Building the Foundations of Child Health: Addressing the Triple Threat of Obesity, Food Insecurity and Hunger

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Objectives
• Understand factors contributing to childhood obesity and food insecurity and their effect on child health
• Understand the role of health professionals, health systems and community in advocacy
• Understand how developing shared values leads toward collective impact and action
• Mobilize the pediatric health professional community to a convergence of thinking and action to improve child nutrition

Foundations of Child Health
- Appropriate Nutrition
- Stable, responsive and nurturing care giving
- Safe and Supportive Environments

Children’s Nutritional Needs
• “an adequate diet for children...one that contains an appropriate density of nutrients, is sufficiently diverse that it supplies adequate but not excessive amounts of nutrition, is palatable and culturally acceptable, affordable and available year round and overall supports normal growth and development.”
Double Burden

- Obesity and undernutrition have been seen as separate and sometime opposing entities.
- However, these two conditions coexist globally, nationally and locally and even within families and individuals.
- The dual burden of under and overnutrition occurring simultaneously within a population is referred to as the double burden of malnutrition.

Morbidity and Mortality Weekly Report
State specific Trends in Fruit and Vegetable Consumption Among Adults
September 10, 2010 / 59(35);1125-1130

3/13/2015

Figure 1
Annual soft drink production in the United States (12-oz. cans/person)

140kcal/soda = 63,000 kcal/year = 170kcal/day = 16lbs/year
Health Consequences of Childhood Obesity

**Burden of non communicable disease**

- Type 2 diabetes
- Hypertension
- Nonalcoholic fatty liver disease
- Dyslipidemia
- Upper Airway Obstruction
- Sleep Apnea Syndrome
- Blount’s Disease
- Polycystic ovary syndrome
- Obesity related emergencies
- Depression/anxiety

**Obesity related comorbidities**

- Type 2 diabetes
- Hypertension
- Nonalcoholic fatty liver disease
- Dyslipidemia
- Upper Airway Obstruction
- Sleep Apnea Syndrome
- Blount’s Disease
- Polycystic ovary syndrome
- Obesity related emergencies
- Depression/anxiety
Among both boys and girls obesity prevalence decreases as income increases, but this relation is not consistent across race and ethnicity groups.

Figure 1. Prevalence of obesity among children and adolescents aged 2–19 years, by poverty income ratio, sex, and race and ethnicity, United States, 2005–2008.

Food insecurity

• "the limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways."
• "Very low food security," the most severe level measured by the survey, is characterized by irregular meals and inadequate food intake, as determined by caregivers

• U.S. Department of Agriculture
  http://www.childtrends.org/?indicators=food-insecurity#sthash.VXI2ws3z.dpuf

Food Insecurity

• 2013, 21% (> 1 in 5) U.S. children lived in households that were food-insecure at some point during the year
• 1% experienced the most severe level of need, where food intake is reduced and regular eating patterns are disrupted

• http://www.childtrends.org/?indicators=food-insecurity#sthash.VXI2ws3z.dpuf
Food Insecurity in Households


Figure 1

Percentage of Children (0-17) in Food-Insecure Households: Selected Years, 1995-2013

Food insecurity in households with children


Households with higher rates of food insecurity
- Households with children (20.6%)
- Households with children under 6 yr (21.9%)
- Incomes near or below poverty line
- Headed by single women (36.9%) or single man (24.9%)
- Black (25.9%) or Hispanic (26.2%) households
- Households with incomes <185% poverty (34.5%)
- Large cities (17.7%) and rural areas (15.4%)
- Only 57% participated in SNAP, WIC, School lunch
- Most food insecure households had very low food security
  several days each month for 7 mo/year
- Food secure households spent 24% more for food (including SNAP)

Child Health and Food Insecurity
- Parent reported poorer health and developmental risk
  - More frequent stomach aches, headaches, colds, hospitalizations, anemia and chronic conditions
  - More anxiety, depression, school difficulties
  - More difficulty with interpersonal skills, self control, attentiveness, flexibility and persistence
- Infants more likely to have insecure attachments and perform more poorly on cognitive assessments
  - Zaslow M et al Food insecurity during infancy: Implications for attachment and mental proficiency in toddlerhood. Maternal and Child Health Journal 13(1) 66-80
The Cost of Hunger

Annual cost burden of hunger in the US $167.5 billion.

