Web-based App for Personalized Patient-Guided Nutrition Therapy for Weight Loss

Leah D. Whigham, PhD, FTOS
Associate Professor, Department of Health Promotion & Behavioral Science
Director, UTHealth Center for Community Health Impact
The University of Texas Health Science Center at Houston | School of Public Health El Paso

Mission: To impact health through creation of community-driven solutions informed by science in support of healthy eating, active living, and decreased obesity.

Strategy:
• Align with the needs of region - use Collective Impact Model
• All levels of the social ecological environment
• Functional cores of expertise
Partnership Areas

- Food Systems
- Metabolic Health in Primary Care
- Workplace Wellness
- School Wellness
- Built Environment

Origins: the need for comprehensive obesity management program
Obesity Management Program

Clinic/Provider Support
- Training
- Easy reference tool for course content

Patient Support
- Time and training for personalized diet plan
- Group sessions for education and support

Lifestyle Modification Treatment

- emphasizes behaviors that are ideal from a scientific perspective
- conformation is expected
CAP-LMT

- Compatibility-based
- Allocation-focused
- Progress monitoring
- Lifestyle Modification Treatment

A structured and stepwise approach to construct a comprehensive, highly individualized plan for greater compliance and better weight loss outcomes.

- 1117 patients
- 15 weeks
- 10-13% weight loss

Sign Up: Current Weight and Measurements

Enter your current weight and measurements, so we can calculate your daily calorie requirements.

Why?

The recipes you see in your Change Plan are unique to your calorie requirements.

Sign Up: Create Your First Change Plan

For each mealtime, from a list of foods, choose FOUR meal options that are closest to what you currently eat.
My Current Breakfast Habits

- Oatmeal
- Basic-4 Cereal
- Eggs, over-easy with toast.
- McDonald’s Breakfast
Follow your Plan:

• Get a Flexcipe for each meal option.

• The ingredient amounts in your Flexcipe are specific to your calorie level, and they change as you lose weight.

• Follow the “Flexcipe” as closely as possible.

Each day, for each meal, choose any one option from your Change Plan.

**BREAKFAST**

- Old Fashioned Oatmeal
- McDonald’s Ham, Egg, and Cheese McMuffin
- Kellogg’s Original Corn Flakes
- Huevos a la Mexicana
Each day, for each meal, choose any one option from your Change Plan.

**LUNCH**

- Ramen Noodles with Chicken and Vegetables
- Hot Pocket (Chicken and Cheese) with Knorr Sopa De Fideos Con Pollo
- Fideo
- Beef Burrito with Fruit and Corn Salad

Each day, for each meal, choose any one option from your Change Plan.

**AFTERNOON SNACKS**

- Mixed Nuts
- Chicken Salad
- Cheese-Only Quesadilla
- 2% Fat Cottage Cheese with Fruit
Each day, for each meal, choose any one option from your Change Plan.

**DINNER**

- Milanesa
- Little Caesars Pizza
- Chile Relleno
- Chicken Flautas

Enter your weight every week to track your progress and enable Small Changes to automatically adjust your Flexcipes (if needed).

![CHECK IN]

**MEASUREMENTS**

- Weight
  - pounds
  - kilograms

Weight in pounds *

- enter weight
- pounds
Choose new options and get a fresh Change Plan every two weeks.

Stick to Your Small Changes Plan and Get Big Results.
Translational Research

Stable Isotopes

- Stable isotopes are heavier due to an extra neutron(s)
  - $^{12}\text{C}$: 6 protons and 6 neutrons
  - $^{13}\text{C}$: 6 protons and 7 neutrons
Stable Isotopes

- Stable isotopes: maintain constant concentrations over time
- Unstable isotopes: disintegrate at predictable and measurable rates by emitting a nuclear electron or a helium nucleus and radiation
- In nature, light isotopes are far more abundant than the heavy.

Isotope Discrimination or Fractionation

The separation of isotopes of an element during naturally occurring processes as a result of the mass differences between their nuclei.
Isotope Discrimination: Diet

• Different foods have different isotopic ratios.
• As macronutrients are metabolized for energy, the carbon structures from the diet are converted to CO₂.
• The isotopes of carbon in exhaled breath, in the healthy state, reflect the isotope ratio of the diet.

You are what you eat...or at least your breath is.

Isotope Discrimination: Fuel Use

• A second and equally important isotope discrimination for our approach occurs during the conversion of glucose to lipids
• This isotopic discrimination results in lipids being about 3.5 ‰ lighter than carbohydrates
Proof of Concept Study

- Can breath carbon stable isotope ratios be used to track energy balance?

7 days on hypocaloric diet
Response to caloric overconsumption

Breath stable isotopes for assessing energy balance and substrate utilization
Breath delta value in response to exercise
