PacificTracker2 - Expert System (PacTrac2-ES)

Behavioral Assessment & Intervention Tool

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9th International Food Data Conference

Biodiversity and Sustainable Diets

Norwich UK, Sept 2011

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Pacific Kids DASH for Health (PacDASH) Study Developed PacTrac2 - ES

- Investigators:
  - Principal Investigator:
    Rachel Novotny, PhD, RD
  - Co Investigators:
    Claudio Nigg, PhD
    Suzanne Murphy, PhD, RD
    John Grove, PhD
    Njeri Karanja, PhD
- Funding:
  - U.S. Dept. of Agriculture, Competitive Grants Program
  - U.S. $1.49 million award
  - Human Nutrition & Obesity program

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Pacific Tracker (PacTrac) Developed with University of Hawaii Cancer Center Food Composition Database

- **Added recipes & children's foods from:**
  - DASH of Aloha Healthy Cuisine & Lifestyle Book (Kapiolani Community College, UH, 2007)
  - Secretariat of the Pacific Community Food Composition Table
  - Common food items identified from 24-hour recalls collected in Pacific Region
- Available at:
  - hawaiifoods.hawaii.edu/

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Cuthrell et al. Hawaii Med J 2010;69:300-1; Murphy et al. J Am Diet Assoc 2009; 109:905-908; Martin et al. J Food Comp Anal. 2008;21:S103-S108.

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PacTrac → PacTrac2 for PacDASH study

- PacTrac 2 involved rebuild of PacTrac
  - PacTrac used U.S. Food Guide Pyramid in servings
  - Uses U.S. MyPyramid food guidance system in cups
- PacTrac 2 includes MyPyramid physical activity analysis tool
  - PacTrac did not have physical activity analysis
  - PacTrac 2 uses minutes & intensity
  - Uses energy estimates from Compendium of Physical Activities (Ainsworth et al., Med Sci Sports Exercise, 2000)
  - Added other physical activities for children from research studies
  - Added local Hawaii/Pacific physical activities (eg. Surfing)

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PacTrac2 interactive assessment tool: food intake & physical activity

- Registration & login
- Personal information entry: age, gender, weight, height
- Food intake entry
  - Type in, search & select foods from existing food database
  - Select serving unit & input quantity of food item
- Analyze food intake for day
- Food intake assessment results include:
  - Nutrient intake compared to U.S. Dietary Reference Intakes
  - Food intake compared to U.S. MyPyramid recommendations
    - 5 major food groups: grains, vegetables, fruits, milk, meat & beans
  - Track food intake over time for up to one year

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PacTrac2 Physical Activity

- **Physical activity entry:**
  - Type in & search from an existing physical activity database
  - Select the physical activity & duration for each
- **Analyze physical activity** status for the day
- **Physical Activity Assessment results** include:
  - Activity intensity & energy expenditure for each activity
  - Sum of energy expenditure for all activities
  - Overall physical activity status compared to U.S. recommendations
  - Track physical activity over time up to one year

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Expert System (ES)

- ES is a computerized decision tree to guide behavior change
  - Uses information on self-efficacy & stage-of-readiness-to-change
  - Uses fruit & vegetable intake & physical activity information from PacTrac2
  - Produces reports for child, parent / guardian & child's physician
  - Provides child - specific strategies, targeted behavioral information, and feedback tailored to child

- ES intervention is complemented with stage - based mailers
  - Periodic one-pagers
    - Address related behaviors (sedentary activity & a Dietary Approaches to Hypertension "DASH" eating approach)
    - Address environment (physical activity, fruit & vegetables)

Haas S et al. 2009. J Sci Med Sport, 12, 586-591;
Marcus BH et al. 2000. Am J Prev Med19(2), 121-126.

