

Cancer Council Update 2009



Cancer - another reason to think again about alcohol

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Preventing Harmful Drug Use in Australia



Cancer – another reason to think again about alcohol

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Plan

How many cancers world-wide are attributable to alcohol?

Which cancers?

What's the mechanism?

New estimates of Australian alcohol attributable cancer deaths

Latest evidence for alcohol and prostate cancer

A cautionary word on 'protective' effects of alcohol



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Alcohol-attributable cancers around the world (Boffetta et al 2006)

- Worldwide in 2002, an estimated 3.6% of all cancers were attributable to alcohol (389,100 cases: 5.2% in men, 1.7% in women) and
- 3.5% of all cancer deaths (232,900)

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- Includes estimated relative risks derived from meta-analyses (Corrao et al 2004) for cancers of the:
 - oral cavity,
 - pharynx,
 - larynx,
 - esophagus,
 - liver,
 - colon,
 - rectum, and
 - female breast (pre- and post-menopausal)

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Globally:

- Among **women**, breast cancer comprised 60% of alcohol-attributable cancers
- Among **men**, more than 60% of all alcohol-associated cancers were from the upper digestive tract (oral cavity, pharynx and oesophagus)

Mechanisms

- Alcohol first listed by the World Health Organisation as a known human carcinogen in 1988
- Epidemiology provides limited insight into *how* alcohol increases the risk for various cancers
- For some cancers, such as mouth, throat and esophageal, alcohol may play a direct causal role (acetaldehyde)
- For other cancers such as liver and breast, alcohol may play an indirect role by enhancing mechanisms that may cause cancer (eg plasma hormone levels).

Mechanisms

- **Activation of carcinogenic metabolites:** Acetaldehyde, a product of alcohol metabolism, impairs a cell's natural ability to repair its DNA, resulting in a greater likelihood that mutations causing cancer initiation will occur
- **Co-carcinogenic and synergistic effects:** enhancing the carcinogenic effects of other chemicals. E.g. the combined effect of alcohol and smoking is many times greater than risk of smoking or drinking alone

Mechanisms

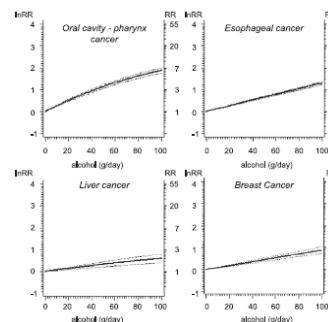
- **Negative effect on nutrition:** chronic alcohol abuse may result in abnormalities in the way the body processes nutrients and promote some cancers. Reduced levels of iron, zinc, vitamin E & A, and some of the B vitamins, common in heavy drinkers, have been associated with some cancers
- **Suppression of immune response.** Alcoholism has been associated with suppression of the human immune system
- **Influence levels of plasma sex hormones** (e.g. breast cancer)

Risk at any level

The evidence tells us that:

- There is no level of alcohol consumption at which there is zero risk for cancer
- Cancer risk increases as alcohol consumption increases

Relative risk functions showing dose-response relationship between alcohol consumption and selected cancers: Corrao et al (2004)



Australian cancer deaths attributable to low and risky/high risk drinking, 2006

Australian standard drink

1 standard drink = 10 grams of alcohol

The Australian standard drink



The Australian standard drink



NHMRC drinking guidelines for long-term/lifetime risk, 2001 vs 2009

	NHMRC 2001		NHMRC 2009
	Low risk drinking	Risky/high risk drinking	No more than 2 per day for lifetime risk under 1 in 100
Males (daily)	1-4	5+	
Females (daily)	1-2	3+	

Guidelines from other countries

	Males	Females
Australia	20g/day	20g/day
Canada	13.6g/day	13.6g/day
USA	28g/day	14g/day
New Zealand	30g/day	20g/day
Sweden	20g/day	20g/day
UK	24g/day	16g/day
Scottish executive	32g/day	24g/day
Ireland	30g/day	20g/day
France	30g/day	30g/day
Italy	40g/day	40g/day

