The dietary challenge in the Caribbean

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Dietary change

- High energy density: ↑ by fat & refined CHOs
- Vegetables, fruits, pulses

Physical inactivity

- Cytokines etc.

Obesity → Diabetes → CHD

- Sex hormone changes
- Phytoestrogens bioactivate molecules
- Folate, B₆
- Homocysteinaemia?

Hypertension

- Antioxidants
- Trans fatty acids
- n-3 fatty acids
- Saturated fats
- Atherosclerosis

Cancers: e.g. breast, colon, endometrium

Total Fat

* Energy density reduced by water-holding, bulky foods, e.g. tubers, cereals, vegetables, fruits, pulses.
A summary of the nutritional problems in the Caribbean

- **Childhood malnutrition**: dramatic fall
- **Strokes**: caused by high salt intakes: amplified by weight gain, dietary fat, low fruit and vegetable intakes
- **Coronary heart disease** emerged as saturated fat intakes rise
- **Obesity/diabetes**: physical activity falls; energy density from high fat/sugar low F&V diets
- Huge change needed at multiple levels: personal, family, community and national
Foci for action in relation to chronic diseases

- Alcohol
- Salt/pres. methods
- Some meats
- Fats- esp. trans
- Sugars
- Veg/fruits/cereals (whole grain)
- Physical activity
Systematic review of tobacco prevention strategies
US DHSS

- Strong evidence of effectiveness for:
  - increasing the unit price of tobacco products and mass media campaigns run concurrently with other interventions.

- Sufficient evidence of effectiveness for:
  - restricting tobacco product distribution,
  - regulating the mechanisms of sale,
  - enforcing access-to-minors laws,
  - merchant education and training
  - all conducted in conjunction with community mobilization

UK British Medical Association proposals to reduce alcohol abuse

- Increase price
- End sponsorship by alcohol producers of sporting and entertainment events that have a young target audience;
- Legislate on labelling of alcohol products
- Reduce drink driving limit: 80→50mg/dl
- Random breath testing
The keys to success in the food business and in obesity and chronic disease prevention

- Price
- Availability
- Marketing
Government support for producing grain and oilseed crops comes in many forms, from money invested in public universities and government agencies to research such crops, to subsidy payments that make up for low prices, to continued promises of increased export markets for these crops.
Agriculture policy

- Chronic over-production of sugar and butter
- Low cost of calories from oils, sugars, starches

55 cents for 100 kcal

1 cent for 100 kcal
Snack Foods Are Everywhere

- Car washes
- Book stores
- Hardware stores (Home Depot)
- Gas stations
- Office buildings (vending machines)
- Health clubs/gyms
- Video stores
- Car repair shops
Living Life Well
CHIPS ARE IN SEASON!

Doubling shelf space increases sales by 40%
Current eye-tracking technology to detect unconscious focus on particular images which then subconsciously affect sales decisions. Still qualifies as "informed free choice"?

Measures attraction to products
Dietary fat and weight gain: additional effects of high sugar intakes on Caribbean overweight/obesity

Adapted from Bray & Popkin, AJCN 1998; 68: 1157-1173 with data from FAO 2005, CFNI and recent national surveys.

Obesity epidemic is inevitable unless policies to reduce intakes substantially from fat & sugar with spontaneous increases in activity are introduced now.
A quarter-pound cheeseburger, large fries and a 16 oz. soda provide:

- 1,166 calories
- 51 g fat
- 95 mg cholesterol
- 1,450 mg sodium
Eating healthily in different food outlets: how do I tell what I am eating?

- Home
- School/work
- Friends
- Canteens/ Restaurants/ fast food outlets
- Street foods
- Vending machines
- Cafés
Who controls the food chain in the Caribbean? Not the people!

Farmers

Family and other small food companies

Local markets, roadside stalls and farm shops

Small food outlets

Global Food Companies

Key buyers & food importers

Supermarkets: the "food consuming industry"

International fast food franchises

IMPORT CONTROLS

GENERAL POPULATION
Central policies affecting the general population

- Nutritional Profiling of foods: new UK policy being extended to Europe & Asia: applicable to school food
- Labelling with consumer relevant symbols, e.g. traffic lights with nutritional profiling: dramatic impact on sales – understandably resisted by vulnerable business interests.
Food labelling schemes based on nutritional profiling tested by the UK Consumers' Organisation - "Which"

UK Food Standards Agency scheme

Tesco Supermarket GDA labelling with a different colour for each nutrient

GDA system

Tesco: GDA + traffic lights

Waiting for a green light for health?

Europe at the crossroads for diet and disease

IOTF demand for EU action
Consumer purchases with traffic light food labelling of nutrients as proposed by UK's Food Standards Agency. Healthy (green), reasonable (yellow), or unhealthy (red)

Wheel of Health (WoH)

JS Ham and Pineapple Pizzeria 356
all 5 GREEN on WoH

42% 55%

JS Ham & Pineapple Thin & Crispy Pizza 335g
1 red 2 amber 2 green

42%

'Taste the Difference' Melting Middle Chocolate puddings
4 red 1 amber

89%

'Be Good to Yourself' Chocolate sponge puddings
4 Green 1 amber

42%

Who controls the food chain in the Caribbean? Not the people!

Nutritional profiling determining government policies throughout the food chain

General Population

Who controls the food chain in the Caribbean? Not the people!
Deaths from stroke in different European countries, plotted against urinary salt excretion, derived from the INTERSALT data.

