Public initiatives to promote fruit and vegetable consumption:
How to counter barriers to dietary change

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Director, NIH Roadmap Center for Obesity Research
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University of Washington

Fruit and vegetables and the prevention of obesity and its associated diseases.
EGEA International Conference, 17-19 April 2007, Brussels, Belgium

The importance of local data for public policy

“Passion is great but data open the door”
Charlie Royer, Former Mayor, Seattle, WA

Policymakers respond to local data on:
- Obesity rates
- F+V consumption patterns
- F+V access
- F+V price
- Impact of labeling and health claims
Overweight and Obesity Prevalence, Age 18 and Older, Washington 1990-2004

Source: Washington Behavioral Risk Factor Surveillance Data

Crude Percent

Obese 23%
Overweight 36%

Data from WA State BRFSS supplied by the Department of Health

Obesity rates by age and gender

Source: WA State DOH: Behavioral Risk Factor Surveillance System (BRFSS)

Obesity rates by SES

We can get obesity rates at even finer geographic scale

Analyses at Zip Code and census tract level

Obesity and diabetes by zip code
(BRFSS data – multiple years)
What about SES influences of fruit and vegetable consumption?

Data from WA State BRFSS

The nutrition module asks how often certain foods are eaten: fruit juice, fruit, green salad & potatoes (other than french fries, fried potatoes or chips) and carrots.

A summary index measure is derived from these questions

Note: how often an item is eaten is not the same as number of servings

WA State BRFSS

Fruits and Vegetables (BRFSS, 2003)

These next questions are about the foods you usually eat or drink. Please tell me how often you eat or drink each one, for example, twice a week, three times a month, and so forth. Remember, I am only interested in the foods you eat. Include all foods you eat, both at home and away from home.

7.1 How often do you drink fruit juices such as orange, grapefruit, or tomato?

7.2 Not counting juice, how often do you eat fruit?

7.3 How often do you eat green salad?

7.4 How often do you eat potatoes not including French fries, fried potatoes, or potato chips?

7.5 How often do you eat carrots?

7.6 Not counting carrots, potatoes, or salad, how many servings of vegetables do you usually eat?
**BRFSS 2003: F+V intakes by age and SES**

Eat Fruit and Vegetables 5 Times a Day Washington Adults by Age Group, 2003

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 to 24</td>
<td></td>
</tr>
<tr>
<td>25 to 34</td>
<td></td>
</tr>
<tr>
<td>35 to 44</td>
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<tr>
<td>45 to 54</td>
<td></td>
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<tr>
<td>55 to 64</td>
<td></td>
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<tr>
<td>65 and over</td>
<td></td>
</tr>
</tbody>
</table>

Eat Fruit and Vegetables 5 Times a Day Among Washington Adults by Education, 2003

<table>
<thead>
<tr>
<th>Educational Level</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than high school</td>
<td></td>
</tr>
<tr>
<td>High school graduate/ GED</td>
<td></td>
</tr>
<tr>
<td>Some post high school</td>
<td></td>
</tr>
<tr>
<td>College graduate</td>
<td></td>
</tr>
</tbody>
</table>

Eat Fruit and Vegetable 5 Times a Day Among Washington Adults by Income, 2003

<table>
<thead>
<tr>
<th>Income Level</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;$15,000</td>
<td></td>
</tr>
<tr>
<td>$15,000-$24,999</td>
<td></td>
</tr>
<tr>
<td>$25,000-$34,999</td>
<td></td>
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<tr>
<td>$35,000-$49,999</td>
<td></td>
</tr>
<tr>
<td>$50,000-$74,999</td>
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<tr>
<td>$75,000 or more</td>
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</tbody>
</table>

**F+V patterns track US trends**

Prevalence of eating fruits and vegetables 5+ times per day
WA State and US, BRFSS 1994 - 2005

<table>
<thead>
<tr>
<th>Year</th>
<th>WA</th>
<th>US</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>1996</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>1998</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>2000</td>
<td>30</td>
<td>30</td>
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<tr>
<td>2002</td>
<td>25</td>
<td>25</td>
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<tr>
<td>2003</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>2005</td>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>

5 A Day by SES

<table>
<thead>
<tr>
<th>Income Level</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;$20k</td>
<td></td>
</tr>
<tr>
<td>$20k-$50k</td>
<td></td>
</tr>
<tr>
<td>&gt;$50k</td>
<td></td>
</tr>
<tr>
<td>&lt;HS</td>
<td></td>
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<tr>
<td>&gt;HS</td>
<td></td>
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<td>Coll</td>
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</tbody>
</table>

Data from WA State BRFSS supplied by the Department of Health
F+V consumption, obesity, and diabetes by WA county

We have mapped the location of all food stores in King County:

