

*“Let food be thy medicine and  
medicine be thy food.”*

Hippocrates



# Food-based interventions to support management of chronic diseases

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Nutrition Symposium  
March 28, 2024

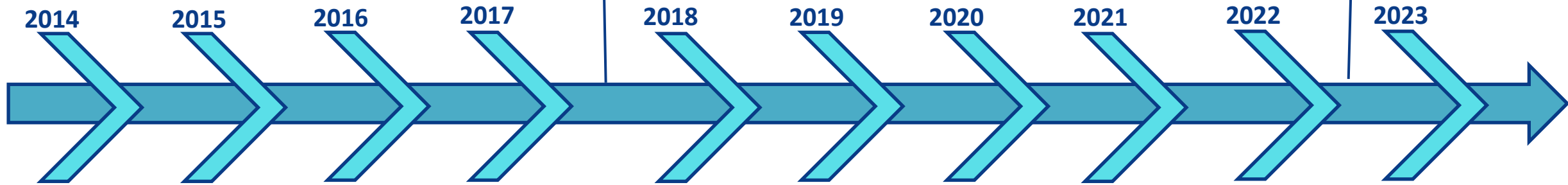
# UCSF-POH Research Partnership



Project Open Hand  
meals with love

California Senate Bill 97 creates Medi-Cal Medically Tailored Meals pilot

Medically supportive food now included as an *optional* covered benefit under Medi-Cal



## Food=Medicine Pilot Study

- Pre-post design
- No control group
- n=72
- HIV and/or diabetes
- Follow up in 6 months

## Changing Health through Food Support (CHEFS) Study

- Randomized trial
- n=191
- HIV
- Follow up in 6 months

## Cardiac Recovery through Dietary Support (CaRDS) Study

- Randomized trial
- n=161
- Congestive heart failure
- Follow up in 1, 5 months

## Nutrition-Supported Diabetes Education Program (NU-DSMP)

- Randomized trial
- n=72
- Type 2 diabetes
- Follow up in 3, 6 months

## Changing Health through Food Support (CHEFS-DM)

- Randomized trial (ongoing)
- n=246
- Type 2 diabetes
- Follow up in 6, 12 months

# Project Open Hand interventions (3-6 months)



## Medically tailored meals

Based on Mediterranean diet, compliant with heart- and diabetes-health guidelines

**AND**



## Medically supportive groceries (primarily fresh foods)

**AND**



## Supplementary items to round out nutritional intake, provide cooking supplies

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**PLUS**

**Medically  
tailored  
nutritional  
education**

Individual  
and/or group  
sessions with  
registered  
dietitians

# Food = Medicine Pilot



Project Open Hand  
meals with love

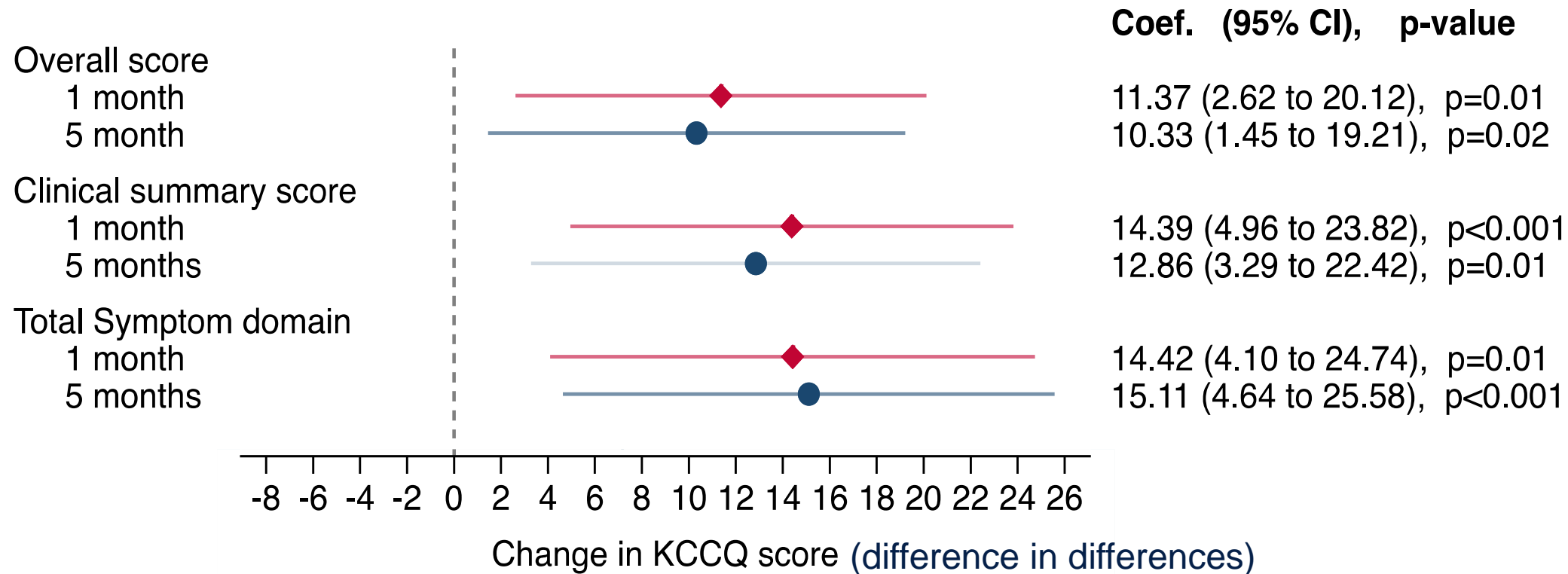
Table 4 HIV- and T2DM-specific study outcomes at baseline and follow-up