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PacDASH Intervention Objective

To develop & evaluate the impact of the PacDASH intervention for preventing weight gain (and improving blood pressure) in children at risk for overweight & obesity in the Pacific Region

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PacDASH Intervention
Study Design and Methods

Description

- Randomized, controlled intervention trial, developed with participatory input:

  1) Intervention group (n= 45)

  2) Usual Care group (n= 45)

Selection Criteria

- Ages: 5-8 year old
- Primary care provider at a Kaiser Permanente clinic
- BMI-for-age and sex at 50th - 99th percentile
- Lives on the island of Oahu
- Due for, or scheduled for a well child / physical exam

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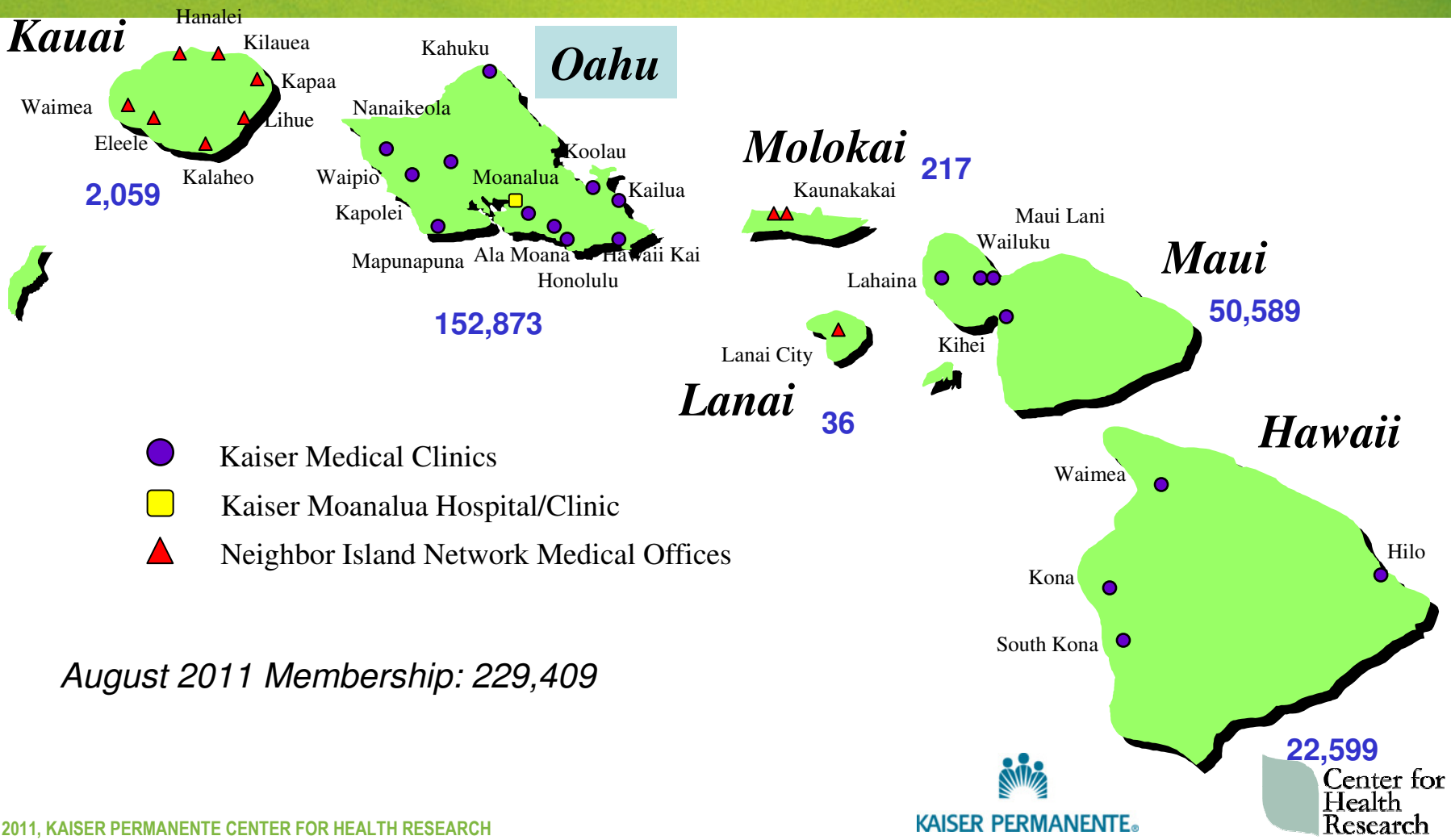
Kaiser Permanente Health System Hawaii Region