Costs associated with charity, chronic illness, psychosocial dysfunction, diminished learning and economic productivity

“Nutritional Landscape”

- Misaligned Food Supply
- Inadequate dietary access
- Poor dietary quality
- Undernutrition
- Nutritional risk
- Micronutrient Deficiency
- Hunger/Food Insecurity
- Lack of Healthy Lifestyle Skills
- Obesity

49 MILLION
16 MILLION
3,143 COUNTIES
IN THE UNITED STATES

$5.26 PER PERSON PER MEAL
2012: HUNGER/
FOOD INSECURITY INCREASES


Figure 1. Percentage of the People Living in Poverty Areas by State: 2006-2010

Food Insecurity and Obesity

- Today, however, the picture of food insecurity is increasingly an overweight or obese child consuming a poor-quality diet
- Highest rates of obesity are found in people with the lowest incomes
  - Among poor populations, 7 times as many children have obesity as are underweight
- The challenge for low-income families in today's modern food environment is not obtaining enough food, but rather having dependable access to high-quality food
  - An estimated 16.7 million youth younger than 18 years do not consistently know when, or how adequate, their next meal will be

Limited Resources and Lack of Access to Healthy Affordable Foods

- Lack of full service grocery stores and farmer's markets
  - Reliance on corner/convenience stores
- Greater density of fast food
  - Larson N et al Neighborhood environments, disparities in access to healthy foods in the US 2009 Am J Prev Med. 36(1) 74-81
- Cost differential between healthy (nutrient dense) and unhealthy food (energy dense/nutrient poor)
- Poorer quality healthy food
  - Andreyeva T et al Availability and prices of foods across neighborhoods The case of New Haven CN 2008 Health Affairs 27(3) 1380-1388

Coexistence of Food insecurity and obesity

- Food insecure and low-income people are especially vulnerable to obesity due to the additional risk factors associated with poverty, including:
  - Limited resources
  - Lack of access to healthy, affordable foods
  - Fewer opportunities for physical activity
  - Cycles of food deprivation and overeating
  - High levels of stress
  - Greater exposure to marketing of obesity-promoting products
  - Limited access to health care

Fewer Opportunities for Physical Activity

- Fewer parks, green spaces, bike paths, and recreational facilities
  - Andreyeva T et al Physical activity levels among children 9-13 years United States 2002 MMWR 52(33) 785-788
- Crime, traffic and unsafe play spaces
  - Duke J et al Physical activity levels among children 9-13 years United States 2002 MMWR 52(33) 785-788
- Expense and transportation to participate in sports
  - Barros R et al School recess and group classroom behavior 2009 Pediatrics 123(2) 430-436
- Low income students spend less time being active in PE and have less recess
  - Barros R et al School recess and group classroom behavior 2009 Pediatrics 123(2) 430-436
Cycles of Food Deprivation and Overeating

• Metabolic consequences of cycles of over and under consumption
  ▫ Alaimo K et al Low family income and food insufficiency in relation to overweight in US Children is there a paradox? 2000 J Pediatr Adolesc Med 154(10)1046-1051
  ▫ Dietz W Does hunger cause obesity? Pediatric 95(3) 765-767

• Maternal food restriction leading to obesity
  ▫ McIntyre L et al Do Low income mothers compromise their nutrition to feed their children? 2003 Canadian Med Assoc J 168. 686-691

High Levels of Stress

• Financial and emotional stress
  ▫ Food insecurity, low wage work, difficulty paying bills, inadequate and long distance transportation, neighborhood violence
  ▫ Block JP et al Psychological stress and change in weight among US adults 2009 Am J Epid 170 (2) 181-192

Greater Exposure to Obesity Promoting Products

• Fast food, sugary beverages, television shows, video games
  ▫ Kamanyika S et al Targeting interventions for low income and ethnic populations 2006 Future of Children 16(4) 187-207