- Grocery stores and supermarkets
- Convenience stores
- Fast food restaurants
- Starbucks

- Seattle does not have food deserts
Density of grocery stores in Seattle-King County, WA

Legend
Kernel Density of Grocery Stores

Data source: Washington State Geospatial Archive, Corporate Websites and United States Census Bureau

Density of convenience stores in Seattle-King County, WA

Legend
Number of Conv Stores Per Mile

Data source: Washington State Geospatial Archive
Density of fast food outlets in Seattle-King County, WA

Legend
Number of Fast Food Rest Per Mile

Data source:
Washington State Geospatial Archive, Corporate Websites and United States Census Bureau

Is it a question of cost?
Access to healthy affordable foods:
WA State Community consumer survey

Nutrition objective #1

- Increase the consumption of vegetables and fruits
- Improve access to health promoting foods
- This means physical and *economic* access

- This requires public policy initiatives at local, state, or regional level

- In other words, a state plan
The WA State plan

• Developed by WA State Department of Health to address the obesity epidemic
• Input from researchers and health professionals
• Implemented in selected communities
• Funded by CDC
• Subject to regular evaluation at local and state level
Objectives of the State Plan

**Nutrition Objectives:**
1. Increase access to health promoting foods
2. Reduce hunger and food insecurity
3. Increase the proportion of mothers who breastfeed their infants and toddlers

**Physical Activity Objectives:**
1. Increase the number of people who have access to free or low cost recreational opportunities for physical activity
2. Increase the number of physical activity opportunities available to children
3. Increase the number of active community environments

Levels of Influence in the Social-Ecological Model

- **Structures, Policies, Systems:** Local, state, federal policies and laws to regulate/support healthy actions
- **Institutions:** Rules, regulations, policies & informal structures
- **Community:** Social Networks, Norms, Standards
- **Interpersonal:** Family, peers, social networks, associations
- **Individual:** Knowledge, attitudes, beliefs

Focus of the Washington State Plan for Nutrition and Physical Activity
LOGIC MODEL: Washington State Plan for Physical Activity and Nutrition

Inputs
- CDC: funds & guidance
- DOH Staff, Time, Money
- Systems CTED, DOT, Parks & Rec
- State-wide Coalitions Action for Healthy Kids, Access to Healthy Foods, Food Policy Council, WA PA Coalition, WA Coalition for Healthy Aging
- Local Community Healthy Communities STEPS Communities Prevention Block Grants

Activities
- Communication & outreach Partner with systems, state coalitions & local communities
- Technical assistance & training Development of assessment tools & resource guides
- Legislation & Policy Development with organizations & agencies
- Pilot Programs (Vending, schools)
- Development of local action plans, using strategies from the State Plan
- Communication & outreach Develop & implement policy recommendations by sectors

Intermediate Outcomes
- Partnerships & Collaborations are Established and Working
- Changes in Policy
- Changes in the environment
- Physical Activity & Improved dietary behavior
- Long-term Outcomes
- Decreased Obesity
- Decreased incidence of chronic disease

Short-Term Outcomes
- Physical Activity & Improved dietary behavior
- Increased Media Coverage About Physical Activity & Nutrition
- Financial Support for Physical Activity & Nutrition Efforts Increases
- Partners Incorporate State Plan into their Own Work Plans

Intermediate Outcomes
- Decreased Obesity
- Decreased incidence of chronic disease

Long-Term Outcomes
- Decreased Obesity
- Decreased incidence of chronic disease

Outputs
- Decreased Obesity
- Decreased incidence of chronic disease

NUTRITION OBJECTIVES & PRIORITY RECOMMENDATIONS

Access to Health-Promoting Foods
- Increase the consumption of vegetables and fruits
- Ensure that worksites provide healthy foods and beverages
- Ensure that schools make healthy choices through guide to 12 provide healthy foods and beverages

Ongoing Collaboration

Reduce Hunger and Food Insecurity
- Provide adequate support for nutrition and food programs
- Improve access to nutrition programs

Increase the Fatherhood of Fathers Who Breastfeed Their Infants and Toddlers
- Ensure that health-care settings, childcare facilities, and workplace environments are breastfeeding friendly
### Improve access to health promoting foods

