alcohol consumption
  - 9,000–23,000 new invasive breast cancer cases each year in the US

Liu Y., Women's Health (Lond). 2015
Liver Cancer

- 10% increase in risk for each drink consumed per day
- Many studies are conducted with participants who already have cirrhosis or other liver diseases
  - Most alcohol-related liver cancers develop following cirrhosis
  - Patients diagnosed with liver disease often have a marked reduction in alcohol intake
- WCRF/AICR: probably causally related, IARC: causally related
Colon & Rectum Cancer

- 10% increase in risk of colorectal and rectal cancer and an 8% increased risk of colon cancer for each drink consumed per day
  - Stronger effect for men (11% increased risk) than women (7% increased risk)
- The risk increases dose-dependently
  - Some studies found an effect only above two drinks per day, other studies found an effect above 1 drink per day
- WCRF/AICR concluded that there was sufficient for men, but probable for women
What Can We Do?
More than half of adults in the United States drink alcohol. Alcohol use increases the risk of several cancers, including female breast cancer. There are evidence-based community strategies that work to reduce excessive alcohol use. This publication provides information about alcohol use among young people and adults and potential strategies for reducing excessive alcohol use in your community.
What Can Cancer Control Programs Do?

- Collect and analyze data
- Identify and engage potential partners
- Measure your effects
Collect and Analyze Data

- Review CDC’s Prevention Status Reports
- Conduct environmental scan to identify any additional alcohol-related laws in your area.
- Track statistics on excessive alcohol use
  - BRFSS, YRRS
  - Cancer registry data on female breast, liver, colon, rectum, mouth, pharynx, larynx, and esophagus cancers
- Consider a special survey
- Ask your local friendly alcohol epidemiologist!

www.cdc.gov/cancer/dcpc/prevention/policies_practices/alcohol/what_cccp_can_do.htm
Identify and Engage Potential Partners

- Educate cancer coalition members and the public on excessive alcohol use and related harms
- Identify potential partners at local and national levels
  - Santa Fe Prevention Alliance, Taos Alive, Health Councils, and DWI Councils
- Disseminate information on evidence-based prevention strategies
  - Community Guide
- Ensure that health promotion activities are supportive of reducing excessive alcohol use

www.cdc.gov/cancer/dcpc/prevention/policies_practices/alcohol/what_cccp_can_do.htm
Develop and implement an evaluation plan that measures the effect of efforts to reduce excessive alcohol use

- CDC’s Comprehensive Cancer Control Branch Program Evaluation Toolkit
- Surveillance systems already in place can be used to monitor changes in key excessive alcohol use indicators over time
  - E.g. BRFSS and YRRS
  - Library of Indicators (LiDS)

www.cdc.gov/cancer/dcpc/prevention/policies_practices/alcohol/what_cccp_can_do.htm
Assessed the extent to which alcohol control efforts, in the context of cancer prevention, are being implemented in comprehensive cancer control plans.

- 69 states, tribes, and jurisdictions
- Cancer Control P.L.A.N.E.T. website

Henley SJ, Alcohol and Alcoholism, 2014
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<tr>
<th>Content</th>
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<tbody>
<tr>
<td>Plan acknowledges alcohol use as a cancer risk factor</td>
<td>50</td>
<td>72</td>
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<tr>
<td>At least one goal, objective, or strategy addresses alcohol use as a cancer risk factor (including any of the below)</td>
<td>31</td>
<td>45</td>
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<tr>
<td>Raise public awareness of cancer risk associated with alcohol use</td>
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<td>Educate individuals about cancer risk associated with alcohol use</td>
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<td>Reduce prevalence of excessive alcohol use:</td>
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<td>Measurable</td>
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<td>Non-measurable</td>
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<td>Partner with health care providers to promote awareness among their patients</td>
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<tr>
<td>Collaborate with other organizations</td>
<td>12</td>
<td>17</td>
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Henley SJ, Alcohol and Alcoholism, 2014
How Comprehensive Cancer Control Plans Addressed Alcohol Control

*Henley SJ, Alcohol and Alcoholism, 2014*
The Social-Ecological Model

- Societal
- Community
- Relationship
- Individual

www.cdc.gov
Community Preventive Services Task Force Findings for Excessive Alcohol Consumption

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<th>Interventions Directed to the General Population</th>
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<td>Dram Shop Liability</td>
<td>Recommended</td>
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<td>Electronic Screening and Brief Intervention (e-SBI)</td>
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<tr>
<td>Increasing Alcohol Taxes</td>
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<td>Maintaining Limits on Days of Sale</td>
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<tr>
<td>Maintaining Limits on Hours of Sale</td>
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<tr>
<td>Over-service Law Enforcement Initiatives</td>
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<tr>
<td>Privatization of Retail Alcohol Sales</td>
<td>Recommended Against</td>
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<tr>
<td>Regulation of Alcohol Outlet Density</td>
<td>Recommended</td>
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<td>Responsible Beverage Service Training</td>
<td>Insufficient Evidence</td>
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<th>Interventions Directed to Underage Drinkers</th>
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<tr>
<td>Enhanced Enforcement of Laws Prohibiting Sales to Minors</td>
<td>Recommended</td>
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Alcohol Screening and Brief Intervention (A-SBI)

- A-SBI can reduce the amount consumed on an occasion by 25% in those who drink too much.
- United States Preventive Service Task Force B recommendation.
- Recommendation: Screen all adult patients.
- 29% of adults in New Mexico reported that they had not been asked about the amount of alcohol they drink in the previous 12 months.
  - 20% of binge drinkers had not been asked.

