CHL Program
National Research Initiative of the USDA National Institute of Food and Agriculture, grant award #2011-68001-30335

Learning Objective

• To describe the vision and strategy of the Children’s Healthy Living Program for Remote Underserved Minority Populations of the Pacific (CHL) to prevent child obesity.
Obesity in the US – Affiliated Pacific Region

• Understudied population
  o Not included in National Health & Nutrition examination system (NHANES) since 1978

• Pacific populations at risk for obesity due to:
  o Western influences / acculturation of Native populations (nutrition transition)
  o Shortage of trained nutrition & health professionals
## Young Child Overweight & Obesity (%) US Affiliated Pacific Region

<table>
<thead>
<tr>
<th>Age, y</th>
<th>US 48 states</th>
<th>Alaska</th>
<th>Am Samoa</th>
<th>CNMI</th>
<th>Guam</th>
<th>FSM</th>
<th>Hawaii</th>
<th>Palau</th>
<th>RMI</th>
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<tbody>
<tr>
<td>2 - 4.9</td>
<td>22&lt;sup&gt;h&lt;/sup&gt;</td>
<td>40&lt;sup&gt;a&lt;/sup&gt;</td>
<td>37&lt;sup&gt;a&lt;/sup&gt;</td>
<td>25&lt;sup&gt;b&lt;/sup&gt;</td>
<td>33&lt;sup&gt;c&lt;/sup&gt;</td>
<td>17&lt;sup&gt;a&lt;/sup&gt;</td>
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<td>5 - 7.9</td>
<td>33&lt;sup&gt;h&lt;/sup&gt;</td>
<td>47&lt;sup&gt;f&lt;/sup&gt;</td>
<td>26&lt;sup&gt;b&lt;/sup&gt;</td>
<td>35&lt;sup&gt;j&lt;/sup&gt;</td>
<td></td>
<td>32&lt;sup&gt;d&lt;/sup&gt;</td>
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<tr>
<td>8 - 9.9</td>
<td>33&lt;sup&gt;h&lt;/sup&gt;</td>
<td>47&lt;sup&gt;f&lt;/sup&gt;</td>
<td>45&lt;sup&gt;b&lt;/sup&gt;</td>
<td>43&lt;sup&gt;j&lt;/sup&gt;</td>
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<td></td>
<td>44&lt;sup&gt;g&lt;/sup&gt;</td>
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</tbody>
</table>

- **b** 2-3, 4-6,7-10 y, Paulino et al 2008, cluster survey
- **c** Headstart Program
- **d** Kaiser Permanente Hawaii, Novotny et al. 2012 FASEB
- **f** 6-11y, [http: // www.ctahr.hawaii.edu / adap / ASCC_LandGrant / technical_papers.asp](http://www.ctahr.hawaii.edu/adap/ASCC_LandGrant/technical_papers.asp), Reports 47, 48, 56
- **g** 6-13y, Healthy Foods Hawaii, Hawaii (Novotny PI), predominantly Native Hawaiian
- **h** NHANES, Ogden et al 2012, JAMA
- **i** 6-11y, >85<sup>th</sup> percentile BMI for age & sex, CDC
- **j** Paulino Y, DOE data 2011, Guam, ages 7-8y, and 9-10y
CHL Program Design

• Researchers from US-affiliated Pacific academic institutions formed CHL to develop a common vision and a multi-level strategy to prevent early childhood (ages 2-8 y) overweight & obesity & improve health

• Local Advisory Committees have been formed in each jurisdictions

• External Advisory Board provides guidance
Integrated USDA AFRI Coordinated Agricultural Program (CAP) competitive grant for Child Obesity Prevention

- Community based Capacity building, systems change & policy change to prevent child obesity

- Preliminary work
  - Healthy Living in the Pacific Islands (HLPI, 2003 – 2006)
  - Pacific Kids DASH for Health (PacDASH, 2008 – 2011)
  - Stakeholder meeting of Pacific Land grants (4/30/10 - 5/3/10)
Integration of Research, Education, & Outreach
CHL Objectives