August 2011 Membership: 229,409

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PacDASH Intervention Timeline

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	Intervention Phase										Maintenance Phase				End of Study
Study activities	V1	WC M*	M	V2	M	M	V3	M	M	V4					V5

V – Assessment Visit / Child and Parent Feedback

WC – Well Child Visit / Physician Feedback

M – Mailers --

*Intervention -- 2 mailers; Usual care -- 1 mailer

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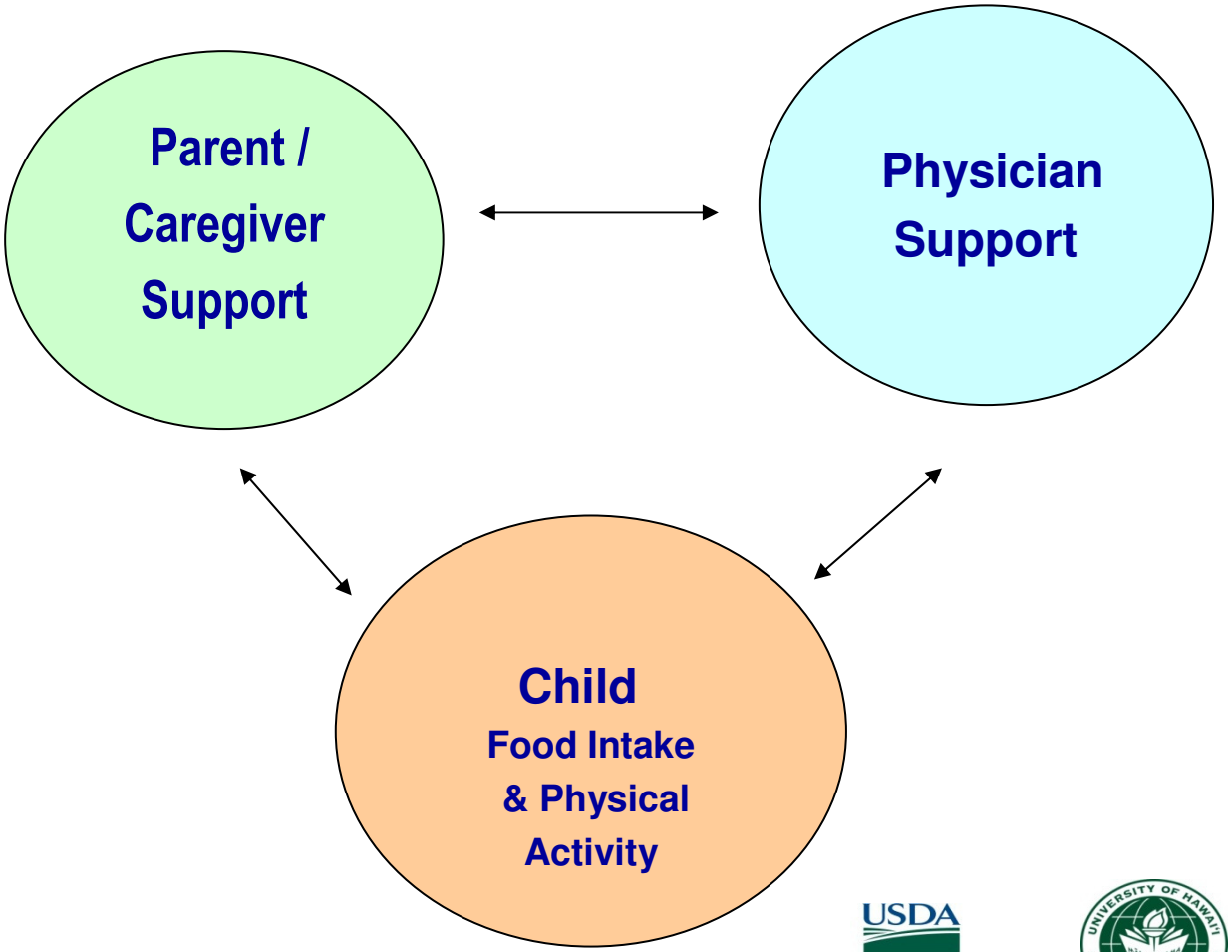
Conceptual Model of Influence
PacDASH Intervention Study