NMBRFSS 2015; CDC Vital Signs, January 2014
Regulating Alcohol Outlet Density

- “The number of physical locations in which alcoholic beverages are available for purchase either per area or per population.” – Community Guide
- Density influences how drinkers congregate
  - Consumers can become more aggressive or encourage others to drink
- CDC has developed a “Guide for Measuring Alcohol Outlet Density” to assist communities

Regulating Alcohol Outlet Density

- Alcohol outlet density is associated with: underage drinking, violent crime, child abuse and neglect, suicide, and road traffic injuries

- For example:
  - Gruenewald PJ et al. reported that every six outlets accounted for one additional violent assault that resulted in at least one overnight stay at hospital in CA
  - Zhang et al. reported that a modest reduction in alcohol outlet density can substantially reduce exposure to violent crime in neighborhoods with high density of alcohol outlets

ALCOHOL USE IN NEW MEXICO

New Mexico has the HIGHEST alcohol-related death rate IN THE NATION. New Mexico’s alcohol-related death rate is 1.6 times the national average. In 2015, 1,296 people died due to alcohol-related deaths in New Mexico.

1 in 6 drivers involved in fatal crashes has a BAC ≥0.08%

10% of school students in New Mexico drink alcohol on a regular basis.

The most common cause of alcohol-related deaths in New Mexico is alcohol-related traffic crashes.

In 2015, New Mexico’s alcohol-related crashes increased by 33.8%.

WHAT IS EXCESSIVE DRINKING?

HEAVY DRINKING

BINGE DRINKING

WOMEN: Consuming 8 or more drinks per week

NEW: Consuming 15 or more drinks per week

WOMEN: Consuming 7 or more drinks in a single sitting

NEW: Consuming 5 or more drinks in a single sitting

Drinking leads to increases in the cost of injury.

In New Mexico, an average of 17,000 binge-drinkers engage in binge drinking per year.

5% of adults are binge drinkers.

90% of alcohol-related deaths by binge drinking in New Mexico are by men.

Only 1 in 10 binge drinkers are women.

On average, binge drinkers report 4 times per month consuming an average of 8 drinks per session.

ADOLESCENTS: Excessive alcohol use and binge drinking is linked to a wide range of serious health concerns.

- Impaired judgment
- Increased risk of accidents
- Disabilities

Health risks can increase with more drinking.

70% of alcohol-related deaths are preventable.

2 in 10 drivers in New Mexico have a BAC ≥0.08% at the time of a crash.
ALCOHOL OUTLET DENSITY

An alcohol outlet is a place where alcohol may be legally sold for the buyer to drink there (on-premises outlets, such as bars or restaurants) or elsewhere (off-premises outlets, such as liquor stores).

Density refers to the number of alcohol outlets in a given area.

EXCESSIVE ALCOHOL CONSUMPTION

Individuals living in areas with high concentrations of liquor stores and low concentrations of other retail outlets are 46% more likely to binge drink.

A large number of New Mexico counties are at least 100% or more over the liquor license quota per every 1,000 population.

More liquor licenses equals an increase in alcohol outlet density.

Regulation of alcohol outlet density is a recommended strategy at preventing excessive alcohol consumption.

GREATER ALCOHOL DENSITY IS ASSOCIATED WITH...

- Increased rates of child abuse
- Increased rates of child neglect
- Increased rates of traffic crashes

MOTOR VEHICLE ACCIDENTS

New Mexico counties with the greatest number of alcohol outlets per 1000 population have 0% higher alcohol-related crash rates compared to counties with the lowest alcohol outlets per 1000 population.

NEIGHBORHOOD OUTCOMES

New Mexico counties also have twice the related crash fatality rate.

UNDERAGE DRINKING

Adolescents living in environments with greater alcohol outlet density are more likely to drink frequently compared to adolescents living in environments with less alcohol outlet density.

STRATEGIES

New Mexico Alcohol Outlet Density Workgroup forms by reducing the number of establishments permitted.

WHY CARE ABOUT ALCOHOL OUTLET DENSITY?

MENTAL HEALTH

New Mexico counties with the greatest number of alcohol outlets per 1000 population have 50% higher alcohol-related suicide rates compared to counties with the lowest alcohol outlets per 1000 population.

INTIMATE PARTNER VIOLENCE

A one unit increase in the number of off-premise alcohol outlets is associated with a 4% increase in calls to police related to intimate partner violence and a 3% increase in crime reports related to intimate partner violence.
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Thank you!

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