Childhood Overweight and Obesity in Massachusetts: 
*Trends, Problems & Solutions* 

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What I Am Going to Talk About…..

• We can use “science” to guide “policy”
  – Science spans biological → sociological

• Often there are no “quick” answers with science & sometimes the science is not “exact”

• Will not make “recommendations” but just some “key suggestions”
Childhood Obesity Prevalence & Trends
1999-2007 Trends for Adolescent Overweight and Obesity in Massachusetts and the U.S

Youth Risk Behavior Survey, 1999-2007
Obesity Prevalence by State in US Children Aged 10-17 yrs

National Survey of Children’s Health, 2003
Singh, J Comm Health, 2008
Prevalence of Overweight by Grade & Gender in MA

Essential School Health Survey, 2007
% Overweight or Obese Children by Family Income

- Massachusetts
- United States

<table>
<thead>
<tr>
<th>Family Income</th>
<th>Massachusetts</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;100% Federal Poverty Level (FPL)</td>
<td>44.8%</td>
<td>39.8%</td>
</tr>
<tr>
<td>&gt;400% FPL</td>
<td>24.1%</td>
<td>22.9%</td>
</tr>
</tbody>
</table>

National Survey of Children’s Health, 2003
% of Overweight or Obese Hispanic Children

National Survey of Children’s Health, 2003
Causes of Childhood Obesity
Social Ecological Model of Obesity
Rise in obesity….the inability to control our *individual* energy intake/expenditure vs. the *environmental* stimuli that influences intake/expenditure
Determinants of Obesity

- Educational priorities
- Built environment
- Advertising & gaming
- Food away from home
- Screen Time
- Family structure
- Social Influences
- Purchasing Power
- Maternal Environment
- Sedentary attractions
- Cultural values
- Food availability
- Biology
- Psychology
- Free Play
- BODY WEIGHT

BODY WEIGHT

12
Energy “Gap”

- It has been calculated that the energy gap needed to produce weight gain is between 110 - 165 calories per day
  - ~1 can of soda
  - 1 oz bag of chips
  - 1 ice cream bar

Wang et al, Pediatrics, 2006
Plachta-Danielzik et al, Obesity, 2008
Closing the Energy “Gap”

- ↓ TV viewing by 1.4 hours (106 kcal/hr)
- Walk 1.9 hrs vs. sitting (30 kg boy)
- ↑ PE from 1x → 3x per week (+240 kcal/wk)

Removed sodas from Boston high schools
  - ↓ consumption = 34 kcal/day
Poor Nutrition
Recommended Daily Servings vs. Reality (2-19 yrs)

- Grains: 7.0
- Whole Grains: 0.76
- Vegetables: 2.3
- Fruit: 1.7
- Dairy: 2.1

NHANES, 1999-2002
Food Consumption of Massachusetts High School Students

Massachusetts Youth Risk Behavior Survey, 2001-2007

- Ate 5+ fruit and vegetables per day:
  - 2001: 16%
  - 2003: 14%
  - 2005: 12%
  - 2007: 15%

- Drank 3+ glasses of milk per day:
  - 2001: 18%
  - 2003: 19%
  - 2005: 15%
  - 2007: 15%

- Ate breakfast everyday:
  - 2001: 32%
  - 2003: 33%
  - 2005: 33%
  - 2007: 35%

Massachusetts Youth Risk Behavior Survey, 2001-2007
Food Consumption of Massachusetts Middle School Students

- 15% 6th
- 15% 7th
- 12% 8th

- 41% 6th
- 40% 7th
- 40% 8th

Ate 5+ fruit and vegetables per day
Drank 1+ glasses of soda per day

Massachusetts Youth Risk Behavior Survey, 2007
Comparison of Breastfeeding Rates

<table>
<thead>
<tr>
<th>Category</th>
<th>Healthy People 2010 Goals</th>
<th>National</th>
<th>Massachusetts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ever Breastfed</td>
<td>75.0%</td>
<td>73.8%</td>
<td>77.6%</td>
</tr>
<tr>
<td>Breastfed at 6 months</td>
<td>50.0%</td>
<td>41.5%</td>
<td>45.2%</td>
</tr>
<tr>
<td>Breastfed at 12 months</td>
<td>25.0%</td>
<td>20.9%</td>
<td>23.8%</td>
</tr>
</tbody>
</table>

CDC National Immunization Study, 2007
Lack of Physical Activity
Physical Activity

- 41% of students are physically active (60 min/day)

- 9th grade students were more likely than 12th grade students to meet recommendations (60 min/day)