1. Conduct program / data inventories & situation analysis
2. (Degree) Train 22 professionals & paraprofessionals in obesity prevention
3. Develop Pacific food, nutrition & physical activity data management & evaluation system
4. Develop & conduct an environmental intervention (to prevent, maintain or decrease young child overweight & obesity in the Pacific Region)
5. Evaluate the community - based primary - prevention environmental intervention
6. Incur at least one obesity prevention policy change per state / jurisdiction
# 7 Time Zones, 2 Days

East to West

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<tr>
<th>Alaska (DST*)</th>
<th>Hawaii</th>
<th>American Samoa</th>
<th>Marshall Islands</th>
<th>Pohnpei</th>
<th>Kosrae</th>
<th>CNMI</th>
<th>Guam</th>
<th>Chuuk</th>
<th>Yap</th>
<th>Palau</th>
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<td>11 am (12 pm)</td>
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<td>12 pm (1 pm)</td>
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<td>1 pm (2 pm)</td>
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*DST = Daylight Savings Time (March-November)
Influential Theoretical Frameworks

• Social Ecological Model

• Multilevel Model of Influences on Obesity

• Social Cognitive Theory

• Angelo Framework (Community-based participatory research)

• RE-AIM (reach, effectiveness, efficiency, impact & sustainability) framework for evaluation
### CHL Model

Build the social / cultural, physical / built & political / economic environment to promote active play and intake of healthy food to prevent young child obesity in the Pacific Region.

**Environmental Changes**

- **Social/Cultural Env.**
  - Possible examples: Family, teachers, leaders, other respected role models setting example of healthy living

- **Political/Economic Env.**
  - Possible examples: Change government policies to promote healthy lifestyle

- **Physical/Built Env.**
  - Possible examples: Ensure water fountains are available and maintained

**RE-AIM**

**Promote**

- **Healthy Food Intake**
- **Physical Activity**

**Outcomes**

**Obesity Prevention**

**Overall Outcome:** Healthy Young Child
CHL Targets

Primary

Sleep by 15 min/day
Moderate to vigorous physical activity by 10 min/day
Fruit & vegetable intake by 1 serving/day
Water intake by ½ cup/day

Sedentary behavior (screen time) by 10 min/day
Sweetened beverage intake by ½ cup/day
Prevalence of obesity by 8% (0.10 kg/m² decrease in z-score)
Waist circumference by 2%

Secondary

Acanthosis nigricans by 5%
Situation Analysis – y 1
(6/11-6/12)

- Community engagement to elicit target behaviors, knowledge & skills & prioritize them

- Tailor action / Intervention plan per site, social marketing, policy & program actions

- Positive deviance emphasis: identify & build on programs that are working (are adapted for that environment)

- Fialkowski talk
Data Center

Design, oversee, manage, & train in data instruments, collection, entry, transfer, analysis, & presentation

- Data standardization & training
- IRB documentation & repository
- Data instruments
- Secure transfer of data from sites
- Data analysis of intervention
  - Training for site analysis
- Data dictionary / documentation
- RE-AIM
External Communications

- To plan, develop & manage CHL Outreach activities
  - Website- www.chl-pacific.org
  - Newsletter
  - Policy management
  - Outreach & communication
Physical Activity Pilot

• Accelerometer validated & feasible for use in children 2 – 5 years
  – Ettiene-Gittens et al talk
  – McGlone et al talk
Training/Education

- To identify, develop, manage, recruit, monitor & evaluate CHL training program

- Formal degree training in accredited programs - multidisciplinary aspects of obesity prevention (Associates to Doctorate)

- Two trainees per jurisdiction (8 from FSM)

- Leslie talk Tuesday
Trainee Program

Total number of trainee spots available = 22
**Intervention**

- To design, train, implement, coordinate, monitor, analyze, evaluate, publish & disseminate CHL intervention

