Strategies to reduce alcohol-related harm

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Speakers

- Professor Jennie Connor
  ~ Chair and Head of Preventive & Social Medicine, University of Otago, Dunedin

- A/Professor Tim McCreanor
  ~ SHORE & Whāriki Research Centre, Massey University, Auckland

- Dr Derek Bell
  ~ Public Health South, Southern District Health Board, Queenstown

- Audience?
Programme

1. The range and magnitude of alcohol-related harm in NZ – JC (20 min)
2. Useful concepts in prevention of alcohol-related harm – KK (10 min)
3. Social media as a vector of alcohol consumption – TM (20 min)

Break

4. Evidence for countermeasures – KK (10 min)
5. A Public health practitioner’s perspective – DB (20 min)
6. Methods in alcohol policy research – JC and KK (20 min)
2. Useful concepts

- High risk and population approaches
- Supply side and demand side strategies

*High-risk* approaches: protect susceptible individuals (interventions applied to people who drink at risky levels)

*Population* approaches: control the causes of incidence (interventions applied to the entire population)

Not usually in competition. The priority should be to discover and control the causes

Note industry and government orientations
Population distribution of weekly alcohol consumption – Scotland

(10 g ethanol = 1 NZ/Aust standard drink)

Strategy Considerations
1. Dose response
   a) Is there a safe level?
   b) Are there benefits of low level consumption?
2. Change the shape of and/or move the entire distribution
3. Chronic vs acute risks
4. What works

# Taxonomy of alcohol harm countermeasures

<table>
<thead>
<tr>
<th>Population Policies and interventions applied to whole populations without regard to individual risk</th>
<th>High Risk Policies and interventions applied only to risky drinkers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Supply-side</strong></td>
<td></td>
</tr>
<tr>
<td>Restrict supply without modifying person’s desire to drink</td>
<td></td>
</tr>
<tr>
<td>Hours, days, and locations of sale</td>
<td>Inpatient treatment</td>
</tr>
<tr>
<td>Number and density of outlets</td>
<td>Imprisonment</td>
</tr>
<tr>
<td>Minimum purchase/drinking age of 19, 20, or 21</td>
<td>Drinker bans</td>
</tr>
<tr>
<td>Alcohol service laws (intoxication)</td>
<td>Detoxification</td>
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<tr>
<td>Secondary supply laws</td>
<td></td>
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<tr>
<td>Parent education about child drinking risk</td>
<td></td>
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<tr>
<td>Taxes on alcohol products</td>
<td>Rationing</td>
</tr>
<tr>
<td>Minimum Unit Price</td>
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<tr>
<td><strong>Demand-side</strong></td>
<td></td>
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<tr>
<td>Restrict a person’s desire to drink (at least temporarily) – consider DDR laws</td>
<td></td>
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<tr>
<td>Drink-driving laws and enforcement</td>
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<tr>
<td>Restrictions on alcohol advertising</td>
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<tr>
<td>Public health messaging</td>
<td>Psychological treatment</td>
</tr>
<tr>
<td>School based education</td>
<td>Brief intervention</td>
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<tr>
<td></td>
<td>Pharmacotherapy</td>
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<td></td>
<td>Mutual help/self-help</td>
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</table>
Evidence for countermeasures
Ratings of 42 Policy-relevant Prevention Strategies and Interventions

1) Evidence of Effectiveness\textsuperscript{a} – the quality of scientific information

2) Breadth of Research Support\textsuperscript{a} – quantity and consistency of the evidence

3) Tested Across Cultures\textsuperscript{a}, e.g. countries, regions, subgroups

4) Cost to Implement and Sustain\textsuperscript{b} – monetary and other costs

\textsuperscript{a} Rating Scale: 0, +, ++, +++, (?)

\textsuperscript{b} Rating Scale: Low, Moderate, High
### 4. Evidence

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<tr>
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<th><strong>High Risk</strong></th>
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<tbody>
<tr>
<td><strong>Supply-side</strong></td>
<td>Policies and interventions applied to whole populations without regard to individual risk</td>
<td>Policies and interventions applied only to risky drinkers</td>
</tr>
<tr>
<td>Physical</td>
<td>Hours, days, and locations of sale (++)</td>
<td>Inpatient treatment (+++)</td>
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<tr>
<td></td>
<td>Number and density of outlets (++)</td>
<td>Imprisonment (?)</td>
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<tr>
<td></td>
<td>Minimum purchase/drinking age &gt;18 (+++)</td>
<td>Drinker bans (?)</td>
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<tr>
<td></td>
<td>Alcohol service laws (++)</td>
<td>Detoxification (+++)</td>
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<tr>
<td></td>
<td>Secondary supply laws (?)</td>
<td>Regulation of physical and economic availability</td>
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<tr>
<td></td>
<td>Parent education (?)</td>
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<tr>
<td><strong>Economic</strong></td>
<td>Taxes on alcohol products (+++</td>
<td>Rationing (++)</td>
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<tr>
<td></td>
<td>Minimum Unit Price (?)</td>
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<td><strong>Demand-side</strong></td>
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<tr>
<td>Regulated</td>
<td>Drink-driving laws and enforcement (+++</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Restrictions on alcohol advertising (+/++)</td>
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<tr>
<td>Voluntary</td>
<td>Public health messaging (0)</td>
<td>Psychological treatment (++)</td>
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<tr>
<td></td>
<td>School based education (0)</td>
<td>Brief intervention (+++)</td>
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<td>Pharmacotherapy (+)</td>
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**Notes:**
- (+) Effectiveness varies with context.
- (+++) Highly effective.
- (++++) Very high effectiveness.
- (+/-++) Mixed effectiveness.
- (?) Unclear effectiveness.
- (0) No effect.