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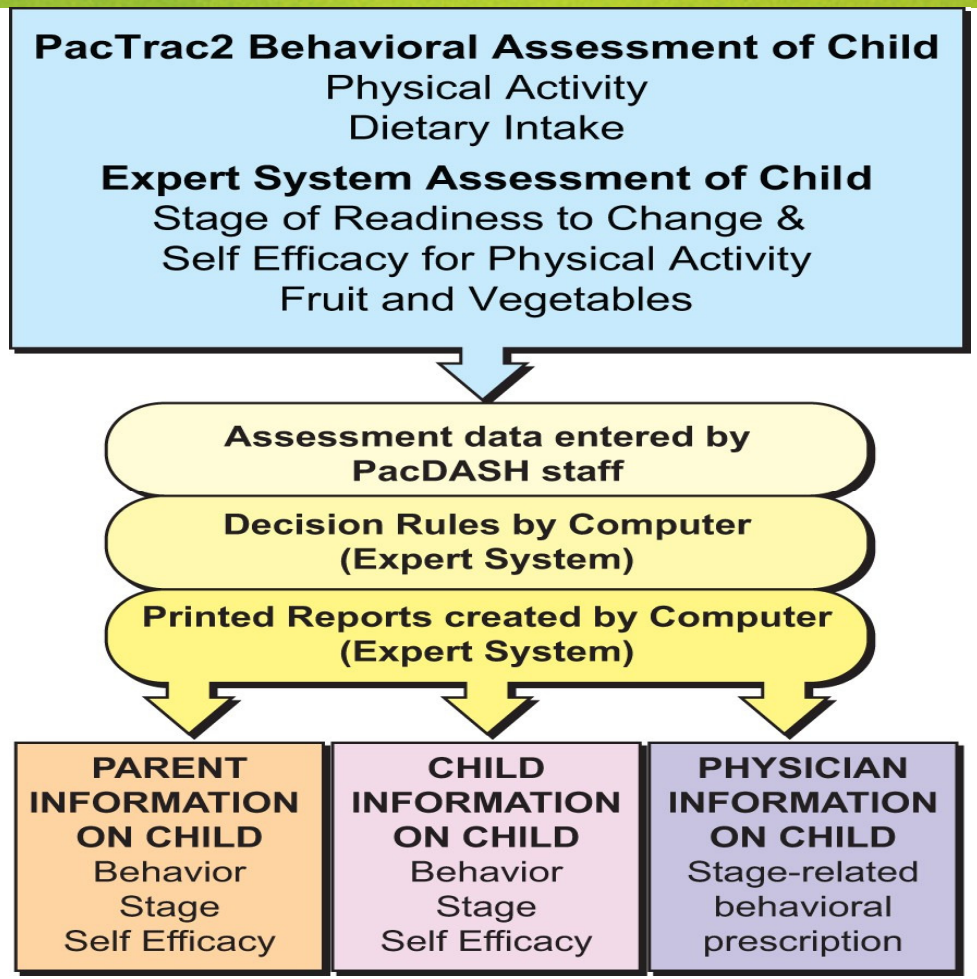
PacDASH Behavioral and Expert System Assessment



