Discussion Roadmap

- Obesity as a public health problem
- Factors influencing overweight and obesity among children and adults
- Community-based research to gather practice-based evidence
- GROW HKC: a multi-level model of obesity prevention
Session Objectives

- **Participants will be able to:**
  - **Identify** multi-level factors that contribute to obesity and impede progress in obesity prevention
  - **Communicate** the importance of coordinated, multi-faceted approaches to obesity prevention
  - **Learn** about a regional multi-level project to prevent obesity among rural children and families
Over the next 20 years the additional number of obese persons will cost the healthcare system an additional $550 billion. More than the U.S. Department of Defense’s total budget in 2013...
Overweight and Obesity Definitions

• Adults, 20 years and older
  — Overweight = Body Mass Index (BMI) 25-29.9 kg/m²
  — Obese (Grade 1) = BMI ≥ 30 kg/m² < 35 kg/m²
  — Obese (Grade 2) = BMI ≥ 35 kg/m² < 40 kg/m²
  — Obese (Grade 3) = BMI ≥ 40 kg/m²

• Children and adolescents, 2-19 years
  — Overweight = BMI- for-age ≥ 85th < 95th percentile
  — Obese = BMI- for-age ≥ 95th percentile
Latest Numbers of Obese Americans

78.1 million

12.5 million

Source: CDC/NCHS, National Health and Nutrition Examination Survey, 2009-2010; Ogden et al., NCHS Data Brief No. 82, January 2012
Latest Adult Obesity Trend Data
Ages 20 and over

- Women: 33.4%
- Men: 27.5%
- Ages 20 and over: 35.5%

Ogden et al., NCHS Data Brief No. 82, January 2012
Obesity Trends Among U.S. Children

![Graph showing obesity trends among U.S. children by age from 1988-1994 to 2007-2008. The graph indicates an increasing trend with peak percentages in 2007-2008 at 15% for 12-19 years and 10% for 2-5 years, with a decrease back to 11% for 6-11 years by 2007-2008.]

Barriers to Obesity Prevention

• Achieving energy balance is an individual level expectation with multi-level level challenges.

• Individual, family, community level factors impact our health behaviors.
The prevalence of childhood overweight and obesity is higher among children living in rural areas (36% vs. 30%).

Most evidence-based practice and obesity preventing programs were developed and tested in more urban environments.

Rural communities face unique social and structural challenges that can have an impact on healthful eating and physical activity different from those found in urban places.
GROW HKC Theoretical Framework

Healthy, Active Rural People and Places

- Individual
- Families and Social Networks
- Organized Groups
- Community Policies and Practices
- Regional, State, and Federal Rules and Policies

Coalition Building
Community Participatory Research, Education, and Mobilization
Planning & Advocacy

Multi-Level, Multi-Sector Social Ecological Model

Attributes of People ↔ Attributes of Place

Adapted from Maibach et al, APHA Annual Meeting 2007
GROW HKC Specific Aims

- Our **first aim** is to understand the rural obesogenic environment.
- OSU is partnering with Extension Services in six Western States to engage rural people in community-based participatory research.
Aim 1 Activities

In the community

- N≥6 Rural Communities in three Oregon Counties
- N≥10 Rural Communities in five additional Western States (AZ, CO, NM, NV, WA)
  - Rural (population < 10,000), distance to urban center, poverty, region

Interested in conducting HEAL MAPPS Trainings in your area? Let us know!!
Community-Level Data

• Resident driven understanding of the attributes of the community relative to HE and PA
  – HEAL MAPPS

• Community Readiness
  – HEAL MAPPS

• Objective measure of existing resources
  – Community Audit

A model of the rural obesogenic environment will be used to drive obesity preventing strategies.
Healthy Eating Active Living
Mapping Attributes using Participatory Photographic Surveys

HEAL MAPPS TOOLS

COMMUNITY ENGAGED ACTION RESEARCH

COMMUNITY PARTICIPATORY PHOTO MAPPING

FOCUSED GROUP DECISION-MAKING

MAPPS RESULTS CONSENSUS REPORT

COMMUNITY MOTIVATIONAL CONVERSATION
HEAL MAPPS mobilizes local residents to…

- **Assess environmental features**
  of the rural community that make easier or harder eating healthfully and being physically active

- **Address people’s different perceptions**
  of their local community features as supports or barriers to healthy behaviors

- **Identify environmental factors**
  that affect rural residents’, particularly children and families, ability to meet guidelines for healthy nutrition and physical activity behaviors

- **Present findings and plan actions**
Community members are provided MAPPS equipment and trained to use tools to map features of their community. On their own or with a partner, they photograph (and map) their direct experiences with the food and physical activity environment in the community. They record their experiences of the community features along their route on their route journal.
A lot of kids have long bus rides to school...when they arrive they sit in the class all day.
HEAL MAPPS Routes
...tell a story of how people intersect with the food and physical activity features of their rural place.

Route Key
Red = Walk
Green = Bike
Orange = Auto
Community Conversation:
How knowledgeable are the people in your community about the link between the community environment and obesity?

Most kids have a 30-40 minute commute then right into the classroom; rural schools and shortened school days make it harder for kids and families to promote healthy lifestyles; I wish my kids could bike to school and home; by the time the kids get home, my youngest is starving with lunch at 10:45

1) Easy for you or others to be physically active
2) Hard for you or others to be physically active
3) Easy for you or others to eat healthy
4) Hard for you or others to eat healthy
Data and Reports...

- Data analyzed at local level are provided to participating communities as HEAL MAPPS Community Report.
- Community data are aggregated at the state-level and analyzed to inform a model of rural obesity prevention.