Strategies to improve nutrition

Correcting Basic Undernutrition

• Education
• Dietary modification
• Food provision
• Supplementation and fortification
• Consensus needs to be built around approaches to scale up coverage and delivery strategies to reduce disparities and provide equitable access.
• Strategies to address food insecurity and poverty alleviation are key

Obesity prevention and Treatment

• Adult and child health education
• Family Systems change
• Lifestyle modification
• Interaction with clinical care
• Access to healthy affordable food
• Opportunity and access to physical activity
**Neighborhoods**

**Correcting Basic Undernutrition**
- Improve transportation to healthy food sources
- Decrease unhealthy food options
- Lower cost of healthy foods
- Alter existing shopping patterns

**Obesity prevention and treatment**
- Ability to walk to school
- Child friendly neighborhoods
- Neighborhood culture (active or inactive)
- Faith based initiatives
- Access to health care providers and services


**Employers/Workplace**

**Correcting Basic Undernutrition**
- Increase income eligibility for food assistance programs
- Increase adult full time employment
- Increase eligibility for households with disabled adult
- Increase high school completion for adults in household

- Health benefits
- Wellness programs
- Healthier work environments
- Activity opportunities
- Marketing of healthier choices


**Schools and Childcare**

**Correcting Basic Undernutrition**
- Increase participation in school lunch program
- Increase breakfast in class
- Increase nutritional quality of after school snack
- Consider alternate venues for summer feeding programs
- Identify infants with undernutrition

**Obesity prevention and treatment**
- Vending machine snacks and beverages
- School meals
- Physical education
- Fund raising
- Health education
- Built environment
- Time constraints

**Community Level**

- “Built environment”, parks, playgrounds, sidewalks, safety
- Availability of community and activity nutrition and activity resources
  - Food banks, fresh produce, Boys and Girls Club, YMCA, community sports
- Employer support for nutrition and activity
- Community group educational and program efforts
Population Level

- State and National policy
  - Healthy Hunger Free Kids Act
  - WIC
  - SNAP
  - Head Start

Obesity in Primary Care

- Calculate and classify BMI
- Screen for obesity related comorbidities
- Focus on stepwise family based change for children with obesity
- Prevention 5210
- Focus on early feeding and activity
- Foster parenting skills

Food insecurity in primary care

- Know your community’s resources for food, housing, literacy, early education etc.
- Ask about food insecurity
  - “Within the past 12 months we worried whether our food would run out before we got money to buy more”
  - “Within the past 12 months the food we bought just didn’t last and we didn’t have money to get more.”
- Screen for key poverty related health conditions
  - asthma, obesity, dental caries, injuries, mental health diagnosis, HIV infections, and tobacco exposure etc.

Families

- Understanding the families relationship with their environment at the population, community, workplace and school is part of putting the obesity puzzle together.
- ? How can we look at family function to enhance the work of obesity prevention, intervention and treatment?
Characteristics of Effective Health Care Systems

- Integration of information
- Measurement
- Interdependence of the care team
- Supportiveness of the larger system
- Constancy of purpose
- Connection to the community
- Alignment of role and training
- Investment in improvement


Integration of Information

- Basic information about healthy nutrition and activity that is:
  - Objective and general
    - Based on basic principles of nutrition and activity
    - Based on research/experience
  - Patient and family specific
    - Family report of diet and exercise
    - Family concerns re food insecurity
    - Family ability, confidence and desire to change
  - Developmentally appropriate
  - Culturally sensitive
  - Economically sound

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Measurement

- Families need to understand growth measurement in children
  - Familiarity with growth charts
  - Understand BMI, what it means, what it defines
  - Understand the link between growth and behavior
- Be able to assess their families health related behavior

Interdependence of the care team

- The family is the fundamental unit of health care delivery
  - Family members need to understand their importance and the effect they have on the child's nutrition and activity
  - Understanding the family system is important in making change
  - There is a need to integrate and communicate between all who care for the child
  - Family, extended family, child care, school, after school, sports, activities
### Supportiveness of the larger system