	Overall		<i>p</i> value <sup>a</sup>
	Baseline	Follow-up	
HIV-specific outcomes ( <i>n</i> = 30)			
Internalized HIV stigma (range 7–28]), mean (SD)	12.2 (4.28)	11.5 (4.10)	0.21
ART adherence ≥95%, %	46.7	70.0	0.046
T2DM-specific outcomes ( <i>n</i> = 29)			
Diabetes distress (range 1–6), mean (SD)	2.64 (0.905)	2.02 (0.777)	<0.001
Perceived diabetes self-management score (range 8–40), mean (SD)	24.8 (6.35)	27.3 (6.73)	0.007
HbA1c %, mean (SD)	9.23 (2.61)	8.75 (1.95)	0.41
HbA1c <7% (optimal control), %	10.3	19.2	0.08
Fasting glucose, mean (SD)	164 (86.1)	151 (80.5)	0.48

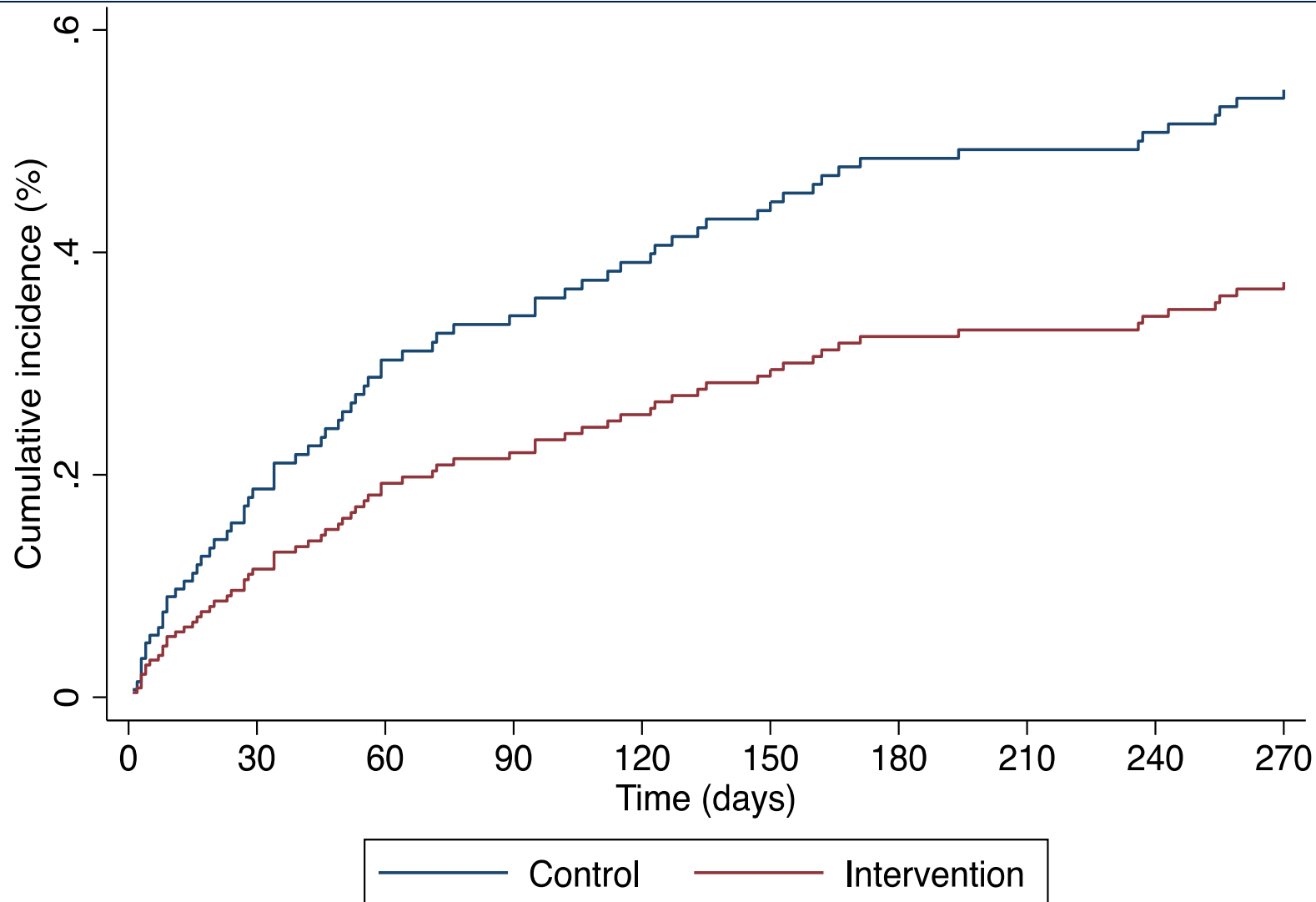
# CHEFS-HIV pragmatic RCT

Outcome (retrospective period)	Adjusted OR for difference in differences	95% CI
Food insecurity (6 months)	0.23	0.09 , 0.62
Depressive symptoms (2 weeks)	0.32	0.13 , 0.83
≤90% ART adherence (7 days)	0.18	0.038, 0.82
Overnight hospital stay (90 days)	0.11	0.01, 0.09
Unprotected sex (90 days)	0.045	0.004, 0.52

# Improved Heart Failure Quality of Life



# Lower risk of all-cause hospital re-admission



- **Hazard ratio 30 days:**  
0.716, 95%CI: 0.319, 1.603  
(p value= 0.417)
- **Hazard ratio 60 days:**  
0.496, 95% CI: 0.267, 0.976  
(p value = 0.042)
- **Hazard Ratio 150 days (end of intervention):**  
0.571, 95%CI: 0.342, 0.954  
(p value = 0.032)
- **Hazard ratio 270 days:**  
0.668, 95%CI: 0.427, 1.046  
(p value = 0.078)

Cox proportional hazard model adjusted for baseline hospitalizations

# Some future directions

- Implementation science studies to understand design, delivery, implementation, and uptake
