WHERE NEXT FOR PREVENTION OF CHRONIC DISEASE?

Steven Allender, PhD

NHMRC/ Heart Foundation Career Development Fellow

NHMRC Centre of Research Excellence for Policy Research in Obesity and Food Systems

Professor of Population Health

Co-Director, WHO Collaborating Centre for Obesity Prevention

Quail Oration 22nd October 2013
OUTLINE

• The problem
• The causes
• Possible solutions
• Current work
• Future directions
WHO CAUSES OF NCD FRAMEWORK

UNDERLYING SOCIOECONOMIC, CULTURAL, POLITICAL AND ENVIRONMENTAL DETERMINANTS
- Globalization
- Urbanization
- Population ageing

COMMON MODIFIABLE RISK FACTORS
- Unhealthy diet
- Physical inactivity
- Tobacco use

NON-MODIFIABLE RISK FACTORS
- Age
- Heredity

INTERMEDIATE RISK FACTORS
- Raised blood pressure
- Raised blood glucose
- Abnormal blood lipids
- Overweight/obesity

MAIN CHRONIC DISEASES
- Heart disease
- Stroke
- Cancer
- Chronic respiratory diseases
- Diabetes
As we look to the future and where childhood obesity will be in 20 years... it is every bit as threatening to us as is the terrorist threat we face today.

Vice Admiral Richard Carmona
U.S. Surgeon General
OBESITY TRENDS* AMONG U.S. ADULTS
BRFSS, 1986-NOW

(*BMI ≥30, or ~ 30 lbs. overweight for 5’ 4” person)
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1986

1993
OBESITY TRENDS* AMONG U.S. ADULTS
BRFSS, 1986-NOW

(*BMI ≥30, or ~ 30 lbs. overweight for 5’ 4” person)

1986

1993

2010
OBESITY TRENDS* AMONG U.S. ADULTS
BRFSS, 1986-NOW

(*BMI ≥30 or ~30 lbs overweight for 5’4” person)
## AUSTRALIA - OVERWEIGHT OR OBESE

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th>Females</th>
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<tbody>
<tr>
<td>Overweight</td>
<td>42%</td>
<td>31%</td>
</tr>
<tr>
<td>Obese</td>
<td>25%</td>
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<tr>
<td>Overweight or obese</td>
<td>67%</td>
<td>55%</td>
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Measured data, NHS 2007–08
COMPARISONS FOR OBESE FEMALES

Prevention of cardiovascular diseases, diabetes and chronic kidney disease (AHIW 2009, Cat. no. PHE 118)
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OBESITY INCREASE BY AGE GROUP

% obese

Age (yrs)

0% 10% 20% 30% 40%


20-34 35-44 45-54 55-64 65-74 75+

WHO Collaborating Centre for Obesity Prevention

Deakin University CRICOS Provider Code: 00113B
ENERGY BALANCE FLIPPING POINT

• Food energy increase more than enough to explain the increase in weight in the US
• Increasing food waste parallel to the increase in food supply per capita
Energy Balance Flipping Point

- Food energy increase more than enough to explain the increase in weight in the US
- Increasing food waste parallel to the increase in food supply per capita
- A simple approach to obesity

Food availability per capita (kJ/day)

- 'Pull phase': energy expenditure driving energy intake
- 'Push phase': energy intake driving energy expenditure
The only plausible explanation for the simultaneous, global increase in obesity is that it has been driven by the changes in the global food supply (price, product, placement, promotion).
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• *Possible solutions*

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Fig 4 Obesity prevalence and coronary heart disease, cancer and stroke mortality in Cuba (1980-2010).

Franco M et al. BMJ 2013;346:bmj.f1515
SENTINEL SITE FOR OBESITY PREVENTION, BARWON-SW

2002 2003 2004 2005 2006 2007 2008 2009


Colac – 4-12 y/o “Be Active Eat Well”

East Geelong – 13-18 y/o “It’s Your Move!”

Greater Geelong – Under 5s “Romp & Chomp”

Reach  Sustainability

Measurements

Components: Anthropometry, behaviours, environments

Intervention groups: Impact of interventions, sustainability, population reach

Regional sample: Comparison sample with intervention population, monitoring trends.
LOGIC MODEL FOR INTERVENTIONS