<table>
<thead>
<tr>
<th>Sector: Community</th>
<th>Access to healthy foods</th>
<th>Free or reduced-cost opportunities for physical activity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>● Healthier food choices are clearly labeled in the store, such that nutritional information, such as the fat and calorie content, can be evaluated.</td>
<td>● Places available to engage in physical activity, including local schools, community recreational centers or gyms, parks, parks with playgrounds, and trails for walking and biking: (Is the destination there &amp; what is the distance) ● Availability of places to walk or bike to in the community ● How long it would take to walk to the nearest grocery or supermarket; convenience store or small grocery store; school; restaurant; parks; playgrounds; trails;</td>
</tr>
<tr>
<td></td>
<td>● Whole grain foods available in store. 1% or non-fat milk and milk products available in store. Lean meats and fish available in store. Fresh fruits and vegetables available in store.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Fresh fruits and vegetables available in store.</td>
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<tr>
<td></td>
<td>● Brightly-colored fresh fruits and vegetables, available in store.</td>
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<tr>
<td></td>
<td>● Affordable fresh fruits and vegetables are available in store.</td>
<td></td>
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<tr>
<td></td>
<td>● High-quality fresh fruits and vegetables are available in store.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Healthy choices available on restaurant menus, such as main dish salads, low-fat or low-calorie options ▪ Healthier food choices on menus clearly labeled as &quot;healthy&quot;. ▪ Menu substitutions to get healthier items are permissible.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● It is possible to get nutritional information, such as the fat and calorie content of menu items from information listed on the menu or posted in the restaurant.</td>
<td></td>
</tr>
</tbody>
</table>

### Improve access to healthy foods in workplaces

<table>
<thead>
<tr>
<th>Sector: Worksites</th>
<th>Access to Healthy Foods</th>
<th>Breastfeeding</th>
<th>Free or Reduced cost opportunities for physical activity</th>
<th>Increase Active Community Environments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>● Low-fat milk, fresh fruits &amp; vegetables, water, 100% juice, and low fat snacks are available in cafeteria. Low-fat milk, fresh fruits &amp; vegetables, water, 100% juice, and low fat snacks are available in vending. “Healthy food” labeling used in cafeteria “Healthy food” labeling used in vending. Has a written policy for healthy foods at meetings. Has a place for employees to sit &amp; eat meals Has microwaves employees can use to cook their food Has refrigerators for employees to store their food</td>
<td>● Has a written breastfeeding policy. ● Has a designated breastfeeding room or area. Breastfeeding room has electrical outlet, locking door, sink with soap &amp; water, refrigerator to store milk.</td>
<td>● Has a policy for employees to use paid time or flex time for exercise ● Provides subsidy to fitness clubs or gyms ● Has a policy to encourage employees to take stairs (in buildings with elevators present) ● Has signs to promote stair use (in buildings with elevators present) ● Has policies to encourage alternative transportation to work</td>
<td>● Has policies to encourage alternative transportation to Work (walk/bike/public transportation)</td>
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</tbody>
</table>
### Promote healthful foods and beverages in schools

<table>
<thead>
<tr>
<th>Sector: Schools</th>
<th>Access to Healthy Foods</th>
<th>More opportunities for physical activity</th>
<th>Policy measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data Collection Tool: Youth Survey</strong></td>
<td>Low-fat milk, fresh fruits &amp; vegetables, water, 100% juice, and low fat snacks are available in cafeteria.</td>
<td>Make it easier to be active in schools</td>
<td>Support the WA School Food Service Association (WSFA) long range legislative plan</td>
</tr>
<tr>
<td></td>
<td>Adopt policies that ensure that all foods and beverages available on school campuses and school events are consistent with dietary guidelines</td>
<td>Provide daily good quality physical education for all students</td>
<td>Support the use of community agriculture programs in local schools (farm to school programs)</td>
</tr>
<tr>
<td></td>
<td>This includes foods available from vending machines, school stores, at sports events, and parent meetings and staff meetings</td>
<td>Teach skills that promote lifelong physical activity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Increase the number of children who participate in school meals</td>
<td>Train teachers in physical education and enhance training of PE teachers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Improve the quality of school meals</td>
<td>Support Safe and Active Routes to School</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Minimize the sale of competitive foods and beverages</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Data Collection Tool: Youth Survey*

- Low-fat milk, fresh fruits & vegetables, water, 100% juice, and low fat snacks are available in cafeteria.
- Adopt policies that ensure that all foods and beverages available on school campuses and school events are consistent with dietary guidelines.
- This includes foods available from vending machines, school stores, at sports events, and parent meetings and staff meetings.
- Increase the number of children who participate in school meals.
- Improve the quality of school meals.
- Minimize the sale of competitive foods and beverages.

**Policy measures**

- Make it easier to be active in schools.
- Provide daily good quality physical education for all students.
- Teach skills that promote lifelong physical activity.
- Train teachers in physical education and enhance training of PE teachers.
- Support Safe and Active Routes to School.
- Support the WA School Food Service Association (WSFA) long range legislative plan.
- Support the use of community agriculture programs in local schools (farm to school programs).

**Nutrition Objectives & Priority Recommendations**

**Access to Health-Promoting Foods**

- Increase the consumption of vegetables and fruits.
- Ensure that school cafeterias and vending machines provide healthful foods and beverages.
- Increase access to healthful foods and beverages.

