Numbers are in: 37,000 Australians can avoid a cancer diagnosis each year

Food for thought in first ever Australian study counting cases by cause

Around 37,000 Australian cancer cases could be prevented each year largely through lifestyle change, according to the first ever study* of cancer incidence and preventable causes in Australia.

The study, funded by Cancer Council Australia and conducted by QIMR Berghofer Medical Research Institute, showed that one in three cancers in Australia could be prevented.

Cancer Council Australia CEO, Professor Sanchia Aranda, said the ground-breaking research should encourage Australians to be positive about reducing their risk.

“Of 13 identified risk factors, smoking, UV radiation, body weight, poor diet and alcohol caused around 90 per cent of all preventable cancers,” Professor Aranda said. “It’s time to bust the myth that everything gives you cancer and do more to reduce the risks that we know cause cancer.

“The association with smoking is well-known, but the study shows that 7000 new cancer cases a year are also attributable to low fruit and vegetable intake, low fibre intake and eating excess red meat. Eating more fruit, vegetables and wholegrains is a positive step we can take to reduce our risk. These healthier choices also reduce obesity, the cause of 3900 cancer cases in its own right, and balance overconsumption of red and processed meat, which account for a further 2600 cases.

“People are confused about fad diets and mixed health messages, but the evidence is clear that a diet rich in vegetables, fruit and whole grains, with other foods consumed in moderation, will cut your cancer risk. Now we can back that advice with data on cancer case numbers, to emphasise why we urge people to adopt a cancer-smart lifestyle.”

Professor Aranda said the study estimated incidence attributable to risk factors as specific as the 3200 cancer cases caused by alcohol and the 1550 cases caused by low fruit consumption alone.

Professor David Whiteman from QIMR Berghofer, who led the study, said the risk factors considered in the report had to meet three conditions – be classified by the World Health Organisation or the World Cancer Research Fund as a cause of at least one cancer type; be modifiable; and there had to be reliable data on numbers of Australians exposed to the risk factor. He said there was sufficient evidence to associate 13 different factors with 24 cancer types, including some cancers with high mortality.

“In addition to lifestyle risk factors, we analysed the impact of hepatitis B and C, human papillomavirus, HIV and Epstein Barr virus,” Professor Whiteman said. “Hopefully the study will help guide lifestyle change and health policy in Australia, and contribute to the international evidence on cancer prevention.”

Professor Aranda said the findings showed the importance of research and evidence to inform public policy and individual choice. “This is the most comprehensive study of its kind ever published in Australia and it provides clear guidance on cutting your cancer risk. It should help motivate all Australians to take simple steps towards a healthier lifestyle.”
Cancers in Australia in 2010 attributable to modifiable factors was commissioned by Cancer Council Australia and conducted by QIMR Berghofer Medical Research Institute. It has been published in the Australian and New Zealand Journal of Public Health. The research seeks to determine the proportion of cancer cases in Australia that are caused by a modifiable known cancer risk factor or exposure (e.g. smoking tobacco, drinking alcohol, eating too much red meat etc.) The researchers also estimated how many cancer cases could be prevented if reasonable measures were taken. The methodology and key findings are summarised follow.

Methodology
Researchers estimated the population attributable fraction (PAF)* of cancers associated with exposure to 13 established causal factors using standard formulae incorporating exposure prevalence (how much people consume or are exposed to) and relative risk data (the extent to which that factor is linked to or causes certain cancers). They also calculated the potential impact of changing exposure to some factors.

*The PAF estimates the proportion of cancers in the population that can be attributed to a specific risk factor. e.g. an estimated 81% of all lung cancers can be attributed to the fact that people smoke.

Key findings

- A total of 32% of all cancers diagnosed in Australia (excluding non-melanoma cancers) were attributed to the 13 cancer risk factors assessed.
- This translates to up to 37,000 cancers (or one third of all cancers) being preventable each year in Australia**
- 33% of cancers in men and 31% in women are estimated to be preventable.
- 9 in 10 preventable cancers are caused by just six risk factors: smoking, UV radiation, poor diet, overweight, physical inactivity and alcohol.

**this is fewer than the total for each risk factor below because some cancers may be attributed to more than one risk factor, e.g. All (100%) cervical cancers are attributable to HPV infection but some can also be attributed to the fact that women smoked and/or used the oral contraceptive pill.

Table 1. Our Most Preventable Cancers

<table>
<thead>
<tr>
<th>Cancer Type</th>
<th>Number of cases estimated to be preventable through modifying lifestyle each year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lung</td>
<td>8569</td>
</tr>
<tr>
<td>Colorectal (Bowel)</td>
<td>7404</td>
</tr>
<tr>
<td>Melanoma</td>
<td>7220</td>
</tr>
<tr>
<td>Breast cancer</td>
<td>3233</td>
</tr>
</tbody>
</table>
### Table 2: Cancers attributable to risk factors in 2010

