

Optimizing Care for Patients Experiencing Food Insecurity

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I have no commercial conflicts
of interest to disclose.

Opinions expressed in this presentation are my
own and do not necessarily reflect the opinions of
NIH, CDC, USDA, or Feeding America.



CR is a 44 yo woman with DM2. She presents for routine care. She has no complaints. Her last HbA1c was 8.1%. In your 5 years taking care of her, her HbA1c has never been $<7.9\%$. In her glucose log, her AM blood sugars are generally in the 200's, but she has numerous values between 48 and 62 since your last clinic visit. BMI today is 28.

DM Meds: long-acting insulin qhs, glyburide, MTF

SH: 3 teenaged children, works as a housecleaner



Objectives

- Examine the rationale and strategy for screening for food insecurity in the clinical setting
- Incorporate diabetes management, where appropriate, to accommodate unreliable or inconsistent access to food
- Differentiate between social determinants of health and social needs

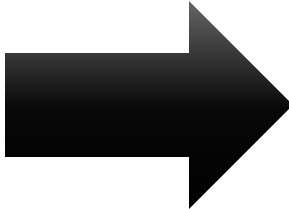


Hunger

- The uneasy or painful sensation caused by a lack of food, or the recurrent and involuntary lack of access to food. (LSRO)



Coping Strategies to *Avoid* Hunger

- Eating low-cost foods
 - Fewer F&V
 - More fats/carbs
 - Eating highly filling foods
 - Small variety of foods
 - Avoiding food waste
 - Binging when food is available
- 
- Higher risk of obesity, diabetes, & other chronic, diet-sensitive disease
 - Once you are chronically ill, poorer ability to manage it your illness

- Food security:
Access by all people at all times to enough food for an active, healthy life
- Food insecurity:
Household-level economic and social condition of limited or uncertain access to adequate food



Food Security

Food security means access by all people at all times to enough food for an active, healthy life

Nutrition Security

WHAT IS NUTRITION SECURITY?

Consistent access to nutritious foods that promote optimal health and well-being for all Americans, throughout all stages of life.