**Population Evidence:**
- High-risk drinkers are a very small segment of the population, often hard to sustain.
- Physical availability and inpatient treatment are highly effective.

**High-Risk Evidence:**
- Regulation of physical and economic availability is highly effective.
- Drink-driving regulation is highly effective.
- Public health messaging and school-based education are ineffective.
- Psychological treatment and brief intervention are effective.
- Pharmacotherapy is somewhat effective.
- Mutual help/self-help is effective.
6c. Methods

6. Methods in alcohol policy research

Cook TD and Campbell DT (1979) *Quasi-experimentation: design & analysis issues for field settings*. Chicago: Rand McNally

“The experimenting society will be one which will vigorously try out proposed solutions to recurrent problems, which will make hard-headed and multidimensional evaluations of the outcomes and which will move on to try other alternatives when evaluation shows one reform to have been ineffective or harmful” (p.268)
Main designs
(many variations on these)

• **Interrupted Time Series:** A large series of observations made on the same variable consecutively over time – test change in level and/or slope

• **Controlled Before and After:** fewer observations before and after an intervention with one or more control series – test difference in change between groups
ITT: change in level (a) and change in slope (b)
CBA - Example 1:

New Zealand legislature reduces the alcohol minimum purchase age
The New Zealand Law Change

- Pursuit of a *café culture*

- July 1999, a conscience vote: 59-54

- Minimum purchase age changed from a ‘soft’ 20 to a ‘hard’ 18

- No requirement to check ID, no additional police resources for enforcement

- Came into effect on 1 December 1999; no provision for evaluation
Aims

- Estimate effects on the target age group (18-19 years) and a younger age group (15-17 years) for “trickle down”
- Estimate effects separately for males and females
- Estimate effects separately for Maori where data permit (paper on Monday)
Method

- Controlled Before and After design

~ 20-21 year-olds as a control for changes in economic conditions and other determinants of traffic injury (e.g., beer availability)
Patients

- Admitted to public hospitals in NZ from 00:01 Friday to 24:00 Sunday (“weekends”)

~ Note: no “alcohol involvement” nor any “time of injury indicator” is routinely recorded, thus assaults between e.g., 10pm-6am cannot be identified
Summary of results

- Compared with 20-21 year-old males:
  - assaults increased significantly among 18-19 year-old males (IRRs 1.04 to 1.21) relative to the pre-change period.

  - assaults increased significantly among 15-17 year-old males (IRRs 1.08 to 1.28) relative to the pre-change period (trickle down)

- No significant effects for females (note lower incidence rates for females 1:4 ratio)

Example 2:

NSW regulator requires pubs to close earlier in Newcastle
6c. Methods

Intervention

- Police and community complain to state govt about high levels of crime from pubs in CBD

- Liquor Administration Board forces 14 pubs to close earlier: 3am (with 1am “lockout” / “one-way door”) – previously 5am

- Took effect 21 March 2008 (weakened to 3.30am/1.30am on 29 July 2008)
Aims

• To test the hypothesis that this intervention reduced the incidence of assault in the Newcastle CBD.

• To determine whether there was displacement in assault incidence from the CBD to the nearby control area and to earlier in the evening. (no evidence of geographic or temporal displacement)
Method

- Controlled Before and After design

  Neighbouring area with late trading pubs to control for changes in economic, transport, and policing variables
14 pubs forced to close earlier: 3.30am (previously 5am)
Effects of restricting pub closing times on night-time assaults in an Australian city. *Addiction*, 2011, 106 303-10

Restrictions in pub closing times and lockouts in Newcastle Australia 5 years on. *Drug & Alcohol Review* 2014, 33:323-6
6c. Methods

Results of the “Newcastle Experiment” applied to Sydney CBD
6c. Methods

Challenges

- Obtaining suitable control data
- Contamination
- Service delivery variables
- Poor specification of intervention
- Identifying and accounting for threats to validity
- Getting governments to recognise learning opportunities
- Post-intervention consultation
Thank you
Single distribution theory

- Ledermann 1950s
- Skog 1980s
- Gmel and Rehm 2000s
- Polarisation / bimodal tendency
2b. Concepts

The Prevention Paradox

“A large number of people at a small risk may give rise to more cases of disease than the small number who are at high risk”
(this is true for alcohol in New Zealand and Australia)

“A preventive measure which brings much benefit to the population offers little to each participating individual”
(e.g., vaccination, seatbelts)