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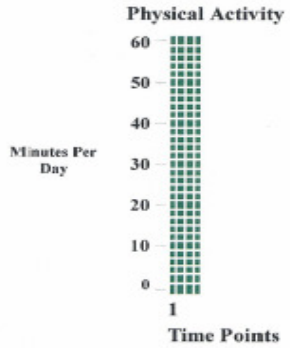
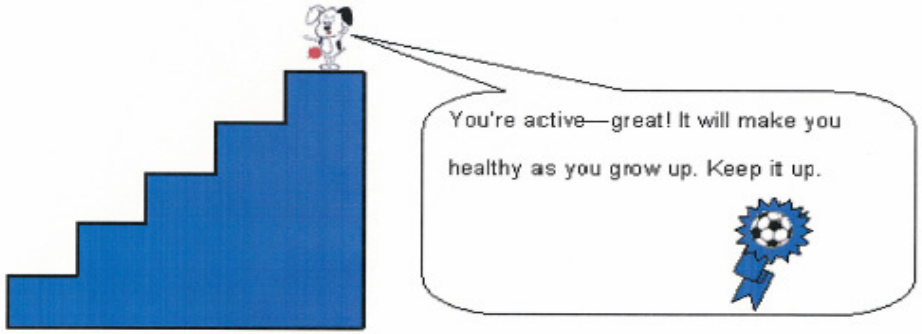
Child's PacDASH Recommendation

Dear

This is your PacDASH visit report. Show this to your parents and ask them to explain it to you. This report is from your most recent responses.





Good job in staying active! You're a good example for the other kids.

Get your friends to join you for more fun.

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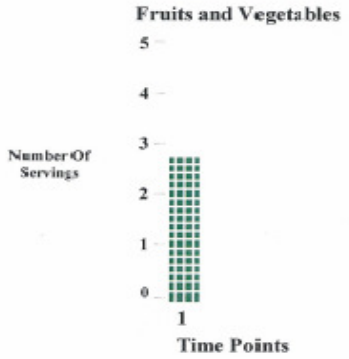
Child's PacDASH Recommendation



It's time for you to eat more fruits and vegetables! Try one—you might like it!

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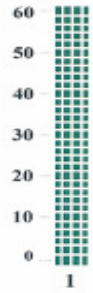
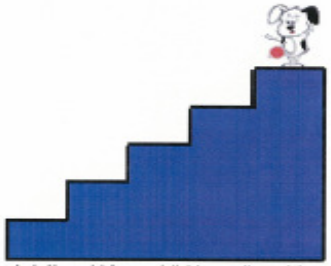
Parent's PacDASH Recommendation

Dear Parent or Guardian of :

Here are the PacDASH physical activity, and fruit and vegetable recommendations for . Please look them over and talk to , about them. This feedback is based on most recent responses.

Physical Activity - Minutes Per Day

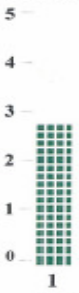


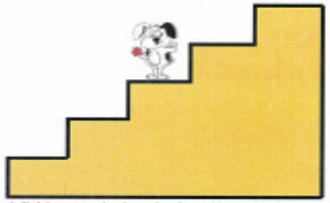


Congratulations! Your child is well on his or her way to being active for life.

Your child is doing well and acts as a role model for others. He or she can get friends to join... for more fun.

Fruits and Vegetables - Number Of Servings





Your child is ready to start eating fruits and vegetables – that's great! Make them available at meals and snack time so he or she can try them.

Your child is ready to eat fruits and vegetables. Have them available at your house. Once your child tries eating fruits and vegetables – he or she might like them.