**Inputs**
- Intervention Dose
- Δ Community capacity
- Δ Policy

**Population Mediators**
- Δ Environments

**Individual Mediators**
- Δ Knowledge, attitudes, beliefs, perceptions etc
- Δ Behaviours

**Moderators**
- Ethnicity, socio-cultural factors, gender, age, SES

**Outcomes**
- Δ Anthropometry
- Δ QoL
- Δ QALYs gained

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1. Intervention dose is either 1 or 0 (intervention, control) or $\$$(economic input – all schools)
2. Capacity is leadership, skills/knowledge, structures, resources
3. Relevant environments are schools, homes, neighbourhoods, churches
4. Weight, BMI, BMI-z, waist, waist:height, %fat, prevalence of o/w+obesity
Under 5s – Romp n Chomp
Relative reduction of 1.8 and 2.7 %-points over 3 years (p<0.05)
Low budget ($100k over 3y) for 12,000 children
Changes in behaviours and environments
State prevalence ↓ing
De Silva-Sanigorski Am J Clin Nutr 2010

Primary School - Be Active Eat Well
Reduction of ~1kg, 3cm waist over 3y
Greater effect in lower SES children
No differences in ‘safety measures’ eg self-esteem, dieting under-weight, etc
Sustainability currently being evaluated
Sanigorski et al Int J Obesity 2008

- 5.8 %-points lower relative prevalence over 3 years
- Changes in community capacity
- Changes in school envs
- Few significant changes in behaviours seen

WHO Collaborating Centre for Obesity Prevention
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OBESITY IS SIMPLE

Positive energy balance
More energy is taken in than is spent, causing an excess of energy which is converted into fat
SYSTEMS IN POPULATION HEALTH

• ISIS report – Greater Than The Sum – Systems Thinking in Tobacco Control

• MRC report – Developing and Evaluating Complex Interventions

• NICE report – The Effectiveness of Whole System Approaches to Prevent Obesity

• WHO report – Strengthening Health Systems to Improve Health Outcomes
SO WHAT’S A SYSTEM THEN?

A system is an interconnected set of elements that is coherently organized in a way that achieves something. (Meadows 2008)

[A system] perspective stresses the importance, among other things, of linkages, relationships, feedback loops and interactions among the system’s parts. (Hawe 2009)
**SO WHAT’S A SYSTEM THEN?**

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AUSTRALIA INVESTING IN OBESITY PREVENTION

• $870m investment over 6y
• Key objective tackling overweight and obesity,
  – Healthy eating PA programs for adults and children
    • Less than Australia spends on 2 statins every year
  – Still a big boost for prevention
• Victoria is taking a ‘systems-based’ approach
  – Prevention Community Model
  – 12 Prevention Areas (cluster RCT design)
  – Whole state + ‘systems activation’
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CHANGING RISK FACTOR BURDEN

Hoad et al ANZJPH 2010
LONG-TERM DEATH RATES

Moon et al., AIHW 2011; Allender et al 2011

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US TOBACCO CONSUMPTION 1900 TO 2000

Fig. 9.11  Tobacco consumption, 1900–2000
Sources: United States Department of Agriculture; United States Centers for Disease Control and Prevention.

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Milestones in reducing smoking in Australia 1980–2007

- No bulls campaign
- Phase out smoking in federal workplaces
- Pack health labelling regulations introduced
- Vic Tobacco Act
- NRT available for sale in Australia
- C/W implement tax by stick
- MCG smokefree
- Smokefree dining
- Gaming venue bans
- 1st QUIT Campaigns
- Smoking banned on domestic airlines
- Tobacco banned in print media
- Age for sale of cigarettes 16 to 18
- Federal bans on tobacco sponsorship of sports & arts
- Remaining tobacco sponsorship removed (exc. Significant international events)
- Health warnings on packs
- POS advertising bans

Source: The Cancer Council of Victoria 2009
According to repeated nationwide surveys, More Doctors Smoke CAMELs than any other cigarette!

Doctors in every branch of medicine were asked, “What cigarette do you smoke?” The brand named most was Camel!

THE DOCTORS’ CHOICE IS AMERICA’S CHOICE!

For 30 days, test Camels in your "T-Zone" (T for Throat, T for Taste).
HeartStats

The Heart Foundation / Deakin University Australian Heart Disease Statistics Project

- New collaboration between Deakin and the National Heart Foundation of Australia

- To present the most up to date picture of the burden of coronary heart disease and related risk factors in Australia

A platform to extend the use of existing data to provide insights into the burden, prevention and treatment of CHD
The CO-OPS Collaboration

www.co-ops.net.au
• Creating a robust national Knowledge Translation and Exchange (KTE) system
• which **links academic, policy and practice professionals**
• to **ensure best practice** in the promotion of healthy eating, regular physical activity and healthy weight as key factors to help prevent chronic disease

**CO-OPS support services**
• Online support requests
• Discussion forums
• Resource library
• Evidence summaries
  • Case studies
  • E-Newsletter
• National workshop
• Professional development
• CO-OPS short courses
• National survey
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