HEAL MAPPS helps us help communities to Generate Rural Options for Weight-HEALTHY KIDS!
• Our **second aim** is to plan, implement, and evaluate a multi-level intervention targeting rural home, school, and community behavioral settings to promote HE and increase PA, and thus improve weight status among rural children.
• All communities are low income
  – defined by elementary schools with > 50% of student population eligible for free/reduced meals
• Intervention efforts directed toward:
  – Community, School, Family Home
It takes a village to change behavior....

- Promoting PA
- Promoting HE
- Sectors of Influence
  - Community
    - Private
    - Public
  - Schools
  - Family Homes

Positive efforts in one environment (e.g. schools) can be undone if other environments (home) do not promote opportunities for PA or HE or demonstrate value toward PA and HE.
Framework for Intervention Action: Health Impact Pyramid

- Child & Family Direct Education Delivery
- Family Home, School, Community
  - Situational, Physical, Policy Environment

Socioeconomic Factors
- Changing H,S,C, Environments to Optimize Defaults
- Long-lasting protective interventions
- Clinical Interventions
- Direct Education
Family Home

• Family Nutrition and Physical Activity Assessment (FNPA)
• Home PA Environmental Audit
• Family Stage of Change
• Family PA
  – Accelerometers
• Family Diet
  – Recall
Does your family home have adequate outdoor space for child and family active play?

Do you have play items that support active play (e.g. bicycles, balls, hula hoops)

Does your family use candy or sweets as a reward for good behavior?

Does your family find ways to be physically active together?

Does your family limit the amount of TV/electronic media your child watches?

Does your family limit the eating of chips, cookies, and candy?
Family Stage of Change (FSOC)

- The FSOC is a tool to help us target our intervention strategies so they have the greatest potential for positive impact!

**Statement 1:** We eat meals as a family together.

<table>
<thead>
<tr>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Almost always</th>
<th>Always</th>
</tr>
</thead>
</table>

- Does your family **plan to eat more meals** together?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

- Does your family **plan to eat more meals** together in the **next 6 months**?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

- Has your family been eating **most or all meals** together as a family for **at least 6 months**?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

- Check how many meals you eat together **in an average week**.

<table>
<thead>
<tr>
<th>0 meals</th>
<th>1-5 meals</th>
<th>6-10 meals</th>
<th>11-15 meals</th>
<th>16 or more meals</th>
<th>I Don’t Know</th>
</tr>
</thead>
</table>
School Environment

• School Nutrition and Physical Activity Assessment of the Environment (SNPA)
• Whole School BMI
  – Grade
  – Sex
School Environment: SNPA

- **Physical Activity (N=16)**
  - Indoor PA/Active Play Space
  - Fixed Outdoor Features/Space
  - Shelter & Shade Structures
  - Surface and Surface Markings
  - Neighborhood Features
  - Portable Equipment
  - PA & Wellness Policy
  - Structured Physical Education

- **Nutrition (N=11)**
  - Safe & Adequate Meal Service Area
  - School Meals
  - Healthy Food & Beverage Practices
  - Promoting Water Consumption
  - Nutrition & Wellness Policy
  - Health & Nutrition Education

Each item is scored and the tool provides a baseline measure that is sensitive to change. The SNPA also works as an intervention strategy identifying areas of “opportunity” to improve the SNPA environment.
SNPA School Report can be used to:

- Measure change as a result of intervention activities
- Secure grant funding
- Document school-level changes resulting from national, state, and/or district policies
- Evaluate school wellness, health and performance factors & practices
Baseline Prevalence of Overweight and Obesity by Gender (n=1737)

- Overweight or obese (≥ 85th %ile):
  - Boys: 36%
  - Girls: 34%

- Obese (≥ 95th %ile):
  - Boys: 19%
  - Girls: 17%
Proportion of Obese Children by Grade – All Schools

<table>
<thead>
<tr>
<th>Grade:</th>
<th>K</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number Assessed</td>
<td>276</td>
<td>287</td>
<td>324</td>
<td>284</td>
<td>322</td>
<td>244</td>
</tr>
<tr>
<td>Mean BMI Percentile</td>
<td>65.7</td>
<td>67.5</td>
<td>69.3</td>
<td>65.7</td>
<td>69.2</td>
<td>69.7</td>
</tr>
<tr>
<td>p-value (^1,^2)</td>
<td>-</td>
<td>0.216</td>
<td>0.047</td>
<td>0.489</td>
<td>0.057</td>
<td>0.048</td>
</tr>
<tr>
<td>Proportion Overweight / Obe</td>
<td>0.31</td>
<td>0.30</td>
<td>0.35</td>
<td>0.33</td>
<td>0.39</td>
<td>0.41</td>
</tr>
<tr>
<td>p-value (^1,^2)</td>
<td>-</td>
<td>0.415</td>
<td>0.145</td>
<td>0.280</td>
<td>0.020</td>
<td>0.008</td>
</tr>
<tr>
<td>Proportion Obese</td>
<td>0.13</td>
<td>0.16</td>
<td>0.16</td>
<td>0.19</td>
<td>0.22</td>
<td>0.23</td>
</tr>
<tr>
<td>p-value (^1,^2)</td>
<td>-</td>
<td>0.158</td>
<td>0.150</td>
<td>0.027</td>
<td>0.002</td>
<td>0.002</td>
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\(^1\) All p-values were calculated using Kindergarten as the reference group.
Grow HKC Research Team

• Principal Researchers
  – Deborah John, PhD
  – Kathy Gunter, PhD

• Co-Researchers
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• State and County Partners
Thank You!

Questions??