4.0 Childhood Obesity and Nutrition

Brief Summary of Program

Programs that are framed by this plan include research and extension linked to childhood obesity; youth, family and community nutrition; food security and food safety.

Childhood Obesity prevention

Childhood obesity prevention research and education are based upon an ecological approach, focusing on individuals and their interactions among the multiple environments that surround them. This approach recognizes that there are inherent multiple levels of influence that affect a child's body weight. Research topics include nutrition and hunger, nutrition education and behavior, built and natural environments, physical activity promotion, healthful food availability, food product development and health care organization, services and policies.

Extension programs are designed to 1) connect research and practice, 2) result in behavior change, 3) build on the strengths of families and youth, 4) develop strong collaborations resulting in community changes for optimal health promotion and 5) provide policymakers with the knowledge to develop appropriate policies to promote healthy lifestyles. Extension programs target children, families and the community at large, with an emphasis on low- and moderate-income audiences. The programs are collaborative and work directly with key community organizations.

Food Security

CCE programs address one or more of the aspects of food insecurity: availability of and access to food, certainty of availability and access to food, sufficiency of food, social and cultural acceptability of food, and nutritional quality and safety of food. Work in this program area ties well with our work in agriculture, and youth, families and communities.

Food Safety

Cornell's statewide food safety research and education program serves a broad constituency including food producers, processors and retailers, as well as consumers and research scientists. The program encompasses the National Institute of Food and Agriculture food safety components: investigating causes of microbiological contamination and microbiological resistance, educating consumers and food safety professionals and developing food processing and storage technologies.

Programs are developed and delivered through many channels, including workshops, research-based publications and ongoing, technical support for policy makers and regulators.

For example, Cornell's National Good Agricultural Practices Program provides growers, packing house operators, government officials and industry trade association personnel with information and strategies to protect consumer health and reduce hazards and risks in the production of fresh fruits and
vegetables. Educational materials designed and developed at Cornell are being used by collaborators in 25 states to provide farmers with a better understanding of good agricultural practices related to food safety.

Consumer education programs focus on safe handling and preparation of foods, conveying important practices in preventing illness along with avoiding food cross-contamination. Programs target moderate and low income adults, 4-H and other youth.

**Situation and Priorities Statement**

**Nutrition and Obesity Prevention**

Nearly one-fifth of children in the United States are overweight and have a greater risk for health problems that are placing a major strain on the U.S. health system and economy. Obesity is positively correlated with increased risk of chronic diseases such as cardiovascular disease, diabetes, stroke, hypertension, and some forms of cancer. An estimated 61% of overweight young people have at least one additional risk factor for heart disease, such as high cholesterol or high blood pressure. There is an increasing frequency of type 2 diabetes in children, even pre-adolescent children. Overweight children are at greater risk for bone and joint problems, sleep apnea, and social and psychological problems such as stigmatization and poor self-esteem.

Factors contributing to obesity in children include unhealthy dietary behaviors such as high consumption of sweetened beverages, low fruit, vegetable and dairy consumption and limited physical activity. Healthy lifestyle habits, including healthy eating and physical activity, can lower the risk of becoming overweight and developing diseases associated with increased obesity. Food insecurity and obesity or overweight can exist at the same time. This necessitates addressing hunger issues for some populations within programs on childhood obesity.

At the individual child level, both psychosocial influences (including food norms, preferences, knowledge, attitudes, skills, supports and role models) and biological influences (including: age, gender, genes, and physiology) interact within the child to direct eating and activity behaviors. The individual child is also interacting within a family that brings another level of influences on behaviors that include feeding practices, parent and childcare provider interaction related to feeding, family attitudes and attention to health care. At the community and organizational level, the interaction between the individual environment that children are in when not at home further influences their behaviors. Factors such as access to healthy and unhealthy foods in schools and after-school programs, access to healthy foods and activity opportunities in the child’s community, local public health programs and policies will all impact the child.