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>Estimated number of cases in 2010 linked to risk factor by cancer type (percentage of cancers of that type linked to risk factor)</th>
<th>Total number preventable cancer cases in 2010 attributable to risk factor</th>
<th>Notable findings</th>
</tr>
</thead>
</table>
| Tobacco smoking    | Lung 8324 (81%)  
Oral cavity/pharynx 1973 (59%)  
Oesophagus 855 (60%)  
Stomach 383 (19%)  
Liver 290 (21%)  
Pancreas 622 (23%)  
Cervix 56 (7%)  
Ovary 26 (2%)  
Bladder 781 (32%)  
Larynx 478 (77%)  
Kidney and Ureter 633 (20%)  
Myeloid Leukaemia 153 (11%)  
Bowel 951 (6%) | 15,525 | 1 in 8 cancers could be avoided if no one smoked  
136 lung cancers in non-smokers in 2010 were caused by partner smoking |
| UV radiation       | Melanoma 7220 (63%)  
Keratinocyte skin cancers 1 million+ cases, estimated separately (100%) | 7220 | Sunscreen use prevented around 14,000 people from developing squamous cell carcinoma of the skin and 1700 people from developing melanoma in 2010 |
| Overweight/obesity | Colon 1101 (10%)  
Female breast (post-menopausal) 971 (8%)  
Endometrium 595 (26%)  
Kidney 509 (19%)  
Rectum 231 (6%)  
Oesophagus 213 (15%)  
Pancreas 205 (8%)  
Ovary 47 (4%)  
Gallbladder 45 (14%) | 3917 | There would have been 820 fewer cancers in 2010 if overweight/obesity levels remained at 1990s levels |
<table>
<thead>
<tr>
<th>Risk factor</th>
<th>Estimated number of cases in 2010 linked to risk factor by cancer type (percentage of cancers of that type linked to risk factor)</th>
<th>Total number preventable cancer cases in 2010 attributable to risk factor</th>
<th>Notable findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol consumption</td>
<td>Colon 868 (8%) Breast 830 (6%) Oral Cavity &amp; Pharynx 613 (31%) Oesophagus 126 (9%) Rectum 470 (12%) Liver 175 (13%) Larynx 126 (20%)</td>
<td>3208</td>
<td>The number of alcohol-related cancers could have been reduced by approx. 1400 in 2010 if Australians stuck to the NHMRC guidelines of no more than two drinks a day</td>
</tr>
<tr>
<td>Inadequate fibre intake</td>
<td>Colorectal 2609 (18%)</td>
<td>2609</td>
<td>One in six colorectal cancer cases in 2010 was attributable to inadequate intake of dietary fibre</td>
</tr>
<tr>
<td>Inadequate fruit intake</td>
<td>Stomach 130 (7%) Larynx 37 (6%) Lung 989 (10%) Oral cavity &amp; pharynx 180 (6%) Oesophagus 219 (15%)</td>
<td>1555</td>
<td>Increasing the proportion of Australians who consume the recommended intake of fruit, vegetables and fibre could prevent up to ~4300 each year (4% of all cancers excluding non-melanoma skin cancer)</td>
</tr>
<tr>
<td>Inadequate vegetable intake</td>
<td>Stomach 32 (2%) Oral cavity &amp; pharynx 190 (7%) Larynx 38 (6%) Oesophagus 51 (4%)</td>
<td>311</td>
<td></td>
</tr>
<tr>
<td>Red and processed meat consumption</td>
<td>Colon 1,700 (16%) Rectum 914 (23%)</td>
<td>2614</td>
<td>If all Australian adults had consumed less than 65 grams of red meat and processed per day, then around 800 fewer cases of colon cancer would be been diagnosed in 2010</td>
</tr>
<tr>
<td>Physical inactivity</td>
<td>Colon 707 (7%) Post-menopausal Breast 971 (8%) endometrial136 (6%)</td>
<td>1814</td>
<td>If those exercising below the recommended level* had increased their activity level by 30 minutes/week, we estimate 314 fewer cancers would have occurred in 2010</td>
</tr>
<tr>
<td>Risk factor</td>
<td>Estimated number of cases in 2010 linked to risk factor by cancer type (percentage of cancers of that type linked to risk factor)</td>
<td>Total number preventable cancer cases in 2010 attributable to risk factor</td>
<td>Notable findings</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Infections e.g. Human Papilloma Virus (HPV), Hepatitis B and C (HBV HPC), Helicobacter pylori, HIV, EBV. | Oral Cavity 77 (7%)  
Oropharynx 304 (40%)  
Anus 288 (84%)  
Vulva 120 (40%)  
Vagina 61 (70%)  
Uterine Cervix 818 (100%)  
Liver 483 (34%)  
Stomach 694 (35%)  
Nasopharynx 107 (87%)  
Penis 38 (45%)  
Hodgkin’s lymphoma 188 (33%)  
Non-Hodgkin’s lymphoma 163 (4%)  
Kaposi’s sarcoma 80 (100%) | 3421 | Infectious agents causing the largest numbers of cancers were human papillomavirus [HPV], *Helicobacter pylori* and hepatitis B and C viruses (HBV/HCV) |
| Hormones (menopausal hormone therapy - HRT) | Breast 453 (3%)  
Endometrial 67 (3%)  
Ovarian 19 (2%) | 539 | HRT use caused more than 500 cancers in Australian women in 2010 and prevented ~50 colorectal cancers in 2010 |
| Oral contraceptives | Breast 105 (1%)  
Cervical 52 (6%) | 157 | While oral contraceptives are estimated to have caused approximately 150 breast and cervical cancers in 2010, they are also estimated to have prevented more than 1,000 endometrial and approx.300 ovarian cancers in 2010 |
| Inadequate breast feeding | Breast cancer 235 (2%) | 235 | Policies to increase breastfeeding duration may help prevent breast cancers in the future |

*Recommended level of exercise used for this study was 60 minutes at least 5 days per week