- **Suggested strategies from CHL COMMUNITIES**

- **Effective environmental strategies from the LITERATURE**
## Intervention Development Timeline

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<td>Formulate CHL Intervention at Annual Meeting</td>
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<td>Jun 2012</td>
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<td>Work within Communities to Plan Intervention</td>
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<td>Activities</td>
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<td>Collect Baseline Data</td>
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Literature supports what community wants

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<tr>
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<th>Literature Supports</th>
<th>Community Supports</th>
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<tr>
<td>Policies</td>
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<tr>
<td>Access to water</td>
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<td>X</td>
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<tr>
<td>Environmental changes for PA</td>
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<td>X</td>
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<tr>
<td>Healthy living education</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Product and shelf labeling</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Access to affordable produce (including gardening)</td>
<td>X</td>
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</tbody>
</table>
“The CHL Intervention”

1. Introduce, enhance, and support policy for healthy eating and physical activity of 3-5yo children
2. Engage 3-5yo children in growing and eating local healthy foods
3. Train and support role models to promote desired behaviors
4. Increase accessibility of environments for safe play and PA for young children
5. Increase accessibility of good water for young children
6. Provide other education & training related to our 6 behavioral outcomes
CHL Philosophy/Approach

• Partner with, support, and “add value” to existing programs conducting activities related to the 6 CHL behavioral outcomes - Positive Deviance

• Build local capacity to sustain programs and policy changes - Train

• Pacific wide collaboration to promote common messages - Partner

• Evaluate and use data to promote policy Pacific-wide - Policy
Operationalize “The CHL Intervention” in 2 intervention communities per jurisdiction

CHL staff in each jurisdiction are working with key partners to plan:

- Activities for each strategy
- Adapt relevant evidence-based programs & curricula to fit their jurisdictions
Intervention Program
Study Design Overview

• CHL will be testing an environmental intervention to prevent childhood obesity and promote health

• Community-based randomized trial
  – 5 jurisdictions (AK, AS, CNMI, GM, HI)
  – 6 communities/jurisdiction

• 2 matched communities
  – One randomized to CHL program, starting Fall 2012 - 2014
  – One randomized to CHL optimized program, Summer 2015

– 2 temporal communities/jurisdiction
<table>
<thead>
<tr>
<th>Year</th>
<th>CHL Program</th>
<th>Optimized CHL Program</th>
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</thead>
<tbody>
<tr>
<td>Fall 2012</td>
<td>Randomly assigned to one community in pair 1 &amp; one community in pair 2</td>
<td></td>
</tr>
<tr>
<td>Fall 2013</td>
<td></td>
<td>Randomly assigned to comparison communities</td>
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</table>
Community sampling sites

- Head Start
- Preschool
- Day Care
- Kindergarten
- Other (eg. WIC)
<table>
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<tr>
<th>Jurisdictions (#)</th>
<th>Fall 2012 Baseline</th>
<th>Fall 2012 12 Months</th>
<th>Fall 2014 24 Months</th>
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<table>
<thead>
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<th>Intervention Program Communities (#/jurisdiction)</th>
<th>Fall 2012 Baseline</th>
<th>Fall 2012 12 Months</th>
<th>Fall 2014 24 Months</th>
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<tbody>
<tr>
<td>Cross-sectional participants*</td>
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<tr>
<td>Intervention (#/pair)- 180 per community</td>
<td>360</td>
<td>360</td>
<td>360</td>
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<tr>
<td>Embedded Longitudinal participants**</td>
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<tr>
<td>Intervention only (#/pair)</td>
<td>180</td>
<td>180</td>
<td>180</td>
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<thead>
<tr>
<th>Optimized (comparison) communities (#/jurisdiction)</th>
<th>Fall 2012 Baseline</th>
<th>Fall 2012 12 Months</th>
<th>Fall 2014 24 Months</th>
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<tbody>
<tr>
<td>Cross-sectional participants***</td>
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<tr>
<td>Comparison (#/pair) – 180 per community</td>
<td>360</td>
<td>360</td>
<td>360</td>
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</tbody>
</table>

| Subtotal Participants (#/jurisdiction)            | 720                | 180                | 720                |