Effective programs are those that target children’s eating and activity-based behaviors through approaches aimed at children directly, as well as parental and community involvement, and environmental change. By taking an ecological approach to childhood obesity prevention, CCE professionals consider the many factors associated with childhood obesity and determine how to best create many points of impact that can result in positive change. In some communities, CCE may be a leader and form a coalition to take action on childhood obesity. In other locations, CCE will join existing coalitions and augment projects to increase effectiveness and target populations reached.
Food Safety

The food supply must be safe to ensure a healthy, well-nourished population. While the United States has one of the safest food supplies in the world, each year about 76 million illnesses occur, more than 300,000 persons are hospitalized, and 5,000 die from foodborne illness. Illnesses, such as E. coli and salmonella, not only take a toll on American consumers' health, they cost the United States $152 billion annually in health care and other losses, according to a report funded by the Pew Charitable Trusts. Center for Disease Control compiled data indicate that known pathogens account for an estimated 14 million illnesses, 60,000 hospitalizations, and 1,800 deaths. Three pathogens, Salmonella, Listeria, and Toxoplasma, are responsible for 1,500 deaths each year, more than 75% of those caused by known pathogens, while unknown agents account for the remaining 62 million illnesses, 265,000 hospitalizations, and 3,200 deaths. An untold number of foodborne illnesses go unreported because people may not seek medical attention and due to varying capabilities of local and state health departments to collect and report incidences. Food contamination also affects the viability of firms in the food system, from small, to regional to international companies. Recent outbreaks have resulted in large recalls of peanuts, spinach and peppers. In 2008 and early 2009, salmonella contamination in peanut butter crackers and peanut paste sickened 714 people in 46 states and prompted the largest recall in history. Safety from farm to retail and then in the home can be improved through research and its application to training, collaboration among all involved in the food system, and information sharing.

Over the last several decades there has been a noticeable increase in the consumption of fresh fruits and vegetables in the United States. Public health officials have observed significant increases in the number of produce-associated food-borne disease outbreaks. Recently outbreaks of salmonella and E. coli infections caused serious health consequences, disrupted the supply of nourishing foods and caused significant economic harm.

A variety of good agricultural and manufacturing practices can reduce the spread of microbes among plant foods and animals and prevent the contamination of foods at retail. The safety of prepared foods is also of concern given the important proportion of foods consumed away from home and purchased already prepared. Targeted training for food producers, preparers and retailers is a priority. In addition, consumer education on proper food handling and preparation in the home is a vital component to ensuring food safety. Consumers continue to improve their food safety practices but some are still unknowingly practicing some unsafe behaviors. The country's ability to pinpoint a food contamination source is hampered by the lack of an integrated system for federal agencies and the food industry to coordinate information through compatible electronic databases. Coordination, practice and policy changes are needed.

Food Insecurity

Food insecurity, as defined by the USDA, refers to sustained access at all times to food adequate in quantity and quality to maintain a healthy life in socially acceptable ways. Hunger is the uneasy or painful sensation caused by a lack of food, and is a potential although not necessary, consequence of food insecurity. Between 800 million to 1 billion people world-wide lack enough food to meet their daily energy requirements. In 2008, 21 percent of U.S. households with children (8.3million households) were food insecure, up from 16 percent in 2006 and 2007. This figure was the highest recorded since the Federal Government began monitoring household food security in 1995. Having enough calories is not sufficient
to assure nutritional adequacy. Foods available may not provide essential nutrients for health. Called "hidden hunger," this type of malnutrition affects more than 3 billion people in developing countries. In developed countries, the problem of overweight may be characterized by high caloric consumption but inadequate levels of important nutrients.

Assumptions

Childhood overweight and obesity is best addressed ecologically through support of integrated community and family systems. These systems are necessary to promote improved eating and physical activity behaviors of New York State children and to reduce the prevalence of childhood obesity.

The National Institute of Food and Agriculture supports childhood obesity research and education programs on affordable and available nutritious foods and guidance for individuals and families enabling science-based decisions about health and well-being. In New York State, research on the etiology of obesity and chronic disease is applied by Cornell Cooperative Extension (CCE) to locally based nutrition and wellness education developed in partnership with families, youth, health and wellness professionals, and other community-minded individuals and groups. Cornell and other academic research are applied to CCE programs promoting healthful and secure community food systems to address childhood obesity. Neighborhood and community resources complement federal, state, and local government support to implement this outreach.

- Food safety can be increased by improving: agricultural practices before harvest; how foods are processed, stored and marketed and how foods are handled and served in the home and commercially.
- Cornell and other research on food contamination will be applied to education on effective food safety practices.
- Policies and practices across the food system affect the safety of foods and can be better coordinated.
- Community, federal, state, and local government support will be provided to implement extension outreach.