- Interaction with those who provide health care and health information
  - Medical Home
  - WIC
  - Public/School Health
- Interaction with those who provide nutrition and activity to child
  - Day care
  - School
  - Sport
- Interaction with those who can make change
  - Policy makers
  - Local food sources
  - School boards

### Constancy of purpose

- Goals for child need to be shared between family members
  - Communication
  - Family dynamics
  - Realistic, doable goals
  - Role for health care provider in facilitating goal setting
  - Support during setbacks
- Medical Goals
- Behavioral/lifestyle goals
  - Values of family
  - Opportunities and motivation for change
  - Parenting skills
- Goal Development
  - Motivational interview
  - Brief focused negotiation etc.

### Connection to the community

- Nutrition
  - Food sources
  - Cooking skills
  - Understanding of school food programs
  - Restaurants
- Activity
  - Built environment
  - Activity opportunities
  - After school programs that emphasize participation

### Alignment of role and training

- Updating or learning parenting skills
  - Empowering parents
  - Linking skills to developmental stage
  - Linking parenting skills to health messages
  - Teaching self assessment and improvement techniques
  - Health literacy
  - The ability to move nutrition and activity decisions into the arena of health decisions
  - The ability to understand how to use nutrition and activity information in daily decision making
Investment in improvement

- Families need to understand the partnership between health care, community services, schools and families
  - Bidirectional
  - Emphasizes dialogue
  - Families have an active role
- Be able to incorporate active learning and change into the family system

Collective Impact

Collective Impact Initiatives are long-term commitments by a group of important actors from different sectors to a common agenda for solving a specific social problem. Their actions are supported by a shared measurement system, mutually reinforcing activities, and ongoing communication, and are staffed by an independent backbone organization.

- Collective impact initiatives involve a centralized infrastructure, a dedicated staff, and a structured process that leads to a common agenda, shared measurement, continuous communication, and mutually reinforcing activities among all participants


Conditions of Success

- Common Agenda
  - All participants must have a common understanding of the problem and a joint approach to solving it through agreed upon actions i.e. must share primary goals
- Shared measurement system
- Mutually reinforcing activities
  - Each group does what it does best supporting and coordinated with others in the group
- Continuous communication
- Backbone support organization
- Highly structured decision making process
- Sustainable funding

Food Insecurity in Primary Care

- The Keeping Infants Nourished and Developing (KIND) program
  - Collaboration between the primary care network and the foodbank
  - The goal was to address FI in households with infants via provision of supplemental infant formula, tailored education, and connection to clinic and community resources or public benefit programs
  - An on-site physician, social worker, and dietician collaborated to define KIND eligibility criteria.
- Families receiving KIND were significantly more likely to report risks relating to parental mental health, housing, benefits, and domestic violence, (highest-risk patients).
- KIND may have served as a "connector" between these high-risk households and primary care
  - Patients receiving KIND were more likely to have complete preventive services (e.g., lead, developmental screening) and 3+ well-infant visits in the first 14 months, more likely to be linked to interventions poised to address multiple and potentially interrelated concerns (e.g., social work)

Forging a Pediatric Primary Care–Community Partnership to Support Food-Insecure Families

Andrew F. Beck, Adrienne W. Henize, Robert S. Kahn, Kurt L. Reiber, John J. Young, and Melissa D. Klein
South Dakota’s Local Foods Collaborative

- Extension provided the centralized infrastructure and dedicated staff. And a recent Rural Business Opportunities Grant from USDA provided a structured process with goals, measurement and communication shared by participants.
- Although each entity involved in the collaborative practices its own expertise and may work with different clients, the goal of obtaining excellence in South Dakota’s local foods system is shared.
- Players have recognized that in order to move this initiative forward we need to share tools that lead to completed goals and measure our collective progress together.
- [http://www.ssireview.org/blog/entry/embracing_emergence_how_collective_impact_addresses_complexity](http://www.ssireview.org/blog/entry/embracing_emergence_how_collective_impact_addresses_complexity)