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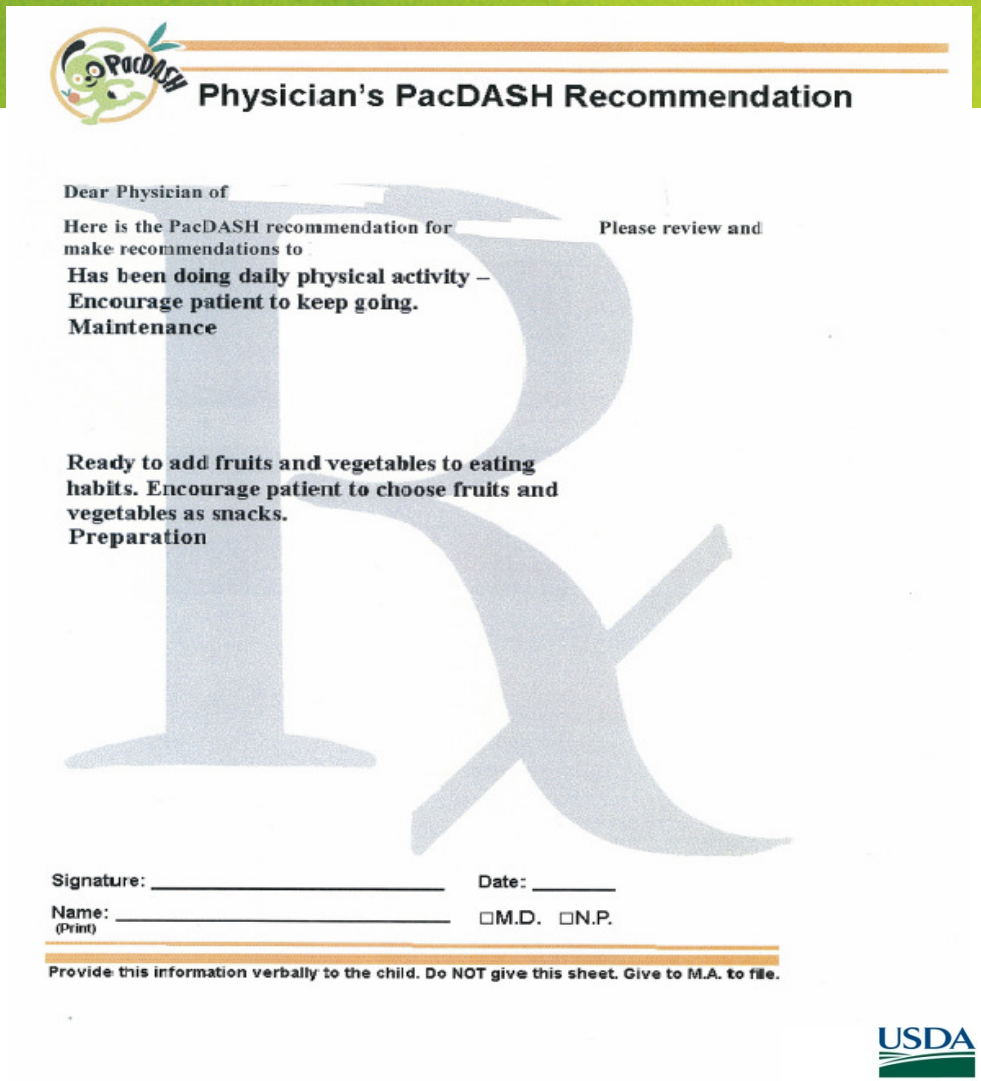
Physician Recommendation at Well Child Visit



Physician's PacDASH Recommendation

Dear Physician of

Here is the PacDASH recommendation for Please review and make recommendations to

Has been doing daily physical activity – Encourage patient to keep going.
Maintenance

Ready to add fruits and vegetables to eating habits. Encourage patient to choose fruits and vegetables as snacks.
Preparation

Signature: _____ Date: _____

Name: _____ ☐M.D. ☐N.P.
(Print)

Provide this information verbally to the child. Do NOT give this sheet. Give to M.A. to file.

- **Used to frame communication**
- **Reminds child (and parent) of PacDASH report**

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PacDASH Intervention is Integrated

- Leverages food composition data & analysis
- Targets behavioral messages to children's readiness - to - change and self – efficacy
- Uses an Expert System for children
- Intervention provides support materials
  - For locating fruits, vegetables & parks near child's residence
  - For targeted diet & physical activity recommendations

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Incorporation of PacDASH's PacTrac2 ES into Health System

	Expert Recommendation	PacDASH
▶	Self-efficacy & readiness - to - change	Expert System
▶	Identification of specific dietary practices	Fruit & Vegetables; DASH eating plan
▶	Environment & social support	Maps, parents, physicians
▶	60 min / d of moderate & vigorous physical activity	Supports all levels of readiness for activity
▶	Levels of sedentary behavior	Support behavior mailers

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Public Access to PacTrac2

- **Public online versions of PacTrac2 in development to appear on these websites:**
  - **Children's Healthy Living Program in the Pacific Region**
    www.CHL-Pacific.org
  - Hawaii Foods
    www.hawaiifoods.hawaii.edu

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Thank you!

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