Ultimate Goals of Program

- Affordable, available nutritious foods
- Guidance for families to make science-based decisions about health and well-being
- Prevention of childhood overweight and reduction of long term risks for chronic disease by encouraging healthy eating and increased physical activity
- Provide for the nutritional well-being and safety of New York State residents through helping to assure a continuous, reasonably priced supply of wholesome foods.
- Improve food safety and food-handling practices throughout the food system.
- Reduce incidence of food-borne illnesses.
- Improved community food security and healthful food-choice options

Activity

This is a statewide multi-disciplinary extension program with emphases cutting across many content areas and audiences. Campus-based faculty and extension associates provide leadership and participate
in work teams with CCE educators. Programs draw upon Cornell and other academic research. All are involved in designing, implementing and evaluating tailored outreach. Trained Extension nutritionists and parenting and 4-H educators lead local program activities. Researchers in horticulture and agricultural economics and marketing investigate options for improving local production and direct marketing of fresh produce into areas where they are currently lacking.

Programs for children and youth are delivered through a variety of settings: 4-H camps, clubs, fairs and afterschool as well as through child-parent/grandparent involvement projects and in-school student education. Family-focused programs promote a positive parent/care-giver-child feeding relationship and planning for good nutrition and physical activity. Extension staff collaborate with community leaders to improve the local environment for healthy eating and active living. Activities include sequential learning events, “community workshops” and engagement with community and civic leaders to improve the environment for nutrition and wellness and support of the local food system.

Example food safety activities include:

- Convey general knowledge and understanding of food safety science to New York State residents and beyond via varied communication strategies;
- Provide educational programs in collaboration with regulatory agencies involved with assuring the safety and wholesomeness of food processed, prepared, sold and handled and consumed by the public in New York State;
- Via courses, presentations and materials, support transfer of new research-based information for appropriate applications in the agricultural production, manufacturing, retailing and food service industries;
- Communicate current food safety production, manufacturing and technical problems to researchers at Cornell;
- Conduct specialized instruction in the effective application of laboratory methods to maintain and improve product safety and quality in the dairy and food industry.

Sample Statewide/Regional Initiatives that fall within this Plan of Work

- Choose Health at 4-H Camps
- Choose Health Officers (CHO)
- Choose Health: Fun, Food & Fitness (CHFFF)
- Choose Health Action Teens (CHAT)
- 4-H Produced in New York (PiNY)
- Adopting Healthy Habits (AHH)
- Collaboration for Health, Activity, and Nutrition in Children’s Environments (CHANCE)
- Cornell Healthy After School Self-Assessment (CHASE)
- Cornell Farm to School Research and Extension Program
- Cornell Farm to School Research Program
- Creating Healthy Places to Live, Work, and Play
- Eat Smart New York (ESNY)
- Expanded Food and Nutrition Education Program (EFNEP)
- Families Growing Together for Healthy Living
Description of Target Audiences

Audiences reached include: moderate and low income families; 4-H youth; children in and out of school; nutrition, health, and family professionals; front-line family workers; school food service staff; community leaders; and government and agency leaders at the local, state, and federal level.

Food safety audiences reached include: processors, producers and consumers with targeted programs for moderate and low income families; 4-H youth; nutrition, health, and family professionals; front-line family workers; food service and food production staff and their managers and directors; and government and agency leaders at the local, state, and federal level.

Food security and hunger programming addresses individuals and families, caregivers, nutritionists, community leaders, human service providers and food policy makers at the local, state, and national levels.

Output and Outcome Indicators: Highlighted indicators are collected annually. Codes in parentheses are (new) and (old) classification system.

<table>
<thead>
<tr>
<th>4.1 Healthy Eating and Active Living</th>
<th>Outputs</th>
<th>Near-Term Outcomes</th>
<th>Mid-Term Outcomes</th>
<th>Long-Term Outcomes</th>
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<tbody>
<tr>
<td>(4.1a) # children, youth, parents/caregivers and other adults reached via healthy eating and active living programs</td>
<td>(4.1d1) # of children and youth who demonstrate knowledge or skill gains related to healthy eating and active living</td>
<td>(4.1g) # of youth program participants documented to have applied healthy eating and/or active living recommendations</td>
<td>(4.1j) # of vulnerable children and youth documented to have reduced incidence of overweight and obesity as a result of participating in relevant educational programs.</td>
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<tr>
<td>(4.1b) # of women and health providers completing education programs addressing healthy weight gain during pregnancy and breastfeeding</td>
<td>(4.1d2) # parents/caregivers and other adults who demonstrate knowledge or skill gains related to healthy eating and active living</td>
<td>(4.1h) (3.1.1g)# of adult program participants documented to have applied healthy eating and/or active living recommendations</td>
<td>(4.1k) # of adult program participants documented to have reduced one or more chronic disease indicators associated with overweight.</td>
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<tr>
<td>(4.1c) # of extension educators and/or volunteers participating in training programs to enhance obesity prevention educational opportunities for children</td>
<td>(4.1e) # of women and health providers demonstrating increased knowledge or skill gains related to healthy weight gain during pregnancy and</td>
<td>(4.1i) # of extension educators and/or volunteers reporting increased delivery of healthy living-related programs.</td>
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and youth, and adults who care for them