**Reduce Hunger and Food Insecurity**

- Provide adequate support for nutrition and food programs.
- Improve access to nutrition programs.

**Increase the Number of Mothers Who Breastfeed Their Infants and Toddlers**

- Ensure that health care settings, childcare facilities, and workplaces are supporting breastfeeding.

**Ongoing Collaboration**

The activities proposed in the Nutrition and Physical Activity Plan will take place within a network of partners that includes schools, community agencies, and state and local government agencies. These partners will promote the health of all Washingtonians through policy and program collaborations with commitment to policy makers in communities and agencies across Washington State. The goals and strategies of the plan will be achieved through ongoing collaboration between agencies, organizations, and individuals who share a common purpose. The plan partners will evaluate progress toward each of the objective and monitor the dissemination and impact of the plan itself.
Rendre atteignable le repère de consommation de fruits et légumes pour tous

Améliorer l’offre alimentaire dans les établissements scolaires

Renforcer les actions locales et la complémentarité entre niveau national, régional et local

Promouvoir l’allaitement

Actions spécifiques destinées aux populations défavorisées au niveau des structures d’aide alimentaire

Plan d’actions 1 : Prévention nutritionnelle globale : offrir à tous les conditions d’une alimentation et d’une activité physique favorable à la santé. Renouer réellement réaligner les repères de consommation du PNEA.

Plan d’actions 2 : Prendre en charge l’obésité de l’enfant et de l’adulte

Plan d’actions 3 : Améliorer la prise en charge transversale de la dénutrition ou de son risque, notamment chez le sujet âgé (en ville et dans les établissements de santé et médico-sociaux).

4.3.3.1. Actions directes pour permettre une réelle augmentation de la consommation de fruits et légumes par les populations concernées pour les consommateurs défavorisés

4.3.3.2. Actions au niveau des structures d’aide alimentaire
### Plan d'Actions « Prévention nutritionnelle globale : offrir à tous les conditions d’une alimentation plus favorable à la santé »

<table>
<thead>
<tr>
<th>N° ACTION</th>
<th>MEASURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Abaisser le prix des fruits et légumes (<em>4.1.1.1</em>)</td>
</tr>
<tr>
<td>2.</td>
<td>Améliorer la disponibilité et l'accessibilité des fruits et légumes (<em>4.1.1.2</em>)</td>
</tr>
<tr>
<td>3.</td>
<td>Renforcer la facilité et la qualité de consommation des fruits et légumes et valoriser l'image des fruits et légumes (<em>4.1.1.3</em>)</td>
</tr>
<tr>
<td>4.</td>
<td>Stimuler la qualité quantifiée des fruits et légumes (<em>4.1.1.4</em>)</td>
</tr>
</tbody>
</table>

#### Data Collection Tool:
- Community Poll
### Promote healthful foods and beverages in schools

<table>
<thead>
<tr>
<th>Actions spécifiques destinées aux enfants en milieu scolaire</th>
<th>Policy measures</th>
</tr>
</thead>
</table>
| 11 1. Améliorer l’offre alimentaire dans les établissements scolaires (4,1,2,4) | - Support the WA School Food Service Association (WSFA) long range legislative plan  
- Support the use of community agriculture programs in local schools (farm to school programs) |
| 12 1. Augmenter l’activité physique à l’école (1,2,3) | - Multiple opportunities for physical activity  
- Access to Healthy Foods  
- Sector: Schools |

#### Data Collection Tool:
- Youth Survey
- Policy measures
- More opportunities for physical activity
- Access to Healthy Foods
- Sector: Schools

### A point of controversy: money

Se donner les moyens de faire fonctionner le PNNS de façon pérenne pour atteindre les objectifs fixés en 2003 et mettre en place une réelle politique nutritionnelle de santé publique pour l’avenir

1. **Créer un Fonds National de la Promotion de la Nutrition (FNPN)** qui permettrait de financer la mise en œuvre des actions d’amélioration nutritionnelle visant les populations défavorisées

Le financement des actions serait obtenu de la manière suivante :
- 4 % à financer les actions qui visent à améliorer la qualité nutritionnelle des aliments pour les populations défavorisées
- 4 % à financer les actions qui visent à améliorer la qualité nutritionnelle des aliments pour les populations défavorisées
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Les ressources issues de la taxe sur les boissons sucrées et les distributions assureront ainsi une économie partielle (30 à 40 %) et permettront d’atteindre les objectifs fixés par les pays de l’UE à moyen terme.
Conclusions

• There are barriers – social and economic to the adoption of healthier diets by all members of the community
• These barriers are beyond individual control
• Public initiatives to counter these barriers need to involve policy change
• This will require community organization and support for policy and political action
• As always – budget questions will be crucial