Cardio-metabolic diseases

Are we heading for a healthier, fairer future?

Nick Wareham
Rising prevalence of obesity

Rising prevalence of diabetes

Source: Massó González et al. JECH 2009
Was the emergence of the type 2 diabetes epidemic predictable?
“If you can dream it, you can do it.”

WALT DISNEY

www.faces.ch/quotes
Walt Disney Predicts the Future – the Magic Highway
Secular decline in physical activity: UK

Source: Ng and Popkin. Obesity Reviews 2012
Physical activity and type 2 diabetes risk

Source: Smith et al Diabetologia 2016
Secular decline in physical activity: UK

Predicted increase in diabetes = 46%

Source: Ng and Popkin. Obesity Reviews 2012
Secular changes in food availability

Source: Swinburn et al. Lancet 2011
Was the emergence of the type 2 diabetes epidemic predictable?

Are preventive interventions likely to lead to a healthier, fairer future?
Will large scale roll out of individual-level preventive intervention programmes lead to a fairer, healthier future?
<table>
<thead>
<tr>
<th>Participation Type</th>
<th>Hazard Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any participation vs none</td>
<td>0.80 (95% CI 0.77–0.83)</td>
</tr>
<tr>
<td>Intense &amp; sustained participation</td>
<td>0.67 (95% CI 0.61–0.74)</td>
</tr>
</tbody>
</table>

**Source:** Jackson et al, Lancet Diabetes and Endocrinology 2015
VA MOVE! programme

Number of people

All those eligible 1.8 million
Any participation vs none 238,540 (13%)
Intense & sustained participation 19,327 (1%)

Source: Jackson et al, Lancet Diabetes and Endocrinology 2015
High and low agency interventions

Source: Adams et al, PLOS Medicine 2016
- transport policy
- foot/cycle paths
- school characteristics
- workplace layout
- family activity levels
- attitudes
- preference
Evaluating the Cambridgeshire Guided Busway
## Effects on time spent in active commuting

<table>
<thead>
<tr>
<th></th>
<th>Cycling</th>
<th>Walking</th>
</tr>
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<tbody>
<tr>
<td>RRR (95% CI)</td>
<td>1.34 (1.03, 1.76)</td>
<td>0.90 (0.69, 1.18)</td>
</tr>
</tbody>
</table>

Adjusted relative risk ratios for an increase in time spent in active commuting

Among participants whose cycling increased over time, the mean increase was 87 min·wk⁻¹

*Source:* Ogilvie et al; Public Health Res 2016
Evaluating the impact of the “not so magic highway

M74 Motorway extension, Glasgow

Source: Ogilvie et al; Public Health Res 2017
Results

Travel
People living near a junction on the new M74 motorway were:
• More likely to travel (OR 4.7, 95% CI 1.1 to 19.7)
• More likely to travel by car (OR 3.4, 95% CI 1.1 to 10.7)
The new motorway did not appear to have any impact on active travel or physical activity in local residents.

Health and wellbeing
• People living near the new M74 motorway experienced markedly reduced mental wellbeing over time (β -3.6, 95% CI -6.6 to -0.7)
• The new motorway did not appear to influence the rate of casualties from local road traffic accidents

Source: Ogilvie et al; Public Health Res 2017
Evaluating the effects of fast food outlet proliferation
Exposure to takeaway food outlets and diet, weight

Fenland study participants encountered:
- an average of 32 takeaway outlets
- up to as many as 165 outlets
- majority of outlets away from home

Source: Burgoine et al BMJ 2014
Mapping, Measuring, and Monitoring food access in England

SHOWING: Postcode level takeaway proportion, central London

Underpinned by our science; significant knowledge translation opportunity; featured in the Guardian, ITV’s Tonight Show.
Evaluating dietary fiscal interventions

Will a sugar tax work? Well, it did at Jamie Oliver's Italian restaurants

Researchers say the chef's 10p levy on sugary drinks led to a significant drop in sales - boding well for the government's sugar tax plan.

Source: Cornelsen et al. J Epidemiol Community Health 2017
Was the emergence of the type 2 diabetes epidemic predictable?

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Can we predict the impact of changes in developing countries?
Prevalence of diabetes in adults (20-79 years)

Source: IDF Diabetes Atlas
Global prevalence of IGT (20-79 years)

Source: IDF Diabetes Atlas 2013

2013 316 million
2035 471 million
Secular decline in physical activity: China

Source: Ng and Popkin. Obesity Reviews 2012
Secular decline in physical activity: China

Predicted increase in diabetes = 500 %

Source: Ng and Popkin. Obesity Reviews 2012
Diabetes in Africa

Millions of people

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2040</th>
</tr>
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<tbody>
<tr>
<td>DM</td>
<td>14.2</td>
<td>34.2</td>
</tr>
<tr>
<td>IGT</td>
<td>34.9</td>
<td>79.0</td>
</tr>
</tbody>
</table>

*M* comparative prevalence
Obesity co-exists with stunting
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Can we promote research aimed at a healthier, fairer future?
NIHR Global Diet and Activity Research Group

To support sustainable development and the prevention of NCDs in LMICs by establishing a research network that will investigate the determinants of diet and physical activity, develop and evaluate interventions and inform policy
Development and evaluation of childhood obesity preventive interventions

Newton Fellowship

Newton PhD exchange programme
Global levels of SSB consumption

A. Sugar-sweetened beverages

8 oz. servings/day
Evaluation of Barbados SSB Tax

- Implemented in September, 2015
- 10% ad valorem tax on sugar-sweetened beverages
- Applied to imported and locally manufactured SSBs
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