| and breastfeeding |
|---|---|
| (4.1f) # of extension educators or volunteers demonstrating knowledge or skill gains related to healthy eating and active living programs for obesity prevention |

### 4.2 Food Resource Management

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<thead>
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<tbody>
<tr>
<td>(4.2a) # of program participants reached to improve their food resource management and food security</td>
<td>(4.2b) # of program participants who demonstrate knowledge or skill gains related to food resource management and food security</td>
<td>(4.2c) # of program participants who adopt food resource management and/or food security practices</td>
<td>(4.2d) # of program participants documented to have improved food resource management and/or food security</td>
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### 4.3 Decision Makers/Policy Education

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<tbody>
<tr>
<td>(4.3a) # of community and/or government/agency members completing educational programs on issues related to childhood obesity prevention programs and policy related to healthy living</td>
<td>(4.3b) # of program participants who demonstrate increased knowledge or skill gains related to childhood obesity prevention programs and policies</td>
<td>(4.3c) # of program participants documented to have increased involvement in public/community childhood obesity prevention actions</td>
<td>(4.3e) # of participating schools and/or communities reporting decline in incidence of childhood overweight and/or indicators of chronic diseases associated with obesity</td>
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<tr>
<td>(4.3d) # of participating schools and/or communities documented to have made practice and/or policy changes to promote healthy eating and active living</td>
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### 4.4 Food Security and Hunger

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<tr>
<td>(4.4a) # of children, youth, and adults completing education programs on: identifying food insecurity, how to obtain food assistance, how to balancing available resources by planning food choices, and improve the sufficiency and quality of</td>
<td>(4.4c) # of program participants who demonstrate knowledge or skill gains related to status of food security in their communities and possible actions to promote increased food security.</td>
<td>(4.4e) # of program participants who have acted to improve their food security status.</td>
<td>(4.4g) # of individuals of households documented to have improved food security status.</td>
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<tr>
<td>(4.4f) # of community action plans implemented as a result</td>
<td>(4.4h) # of participating communities reporting</td>
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</table>
the diet.

(4.4b) # of policy makers and citizens participating in education programs on status of food security in their communities and possible actions to promote increased food security.

(4.4d) # of program participants who know what to do related to food insecurity problems such as how to obtain food assistance, how to balance available resources by planning food choices, and how to improve the sufficiency and quality of the diet.

of community based assessment.

decreases in food insecurity indicators.

4.5 Food Safety and Consumers

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<th>Long-Term Outcomes</th>
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<tbody>
<tr>
<td>(4.5a) # of consumers participating in programs on: reducing food safety and/or food borne risks and illnesses including recommended purchasing, handling, storage, and preparation practices.</td>
<td>(4.5b) # of consumers who demonstrate knowledge or skill gains related to reducing food safety and/or foodborne risks and illnesses including recommended purchasing, handling, storage, and preparation practices.</td>
<td>(4.5c) # of consumers documented to have implemented new and/or increased application of ongoing safe food purchasing, handling, storage, and preparation practices.</td>
<td>(4.5d) Reduced incidence of foodborne illness among program participants. (no target).</td>
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4.6 Food Safety and Producers/Processors/Retailers/Food Service Providers

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<tr>
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<th>Long-Term Outcomes</th>
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<tbody>
<tr>
<td>(4.6a) # of producers/processors/food service providers participating in programs on: reducing food safety and/or food borne risks and illnesses including recommended production, processing, storage, handling, marketing, and preparation practices (no target).</td>
<td>(4.6b) # of producers/processors/food service providers who demonstrate knowledge or skill gains related to reducing food safety and/or foodborne risks and illnesses including recommended production, processing, storage, handling, marketing, and preparation practices.</td>
<td>(4.6c) # of producers/processors/food service providers documented to have implemented new and/or increased application of ongoing safe food production, processing, storage, handling, marketing, and preparation practices.</td>
<td>(4.6d) Improved safety of foods available through wholesale and retail outlets and institutional foods.</td>
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4.7 Food Safety and Decision Makers

