Right Here Right Now: Interventions for Reduction in Cancer Occurrence and Recurrence

Dr Emilia Crighton
Quiz

Rank cancer as cause of death in NHSGGC

- Main
- Second
- Third
Reducing the global cancer burden

Screening and treatment......
- availability of clinical interventions
- access to and use of existing technologies

Primary Prevention
- Lifestyle interventions
- Environmental interventions
- Immunisation
- ?Chemoprevention
Cancer Causes

- Genetics
- Infection
- Infestation
- Solar radiation
- Environmental carcinogens
- Reproductive factors
- Medicinal drugs
- Tobacco
CREATING A TOBACCO-FREE GENERATION
A Tobacco Control Strategy for Scotland
Cancers of 17 sites – 80% of incidence and deaths worldwide

http://www.dietandcancerreport.org
EXPERT REPORT PROCESS
Key features

- Systematic reviews
- Review of evidence separate from judgment
- Expert Panel of international experts
- Predetermined criteria
- Flexibility
Summary of convincing and probable judgements

Foods containing dietary fibre
Aflatoxins
Non-starchy vegetables¹
Allium vegetables
Garlic
Fruits²
Foods containing folate
Foods containing lycopene
Foods containing selenium³
Red meat
Processed meat
Cantonese-style salted fish
Diets high in calcium⁴
Energy-dense foods⁵
Low energy-dense foods
Salt, salted and salty foods
Arsenic in drinking water
Maté
Sugary drinks
Alcoholic drinks⁶
Beta-carotene⁷
Physical activity
Sedentary living⁸
Body fatness
Abdominal fatness
Adult weight gain
Adult attained height
Greater birth weight
Lactation
Being breastfed

1. Epidemiological evidence
2. Animal studies
3. Animal studies
4. Animal studies
5. Animal studies
6. Animal studies
7. Animal studies
8. Animal studies

Weight gain, overweight and obesity
### Estimates\(^1\) of cancer preventability by appropriate food, nutrition, physical activity, and body fatness in four countries\(^2\)

<table>
<thead>
<tr>
<th>Cancer</th>
<th>USA</th>
<th>UK</th>
<th>BRAZIL</th>
<th>CHINA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mouth, pharynx, larynx</td>
<td>63</td>
<td>67</td>
<td>63</td>
<td>44</td>
</tr>
<tr>
<td>Oesophagus</td>
<td>69</td>
<td>75</td>
<td>60</td>
<td>44</td>
</tr>
<tr>
<td>Lung</td>
<td>36</td>
<td>33</td>
<td>36</td>
<td>38</td>
</tr>
<tr>
<td>Stomach</td>
<td>47</td>
<td>45</td>
<td>41</td>
<td>33</td>
</tr>
<tr>
<td>Pancreas</td>
<td>39</td>
<td>41</td>
<td>34</td>
<td>14</td>
</tr>
<tr>
<td>Gallbladder</td>
<td>21</td>
<td>16</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>Liver</td>
<td>15</td>
<td>17</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Colorectum</td>
<td>45</td>
<td>43</td>
<td>37</td>
<td>17</td>
</tr>
<tr>
<td>Breast</td>
<td>38</td>
<td>42</td>
<td>28</td>
<td>20</td>
</tr>
<tr>
<td>Endometrium</td>
<td>70</td>
<td>56</td>
<td>52</td>
<td>34</td>
</tr>
<tr>
<td>Prostate</td>
<td>11</td>
<td>20</td>
<td>N/A(^3)</td>
<td>N/A(^3)</td>
</tr>
<tr>
<td>Kidney</td>
<td>24</td>
<td>10</td>
<td>13</td>
<td>8</td>
</tr>
<tr>
<td><strong>Total for these cancers combined</strong></td>
<td><strong>34</strong></td>
<td><strong>39</strong></td>
<td><strong>30</strong></td>
<td><strong>27</strong></td>
</tr>
<tr>
<td><strong>Total for all cancers</strong></td>
<td><strong>24</strong></td>
<td><strong>26</strong></td>
<td><strong>19</strong></td>
<td><strong>20</strong></td>
</tr>
</tbody>
</table>

Around one quarter of all cancers estimated avoidable through appropriate food, nutrition and physical activity
Preventability estimates (PAF%) for cancers of the breast (UK) (WCRF, 2009)

<table>
<thead>
<tr>
<th>Exposure</th>
<th>PAF% (range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcoholic drinks</td>
<td>22 (10-35)</td>
</tr>
<tr>
<td>Physical Activity</td>
<td>12 (2-22)</td>
</tr>
<tr>
<td>Body Fatness</td>
<td>16 (5-25)</td>
</tr>
<tr>
<td><strong>Total estimate</strong></td>
<td><strong>42 (16-62)</strong></td>
</tr>
</tbody>
</table>
Preventability estimates (PAF%) for cancers of the colon and rectum (UK) (WCRF, 2009)

