

# Development of a Supplement Composition Database for the SURE Study



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# Overview

- The SURE Study
- The Cancer Research Center of Hawaii's dietary supplement database
- Creating a dietary supplement database for the SURE Study

# The SUPplement REporting Study (SURE Study)



# The SURE Study

- Goal is to quantify measurement errors in reporting dietary supplement use
- Funded by grant # R01 CA 106744
  - NIH/National Cancer Institute
  - NIH/Office of Dietary Supplements

# The SURE Study Sample

- Drawn from supplement users in the Hawaii-Los Angeles Multi-Ethnic Cohort (MEC)
- Men and women, aged 53-87
- Taking at least one dietary supplement a week (FDA definition)

# SURE Study Sample

- Mean age  $68 \pm 7$  years
- 6 ethnic groups
  - African American (18%)
  - Caucasian (19%)
  - Japanese American (17%)
  - Latino - US born (18%)
  - Latino - Non-US born (13%)
  - Native Hawaiian (15%)



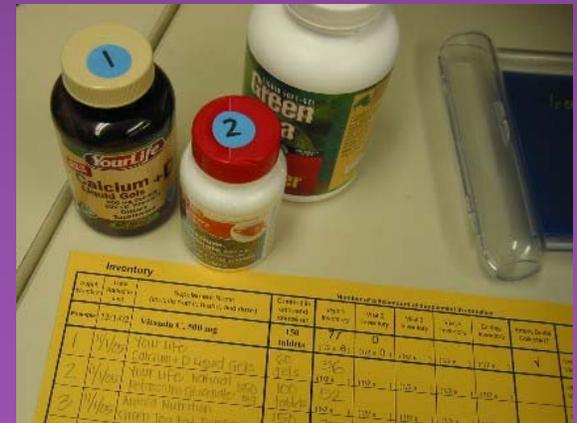
# SURE Study Methods

- “Inventory” group asked to complete 5 home visits
  - Participants saved empty containers; recorded new purchases; recorded use by others; filled out different forms
  - Conducted quarterly inventory of supplements
- 401 participants completed the study (34% of total contacted)



# SURE Study Methods

- 3 other methods were used to collect supplement information from the inventory group:
  - SFQ
  - Recall of supplement use
  - Daily diary



# SURE Study Methods

## Inventory Group Data Collection Schedule

Activity	Visit 1	Visit 2	Visit 3	Visit 4	Visit 5
SFQ (past year)	X				X
SFQ (past 3 mo)			X		
Recall (24 hr)	X				X
Recall (2 wk or 1 mo)		X		X	
Daily Diary (2 wk or 1 mo)		X		X	
Inventory	X	X	X	X	X

# SURE Study Methods

- All SURE Study methods rely on a dietary supplement database to estimate nutrient and other component intakes

# Cancer Research Center of Hawaii's Dietary Supplement Database

**Supplement Browser**

Searching Tools  
Name Code

Filters:

Code: 42091 Supplement Name: CENTRUM SILVER WITH LYCOPENE

Type: 04 Multivitamins and minerals  
Brand: 391 NO BRAND AVAIL OR SEE MANU  
Maker: 117 Wyeth Consumer Healthcare  
Source: 03 Label  
Form: 01 Pill

Formula is the same as '04 internet source. (11/05)

2004 11 2005 1.00 08/30/2004 11/29/2005  
Beg\_year End\_year Srce Month year Dosage Entry\_date Mod\_date

supp_cd	supp_name	supp_cod	nutr	nutr_name	nutr_val	Unit
40535	CENTRUM LIQUID (DISCONTINUED)	42091	203	Retinol (IU)	2485.000	IU
42262	CENTRUM PERFORMANCE	42091	202	Beta-Carotene (IU)	1015.000	IU
41720	CENTRUM PERFORMANCE (DISCONTINUED)	42091	040	Vitamin C	60.000	MG
40526	CENTRUM PERFORMANCE COMPLETE MULTIVITAMIN	42091	041	Vitamin D	400.000	IU
42857	CENTRUM SELECT 50+	42091	033	Thiamin	1.500	MG
40807	CENTRUM SILVER (1999) (DISCONTINUED)	42091	034	Riboflavin	1.700	MG
40237	CENTRUM SILVER (DISCONTINUED)	42091	035	Niacin	20.000	MG
41721	CENTRUM SILVER (DISCONTINUED)	42091	037	Vitamin B-6	3.000	MG
41500	CENTRUM SILVER - IRON FREE FORMULA (DISCONTINUED)	42091	207	Folic Acid	400.000	MCG
42435	CENTRUM SILVER CHEWABLES	42091	039	Vitamin B-12	25.000	MCG
42766	CENTRUM SILVER NEW FORMULA	42091	036	Pantothenic Acid	10.000	MG
42091	CENTRUM SILVER WITH LYCOPENE	42091	205	Vitamin E (IU)	45.000	IU
40832	CENTURY ADVANCED FORMULA MULTIVITAMIN WITH	42091	149	Biotin	30.000	MCG