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<tbody>
<tr>
<td>(4.7a) # food safety decision-makers, policy makers and other officials reached</td>
<td>(4.7b) # of food safety decision-makers, policy makers and other officials who</td>
<td>(4.7c) # of communities/firms/or organizations documented to have assessed practices or</td>
<td>(4.7d) # of communities/firms/or organizations documented to have implemented improved</td>
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<td>with science-based information to improve food safety practices and policies.</td>
<td>demonstrate knowledge gains relative to improved food safety practices and policies.</td>
<td>food safety policies as a result of participating in relevant educational programs.</td>
<td>practices or food safety policies as a result of participating in relevant educational programs.</td>
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**External Factors**

The scope and scale of outcomes is greatly enhanced by augmenting Federal Formula Funds with external sources of support. However, external grant funds may only support certain activities or aspects of this plan. Local governments, an important funder for local extension staff, face diminished revenues and increased mandated costs outside of the non-mandated extension programs. Thus having professionals available to implement new research-based programming is not always possible. A very slow recovery from the recession and pockets of high unemployment in the state affect how public and private funds are allocated to educational activities. In some instances, family subsistence will be a higher priority than improved nutrition and opportunities for physical activity. As an example of the latter, in New York State, cost cutting proposals include closing some public parks and reducing recreational physical activity programs. Some decision-makers and others in the community may not agree with all aspects of an ecological approach to childhood obesity prevention. They may disagree with community or institutional policy changes such as eliminating non-nutritious snacks from after school activities and place all responsibility on the individual and within the family, disregarding most environmental factors outside the family.

**Evaluation**

The evaluation approach included in our plan can more accurately be described as an evaluation "system" rather than as bounded "studies" or investigations. Because each of the plans addresses a broad combination of applied research and extension initiatives spanning multiple audiences, methods, and intended outcomes, a combination of routine program monitoring and documentation, near-term outcome assessment, and targeted follow-up activities is required to provide comprehensive assessment. In addition, specialized data needs of funding partners must be addressed, sometimes using methods and/or accountability structures required by the funders.

Cornell Cooperative Extension works with the Cornell Office of Research and Evaluation (CORE) to influence our evaluation patterns and procedures. CORE has piloted the Evaluation Partnership Project (EPP) over the last decade documenting processes that work for Cornell Cooperative Extension and teaching process. The CORE Evaluation Partnership Project has included intensive program development and evaluation planning with a number of targeted programs and counties.

We employ a combination of routine program monitoring and documentation, near-term outcome assessment, and targeted follow-up activities for each of our planned programs. The results are aggregated in a statewide accountability system which leads to the summary results reported in the State Defined Outcomes in each plan including selected impact statements and success stories from a pool of more than 400 documented narratives.

Some of the food and nutrition programs implemented through Cornell Cooperative Extension are the result of larger grant/contract supported projects that require specific evaluation strategies. Programs like
EFNEP, Eat Smart New York, Choose Health Action Teens, and Choose Health at Camp are evaluated with consistent measures and strategies across the state. This information now feeds into our State Defined Outcomes related to Nutrition and Childhood Obesity.

One example of evaluation in this plan of work framework:

- Within EFNEP, the Expanded Food and Nutrition Education Program (EFNEP) and Supplemental Nutrition Assistance Program - Education (SNAP-Ed) are nutrition education programs designed to enhance the quality of life for a low-income (<=185% of poverty) participants and their families. Participants complete an assessment form at entry into the program and at exit. The question sets used are based on the content of classes delivered. Enrollment in the program is usually limited to 4 - 12 lessons, but may occasionally be longer, depending upon the needs and desires of the individual participant. The assessment form collects demographic information, a maximum of 25 behavior checklist items and a 24-hour dietary recall. These collected data are entered into a web-based electronic database, specifically designed by the USDA to capture these evaluation data. SNAP-Ed is provided to any person who meets the income guidelines.

- The web-based EFNEP evaluation system provides multiple levels of assessment on participant and program outputs. The web-based system provides individual assessment: providing output reports which summarize participant reported behaviors to use with program participants to facilitate awareness of current practices and improved practices, at the conclusion of the sessions. The web-based system provides aggregated reports of program participant data which summarizes output and outcome (reported behavior and diet changes) at the local county level. The web-based system then enables to aggregation of data at the state and federal levels, to facilitate program reporting and evaluation assessment at each of these levels.