- Promoting meaningful community leadership in Food-is-Medicine research and policy making
- Leveraging secondary data to reduce data collection burden
- Culture- and human-centered Food-is-Medicine interventions
- Integrating Food-is-Medicine with initiatives addressing
  - Other social determinants of health
  - Community development
  - Sustainable food systems



# Food = Medicine Pilot: Perceived Impacts (Diabetes)

- **DM health:** “The diabetes changed, the numbers. The number because if you eat that kind of food every day, like I did it, the number changes a lot. A lot. A lot...The sugar is more low...Before the program I tested sometimes 200, 220...Over here it go down [to] 130.”
- **Nutrition:** “But I’m realizing I’m buying more vegetables and stuff now than I did before the program. ...The program had an effect on the fact of my buying vegetables... I realized that you got to have them...Vegetables are really vital for your health. They really are.”

# Food = Medicine Pilot: Perceived Impacts (Diabetes)

- **Mental Health**: “You stress about some food. You don't have no money, and get caught...Now I feel more better...I get my food. My food is right there when I hungry. I don't have to be stressing.”
- **Health-behaviors**: “I was able to eat something rather than put it off to take the medicine...Before I missed a lot of medicine...some medicine you need to eat before and...now I can just take some portion of my plate and heat it up to take my medicine.”