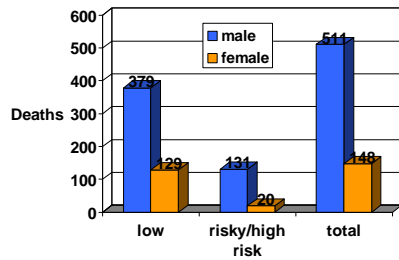
Cancer Council 2007-09 recommends:

- For men—an average of no more than two standard drinks a day
- For women—an average of no more than one standard drink a day

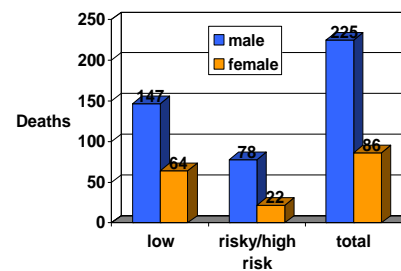
National prevalence of drinking by risk of harm in the long-term (Source: AIHW 2005 [2004 NDSHS])

	Low M:1-4 F:1-2	Risky/high risk M: > 4 F: > 2
Male	75.2 (61.2)	10.3
Female	69.2	9.7

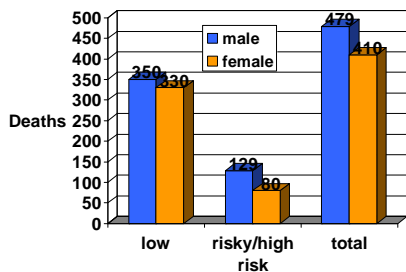
Number of oropharyngeal, oesophageal and laryngeal cancer deaths (n=1760) attributable to alcohol by level of drinking (n=659, 37%), 2006



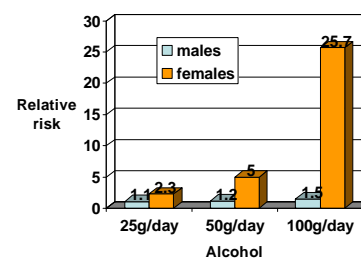
Number of liver cancer deaths (n=1024) attributable to alcohol (n=311, 30%) by level of drinking, 2006



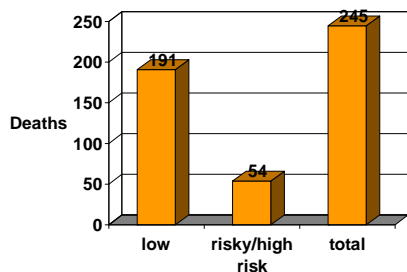
Number of rectal and colon cancer deaths (n=3615) attributable to alcohol (n=889, 25%) by level of drinking, 2006



Relative risk for rectum cancer (3 studies combined), males and females (Corrao et al 1999)



Number of female breast cancer deaths (n=2505) attributable to alcohol (n=245, 10%) by level of drinking, 2006



National count: Cancer and alcohol in 2006

- 1215 preventable male deaths – 30% of known alcohol-related cancers
- 890 preventable female deaths – 18% of known alcohol-related cancers
- Under-estimated

Alcohol-attributable deaths in WA, 2006

	Male	Female	Total
oropharyngeal, oesophageal, laryngeal	15	16	66
liver	18	8	26
colon and rectal	33	38	71
female breast	-	22	22
Total	101	84	184

Alcohol and Prostate Cancer

Prostate Cancer

Prostate Cancer Foundation of Australia

<http://www.prostate.org.au/articleLive/pages/Prostate-Cancer-Statistics.html>

- Prostate cancer is the most common cancer in Australian men and is the second most common cause of cancer *deaths* in men (13%, second to lung cancer 22%)
- Likelihood of a diagnosis of prostate cancer:
 - For a man in his 40s - 1 in 1000
 - For a man in his 50s - 12 in 1000
 - For a man in his 60s - 45 in 1000
 - For a man in his 70s - 80 in 1000
- About 3000 Australian men die of prostate cancer each year