Deaths from stroke (per 100,000 per year) vs. Urinary salt excretion (g/day)

- Malta
- N.Ireland
- Finland
- Portugal
- Belgium
- Denmark
- Iceland
- Holland
- England & Wales
- Germany
- Italy
- Spain

$r=0.832$
$p<0.001$
The tracking of cooking salt consumption

Sodium in tap water

Natural sodium content of foods

Discarded salt in cooking water

Manufacturers’ salt in processed food

Plated salted food

Discarded salt on plate (food, water, cooking & table salt sources in variable proportions)

Sodium ingested

Salt sources in a Western diet

- Table
- Cooking
- Water and Medicines (1%)
- Non-salt food additives
- Added salt
- Natural

Salt sources in UK and Italian diets

- **Table**: 7%
- **Cooking**: 8%
- **Water and Medicines (1%)**: 7%
- **Non-salt food additives**: 59%
- **Added salt: food processing**: 18%
- **Natural**: 0%

Total discretionary salt in Italy in late 1980s: 34 - 39%

Total Salt intakes in Italy similar to UK: 11.1g in men; 9.3g in women and 7.7g/d in children

Intervention trial in two Portuguese villages

Blood pressure (mmHg) ± (SEM)

Years

Control Moderate salt restriction


*p<0.05,   ***p<0.001 compared to control group
Components of an integrated comprehensive model for school-based obesity prevention.

- Family and community linkages
- School-site health promotion for faculty and staff
- Physical education classes
- School counselling and psychology programs
- Health instruction (curriculum)
- School health services
- Nutrition environment of the school

Goal: Enhancing healthy eating practices and physical activity patterns and achieving healthy weights in children and adolescents

School food services
Difference in blood pressure in newborn babies, randomised to either a normal salt intake or a moderate reduction in salt intake over the first six months of life. At six months, the study was discontinued, with all participants resuming a normal salt intake. Fifteen years later, a subgroup of those in the study had blood pressure re-measured.

McGregor, GA. (1999) Nutr Metab Cardiovascular Dis, Suppl.4, 6-15

<table>
<thead>
<tr>
<th>Age (weeks)</th>
<th>Double blind</th>
<th>Normal salt</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Moderate reduction salt</td>
<td>Normal salt</td>
</tr>
<tr>
<td>9</td>
<td>p&lt;0.01</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>p&lt;0.02</td>
<td></td>
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<tr>
<td>17</td>
<td></td>
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<tr>
<td>22</td>
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<tr>
<td>25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td>p&lt;0.02</td>
</tr>
</tbody>
</table>

n=167
1g extra salt: soft drinks \(\uparrow\) 27 ml/d and water 100 ml/d in British children aged 4-18 yrs

Salt intake is related to soft drink consumption in children & adolescents: a link to obesity? He, Marrero & MacGregor. Hypertension. 2008 Mar;51(3):629-34
- Restrict promotion of energy-dense, nutrient poor foods and beverages … while allowing the promotion of foods in line with the WHO dietary recommendations *

- Imperative to protect all children

- Incorporate all forms of marketing

* IMPLIES NEED FOR NUTRIENT PROFILING
5 Practical Priorities: local activism by business and NGOs leads to major changes

- **Major drive to increase/sustain breast feeding**: facilities at work important; maternal leave + cultural change
- **Marketing restrictions** (not just TV advertising) - statutory for children & adolescents: rights of child extend to 18 yrs
- **Control of food** in nurseries, all school facilities and school environment: avoid choice - all foods of high nutritional quality + facilities to allow spontaneous play - not TV; most measures apply to all public/private facilities
- **Fruit and vegetable availability** within main cost in canteens and restaurants - government + local action
- **Transformation of physical facilities for spontaneous & leisure time activity**: urban design changes with novel traffic policies; pedestrian only areas immediately adjacent to houses/apartments
## The most cost-effective community (not national) interventions in Australia

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Cost in Australian $ for each DALY saved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restrict TV advertising</td>
<td>4</td>
</tr>
<tr>
<td>Soft drink intervention at school</td>
<td>3,000</td>
</tr>
<tr>
<td>Walking buses to school</td>
<td>770,000</td>
</tr>
<tr>
<td>Cycling (travel SMART schools)</td>
<td>260,000</td>
</tr>
<tr>
<td>After-school community programmes.</td>
<td>90,000</td>
</tr>
<tr>
<td>Doctors targeting the overweight children</td>
<td>32,000</td>
</tr>
<tr>
<td>School multiple interventions, but no physical education</td>
<td>14,000</td>
</tr>
<tr>
<td><strong>Add</strong> Physical Education</td>
<td>7,000</td>
</tr>
<tr>
<td>School education to reduce TV viewing</td>
<td>3,000</td>
</tr>
<tr>
<td>Family-based program for obese child</td>
<td>4,000</td>
</tr>
<tr>
<td>School program targeting overweight &amp; obese children</td>
<td>3,000</td>
</tr>
<tr>
<td>Medical treatment with drugs, e.g. Orlistat</td>
<td>14,000</td>
</tr>
</tbody>
</table>

*Victoria State Analyses: Sept 2006*
Governmental/community initiatives are the most cost-effective.

Impact:
- Federal / National Parliament
- Regional
- Local Council
- Schools

Costs:
- General Population
- Minimum
- Maximum

Impact:
- Maximum
- Minimum

Costs:
- Minimum
- Maximum
Foresight: predicted diabetes costs with different prevention strategies

- No action
- Prevent children's obesity
- BMI Cap 30
- 20+yrs: BMI -4 units
The biggest change in diet ever seen other than in war and famine
Nutritionists advocate a "balanced diet": the emergence of coronary heart disease in the Western world. Its reversal by coherent multiple level actions involving regulatory measures.

Annual mortality per 100,000

Norway
Adults 50-59yrs

National Comparisons Males 0-64yrs

Norway
Greece
Spain
France

Year

1925
2005