Main Menu Add Delete Recall Edit Main Edit Nutr Print

# Cancer Research Center of Hawaii's Dietary Supplement Database

- Currently houses 6700+ supplements
  - 2880 multivitamin with minerals products
  - 1222 defaults
  - 545 multivitamin products
  - 307 multimineral products
  - 726 single nutrient/component products
  - 884 non-vitamin, non-mineral products
  - 142 generic supplement codes
- 1425 discontinued supplements

# Cancer Research Center of Hawaii's Dietary Supplement Database

- Up to 1000 components
  - Examples:
    - 12 different entries for ginseng
    - Goji fruit, watermelon fruit extract, green tea powder, pumpkin seed oil
- Components entered as listed on the label

# Supplement Data Sources

- Supplement facts label
- Internet
- Manufacturers/distributors
- PDR/catalogs



# Dietary Supplement Database for the SURE Study



# Dietary Supplement Database for the SURE Study

- Subset of the CRCH database
- Over 1800 different supplements reported (27% of the CRCH database)
- 262 default codes created specifically for SURE

# SURE Study Defaults

- Default codes were developed to assign nutrients/components to supplements with insufficient information
- Defaults were linked to appropriate supplements based on description
- Nutrient values calculated using a weighted average of the most commonly reported supplements

# SURE Study Defaults

- Blitz CL, Murphy SP, Au DLMT, Yonemori KM, Foote JA, Kolonel LN. Creating default codes and assigning nutrient values for nonspecific dietary supplements. *J Food Comp Anal.* 2006;19:453-460

# SURE Study Defaults

Default Type	Examples
Product default	Default glucosamine Default multivitamin Default vitamin E
Manufacturer/brand default	Longs default Nature Made default Target default
Combination manufacturer/brand and product default	Bayer Corporation default One-A-Day Rexall default Osteo Bi-Flex Safeway Select Default One Tablet Daily

# SURE Study Defaults

- Example:  
Safeway Select Default One Tablet Daily



# Most Commonly Reported Supplements by Inventory Participants

- Multivitamin/Multimineral Combinations
  - Centrum Silver (22%)
  - Kirkland Signature Daily Multi (12%)
  - Kirkland Signature Mature Adults Daily Multi (8%)
- Single Vitamins or Minerals
  - Vitamin E 400 IU (28%)
  - Vitamin C 500 mg (22%)
  - Vitamin B-12 500 mcg (9%)
- Herbals/Non-nutrient Supplements
  - Fish Oil 1000 mg (20%)
  - Kirkland Signature Glucosamine Chondroitin (6%)
  - Flaxseed Oil 1000 mg (6%)

# Most Commonly Reported Supplement Types on the SFQ\*

Supplement	Men	Women
Multi	78%	73%
Calcium	37%	72%
Vitamin C	44%	41%
Vitamin E	40%	37%
Fish oil/ $\omega$ 3	26%	26%

\*among 1109 supplement users in the SURE Study

## Least Commonly Reported Supplement Types on the SFQ\*

Supplement	Men	Women
Zinc	13%	9%
$\beta$ -carotene	8%	6%
Iron	7%	9%
Vitamin A	7%	6%
Selenium	10%	6%

\*among 1109 supplement users in the SURE Study

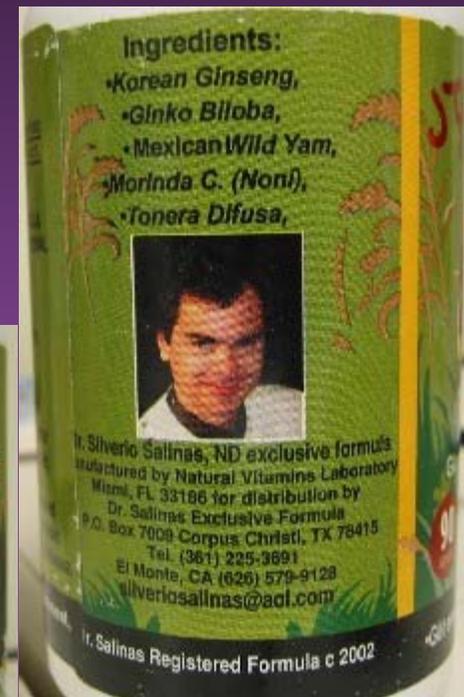
# Supplements Reported by SURE Participants

- Some of the more unique supplements reported include:
  - Body Mint<sup>®</sup> (n=13)
  - Joint Juice<sup>®</sup> (n=4)
  - Noni Fruit Leather (n=1)



# Challenges

- Still dependent on labels
  - Not always available
  - Incomplete info



# Challenges

- 262 default codes were created and assigned nutrients
  - Needed to distinguish between SURE defaults and those from other studies
- Our current database has exceeded the limit for new components (n=999)
  - We capture different forms of the same component (e.g. Vitamin E)

# Significance

- Dietary supplement use is of increasing interest in studies of diet and health
- A comprehensive dietary supplement database is needed to accurately quantify intakes from supplements
- Future improvements include:
  - Conversion to a new combined food and supplement database
  - Incorporation of analytic values from USDA to replace data taken from supplement labels

Thank you!