Alcohol and prostate cancer

- Age, family history and race appear to be risk factors but little is known about potentially modifiable risk factors (e.g. smoking, poor diet)
- Rates differ across nations and men moving to another country tend to take on the rate of their adoptive country
- This suggests that environmental factors play a role in the disease

Alcohol and prostate cancer

- Most past meta-analyses concluded results from studies too mixed to confirm causality

Alcohol and prostate cancer: new meta-analysis

(Fillmore, Chikritzhs, Stockwell, Pascal and Bostrum, 2009)

- Global in scope, included all studies published in or before 2006
- Examined effect of alcohol consumption on likelihood of being diagnosed with prostate cancer

Prostate Cancer meta-analysis results

- Men who drink more than 2.5 standard drinks a day at age 60 or younger are about 20 per cent more likely to develop prostate cancer than men who don't drink



New cohort study: Gong et al 2009

- Investigated link between alcohol and risks of low-grade (least dangerous, non-aggressive, slow growing ie Gleason scale 4 or less) and high-grade prostate cancer (fast growing, aggressive 8+)
- More than 10,000 men
- Men who drank 5 drinks per day or more were twice as likely to be diagnosed with high-grade prostate cancer than men who did not drink
- The drug Finasteride (may reduce risk by up to 25%, 'Proscar') was ineffective among men who drank more than 5 drinks per day
- In sum, heavy, daily drinking increases the risk of high-grade prostate cancer and made Finasteride ineffective for reducing prostate cancer risk

How many men?

- About 3000 men die each year from prostate cancer in Australia
- Assuming the relationship between alcohol use and prostate cancer is 'causal':
 - An estimated 150 to 320 deaths were due to drinking in 2006

A cautionary word on apparent protective effects of alcohol on coronary heart disease

True or false? "Middle-aged moderate drinkers have lower levels of heart disease than non-drinkers"

True or false? “Moderate drinkers have lower levels of heart disease than non-drinkers”

- The size of apparent cardio-protective effects of alcohol has been grossly over-estimated due to problems with study design and confounding (eg Fillmore et al 2006)
- The problem: studies that mix up ex-drinkers with true non-drinkers
- Known as ‘misclassification error’

True or false? “Moderate drinkers have lower levels of heart disease than non-drinkers”

- Since 2006, international doubt over cardio-protective effects of alcohol has increased and there is growing disagreement regarding existence of protective effects in the scientific literature

True or false? “Moderate drinkers have lower levels of heart disease than non-drinkers”

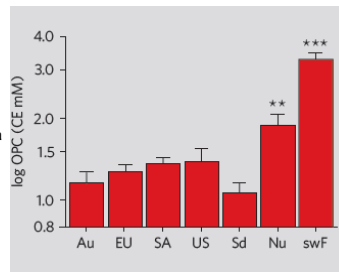
- The 2007 World Health Organization’s expert committee on the prevention of cardiovascular disease, states: “from both the public health and clinical viewpoints, there is no merit in promoting alcohol consumption as a preventive strategy.”
- The 2009 NHMRC guidelines have taken growing doubt over protective effects into consideration

True or false? “Moderate drinkers have lower levels of heart disease than non-drinkers”

- Potential antioxidant properties of red wine are probably counterbalanced by the pro-oxidant effects of alcohol (Acetaldehyde)
- On average, Australian red wine has negligible levels of vasoactive procyanidins (chemicals that increase blood vessel dilation and suppress constriction) and negligible effect on inhibiting vasoconstriction (Corder et al 2006).

Ability of red wines to inhibit constriction of blood vessels by region (Corder et al 2006)

Au: Australia
EU: France, Greece, Italy
Spain
SA: South America
US: United States
Sd: Sardinia
Nu: Nuoro province, Sardinia
swF: southwest France.



Moderate drinking is probably a marker for good health among middle-aged and older people, not a cause of it

Thankyou

daffodil day
Cancer Council

**Friday 28 August
2009**

for more information call
Cancer Council Helpline 13 11 20