Massachusetts Youth Risk Behavior Survey, 2007
Adolescents Who Attend PE Class in an Average Week

TV & Screen Time

• High School
  – 30% reported 3+ hrs/day of non-school related computer usage
  – 28% reported 3+ hrs/day of TV viewing

• Middle School
  – 18% reported 3+ hrs/day of Internet use on an average school day

Massachusetts Youth Risk Behavior Survey, 2007
Costs & Consequences
Consequences

Biological and Social Health
- Overweight and obese children are more likely to become obese adults
- ↑ rates of diabetes and cardiovascular disease
- Sleeping problems, social stigmas, teasing

Productivity
- Greater levels of school absenteeism \( \Rightarrow \) decreased academic performance?
MA Childhood Diabetes Prevalence

Procedures Per 1,000 Students Per Month

Blood Glucose Testing

Insulin Pump Care

MA ESHS, 2006-2007
Costs

• State medical expenses associated with obesity:
  – Massachusetts 4.7% ($283 per capita)

• Decrease of just 5% prevalence of overweight and obesity and an increase in physical activity would save Massachusetts $9.6 billion over four years

• Per child medical expenditures for overweight & obese children are ~$200 more than for healthy weight children
Integrating Science and Policy

- New Scientific Evidence
- Enacted Policy
  Combating the Obesity Epidemic
- Bills & Initiatives
  Proposed
- Activism to
  Stop the Epidemic
Policy: Individual vs. Society

Individual  Values  Society
POLICY SOLUTIONS
Individual vs. Society

Individual - Long-term

Individual - Short-term

Society - Long-term

Society - Short-term
Massachusetts Policy & Program Landscape
MA Department of Public Health Initiatives

- **Statewide Taskforce on Obesity (2008)**: Formed to both complement and coordinate several groups around the state to fight obesity

- **Workplace Wellness Initiative (2008)**: Conceptual framework for worksite wellness initiatives

- **Wellness Grants (2007)**: Awarded $1 million in grants across the state to support healthy eating and increased physical activity
Other MA Initiatives

• Jump Up & Go!
• Growing Up Healthy
• MA Action For Healthy Kids
• Project Bread: Better Breakfast & Better Summer Meals
• Farm to School Project
Massachusetts Legislative Environment
School Wellness Policies

Only 30% of MA school wellness policies meet minimum federal requirements

– Only 70% of the policies included plans for evaluation and communication of those findings to school administration
### 2007 Obesity-Related Standards in Schools & State Initiatives

<table>
<thead>
<tr>
<th>Type of Legislation</th>
<th>Massachusetts</th>
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<tbody>
<tr>
<td>Nutritional Standards for School Meals</td>
<td>X</td>
</tr>
<tr>
<td>Nutritional Standards for Competitive Foods</td>
<td></td>
</tr>
<tr>
<td>Limited Access to Competitive Foods</td>
<td></td>
</tr>
<tr>
<td>Physical Education Requirements</td>
<td>X</td>
</tr>
<tr>
<td>BMI or Health Information Collected</td>
<td>X</td>
</tr>
<tr>
<td>Non-invasive screening for diabetes</td>
<td></td>
</tr>
<tr>
<td>Health Education Requirements</td>
<td>X</td>
</tr>
<tr>
<td>Trans Fat Restrictions</td>
<td>X</td>
</tr>
<tr>
<td>Snack Taxes</td>
<td></td>
</tr>
</tbody>
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Trust for America’s Health, 2007
Most Promising Nutrition Policy Options

1. ↑ Participation of schools in school breakfast programs

2. Changes in nutritional standards at schools
   • limit access to junk foods in cafeterias and vending machines

3. Regulation of marketing of foods to children

4. Zoning changes in the built environment around access to healthy and affordable food

5. ↑ Promotion and public acceptance of breastfeeding
Most Promising *Physical Activity* Policy Options

1. Increased physical education and recess time in schools

2. Administration of annual fitness testing in schools

3. Increase walkability and cyclability of built environment
   - design attractive sidewalk networks
   - create schoolyards, playgrounds, and trails that are safe and accessible
   - convert areas to be bike-friendly within communities to promote active living
Most Promising *Universal Approaches*

- **Recognize that we have a problem**
- **Collect Data**
  - Life course approach
  - Teaching of health professionals about “prevention”
  - Increase business and organization care for health of employees
  - Parents serve as “role models” for healthy lifestyle behaviors
    - ↑ healthy foods in the home
    - ↓ screen time
    - Promote safe, outdoor play
Need For A Coordinated Strategy
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