<table>
<thead>
<tr>
<th>Exposure</th>
<th>PAF% (range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foods containing fibre</td>
<td>12 (5-18)</td>
</tr>
<tr>
<td>Red meat</td>
<td>5 (0-21)</td>
</tr>
<tr>
<td>Processed meat</td>
<td>10 (0-23)</td>
</tr>
<tr>
<td>Alcoholic drinks</td>
<td>7 (0-18)</td>
</tr>
<tr>
<td>Physical activity</td>
<td>12 (4-20)</td>
</tr>
<tr>
<td>Body fatness</td>
<td>7 (0-17)</td>
</tr>
<tr>
<td><strong>Total estimate</strong></td>
<td><strong>43 (0-73)</strong></td>
</tr>
</tbody>
</table>

CUP (2011) estimate 47%
# Obesity and cancer risk

<table>
<thead>
<tr>
<th>Cancer site</th>
<th>Relative risk</th>
<th>Preventable fraction</th>
<th>Possible mechanism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endometrium</td>
<td>3.40</td>
<td>49</td>
<td>Hyperoestrogenemia from aromatase</td>
</tr>
<tr>
<td>Oesophageal (Adenocarcinoma)</td>
<td>1.92</td>
<td>35</td>
<td>Tissue damage from acid reflux</td>
</tr>
<tr>
<td>Pancreas</td>
<td>1.72</td>
<td>28</td>
<td>Inflammation, other growth factors</td>
</tr>
<tr>
<td>Kidney</td>
<td>1.70</td>
<td>24</td>
<td>Inflammation, other growth factors</td>
</tr>
<tr>
<td>Gall Bladder</td>
<td>1.66</td>
<td>21</td>
<td>Tissue damage from gall stones</td>
</tr>
<tr>
<td>Breast (Post Menopausal)</td>
<td>1.26</td>
<td>17</td>
<td>Hyperoestrogenemia from aromatase</td>
</tr>
<tr>
<td>Colorectum</td>
<td>1.22</td>
<td>9</td>
<td>Inflammation, other growth factors</td>
</tr>
</tbody>
</table>

Byers & Sedjo (2011) Diabetes Obes Metab
## Changing Cancer Risk

<table>
<thead>
<tr>
<th>Dietary RCT’s</th>
<th>Site</th>
<th>Population</th>
<th>Body weight loss</th>
<th>Cancer risk reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sjostrom et al (2009)</td>
<td>All sites</td>
<td>Women Men</td>
<td>31.9% 19.3%</td>
<td>42% 3%</td>
</tr>
<tr>
<td>Adams et al (2009)</td>
<td>All sites</td>
<td>Women Men</td>
<td>31.0%</td>
<td>24% 2%</td>
</tr>
<tr>
<td>Christou et al (2008)</td>
<td>All sites</td>
<td>Men &amp; Women</td>
<td>31.9%</td>
<td>78%</td>
</tr>
</tbody>
</table>

Byers & Sedjo (2011) Diabetes Obes Metab
Breast Cancer in Scotland

- Early detection campaign
- Screening programme
- Better treatments
- Very good (80%) 5 year survival rates
WCRF (continuous update project)

5% increase risk of breast cancer with every 2 kg/m² increment

e.g. a woman weighing 30 kg/m² would have a 13% increased risk compared to a woman with BMI 25 kg/m²
Conclusions: Among survivors of early stage breast cancer, adoption of a diet that was very high in vegetables, fruit and fibre and low in fat did not reduce additional breast cancer events or mortality during a 7.3 years follow up period.
Survival outcomes....

WHEL...

Those who followed diet AND exercised 30 mins on 6/7 days lower recurrence and better survival (Bertram et al, 2011)

Women with lowest carotinoids (markers for fruit and veg) – high risk of recurrence

High Cruciferous Veggie at baseline lower recurrence esp for those on tamoxifen
Physical activity

Exercise is a safe and effective way to provide rehabilitation for cancer survivors

Short term interventions HAVE demonstrated

- Improved aerobic capacity
- Strength
- Body composition
- Quality of life
- Reduced fatigue
- Emotional distress
- Lymphedema symptoms

Include resistance training for body composition
Dietary Supplements

BEWARE!!!

57 to 87% US breast cancer survivors initiate supplements after diagnosis

Unlikely to improve prognosis

May INCREASE mortality

May be a role for standard multi vitamins/minerals during and after cancer treatments if deficiency or cannot take meet nutritional needs through diet- not routine needs
The Scottish Cancer Taskforce – Where Does Cancer Prevention Fit?

Health Promoting Health Service

‘Every healthcare contact is a health improvement opportunity’
Challenges

An unrecognised....

Window of Opportunity

To promote a culture of prevention people must be made aware of the cancer / lifestyle relationship

Without patient education .....a health certificate effect ?
Emerging issues

Are health professionals trained in how to translate the main prevention recommendations into everyday behaviours?

Is giving lifestyle advice something cancer care heath professionals should do?