* Includes the embedded longitudinal sample
** Included in the total as apart of the cross-sectional sample
*** No embedded longitudinal sample in the comparison communities
## CHL Intervention Study Timeline & Samples

<table>
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<th></th>
<th>Fall 2012 Baseline</th>
<th>Fall 2012 12 Months</th>
<th>Fall 2014 24 Months</th>
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<tr>
<td>Jurisdictions (#)</td>
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<td>Intervention Communities (#/jurisdiction)</td>
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<td>Cross-sectional participants*</td>
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<tr>
<td>Intervention (#/pair)</td>
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<td>Embedded Longitudinal participants**</td>
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<td>Comparison communities (#/jurisdiction)</td>
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<td>Cross-sectional participants***</td>
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<tr>
<td>Comparison (#/pair)</td>
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<td><strong>Subtotal Participants (# all 10 matched pairs)</strong></td>
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<tr>
<td><strong>Grand Total Participants (# /jurisdiction)</strong></td>
<td>1080</td>
<td>180</td>
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# CHL Participant Measures

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<thead>
<tr>
<th>Measures</th>
<th>Anthropometry</th>
<th>Functional outcomes of obesity</th>
<th>Dietary assessment</th>
<th>Physical activity (PA)</th>
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<tbody>
<tr>
<td><strong>Study groups:</strong></td>
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<tr>
<td>Cross-sectional (including embedded longitudinal)</td>
<td>- Weight &amp; height for BMI</td>
<td>- Sleep quality &amp; duration (min/d) (questionnaire &amp; accelerometry)</td>
<td>- 1 d diet logs (parent or guardian recording) - 2 d for sub set</td>
<td>- 6 days accelerometer - 1 d activity log (2 day for sub set) - screen time &amp; sedentary behavior questionnaires</td>
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<tr>
<td>Temporal</td>
<td>- Weight &amp; height for BMI</td>
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<tr>
<td></td>
<td>- Waist circumference</td>
<td>- Waist circumference</td>
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**Notes:**
- BMI: Body Mass Index
- PA: Physical Activity
Community Measures

CHL Community Assessment Tool Kit (CAT)

• Food environment
  – Food Access Survey
  – Food Availability Survey
  – Food Cost Survey

• Physical activity (PA) environment
  – PA Resource Survey

• Policy
  – Wellness Policy Survey
RE-AIM Measures

Reach, Efficacy, Adoption, Implementation & Maintenance

- Framework to document intervention effectiveness and sustainability
- **Reach**
  - measure for element of intervention
- **Efficacy**
  - covered by main analysis of outcomes
- **Adoption**
  - measure what of intervention is adopted in optimized community
- **Implementation**
  - track everything implemented in target communities by CHL
- **Maintenance**
  - track sustainability through partners

Sustainability of CHL Program

• Resources/framework for continuation
  o Land Grant College Infrastructure
  o Local Advisory Committees
  o Pacific food, nutrition & physical activity data system
  o Community ownership of intervention changes

• Collaborations/Partnership/Alignment
  o U54 Univ. Hawaii/Univ. Guam Partnership Grant to Reduce Cancer Health Disparities
  o PIHOA - Pacific Island Health Officers Association

• Policy change - redirect resources for healthy living for children & prevention of child obesity
Impact

• The CHL program seeks alignment & collaboration from partners with shared vision & goals throughout the Pacific Region, for sustainable changes to prevent obesity & future non-communicable disease, & to improve health in the remote underserved minority populations of the US Affiliated Pacific.
CHL Sessions at Conference

• Tuesday
  – Training (Leslie)
  – Obesity Panel (Novotny)

• Wednesday
  – Overview (Novotny)
  – Situation Analysis (Fialkowski)
  – Accelerometry Validity (Etienne-Gittens)
  – Accelerometry Feasability (McGlone)