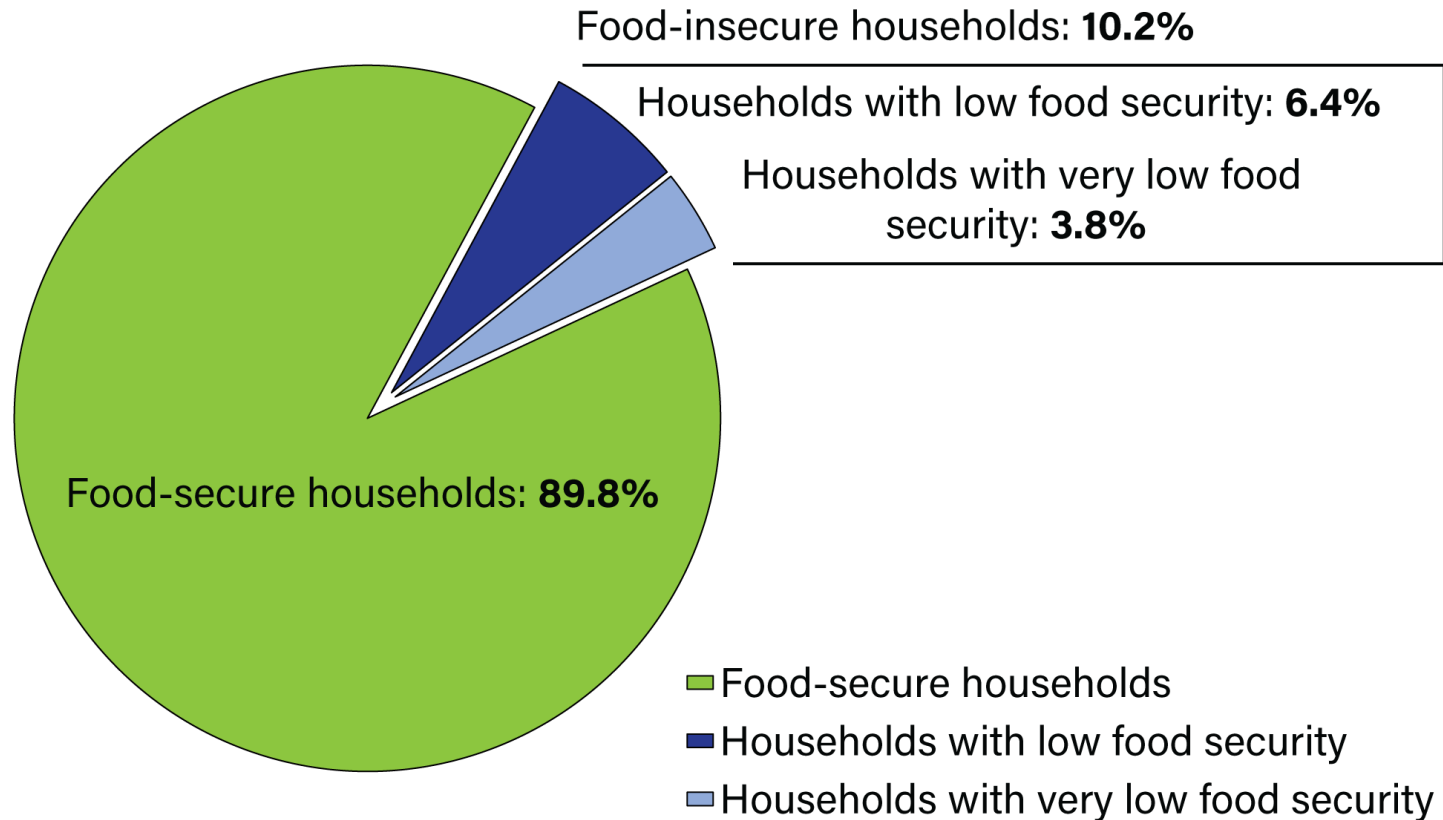


HOW DOES NUTRITION SECURITY BUILD ON FOOD SECURITY?

Food security is having **enough** calories.
Nutrition security is having the **right** calories.

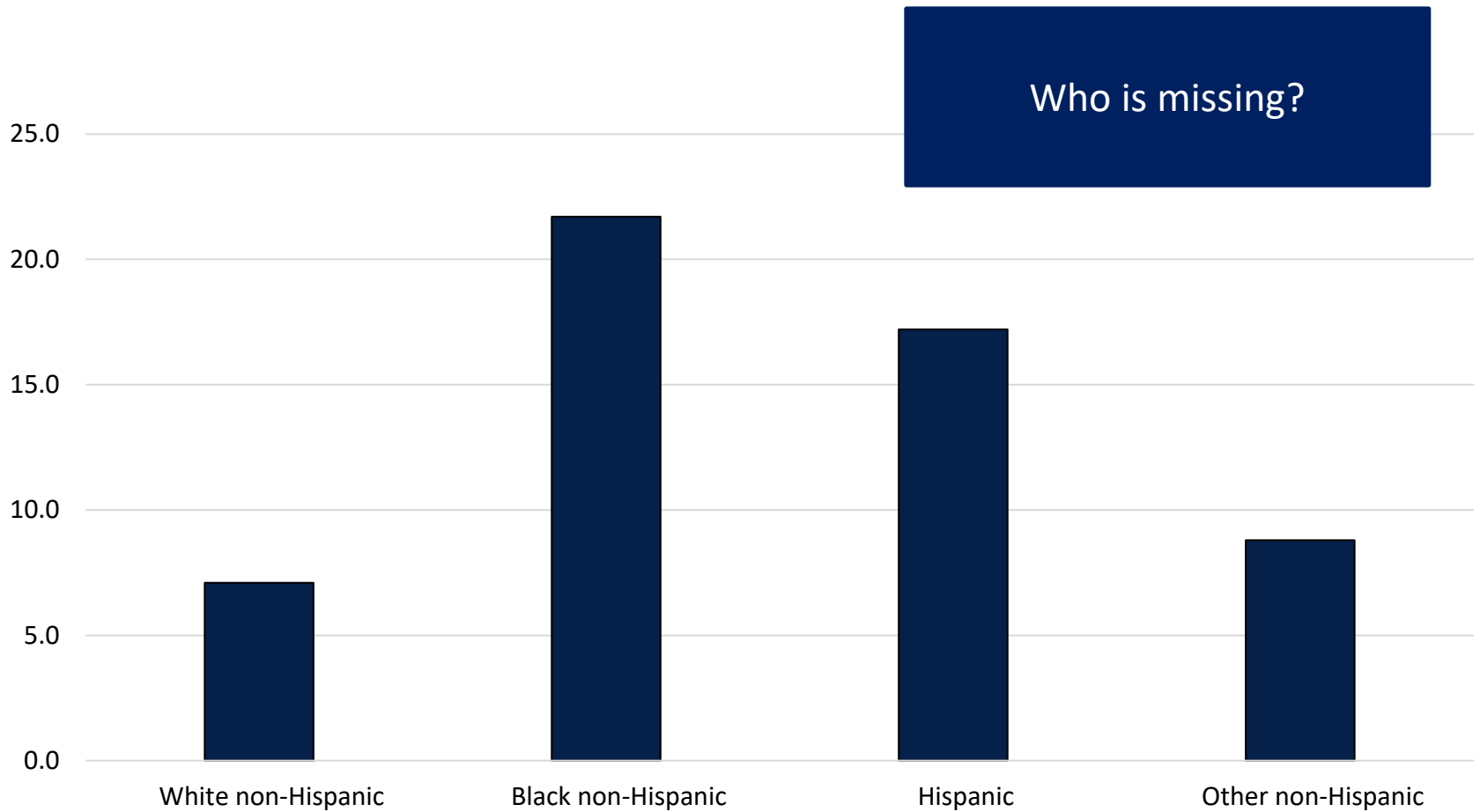
1 in 10 US Households Food Insecure in 2021

U.S. households by food security status, 2021



Source: USDA, Economic Research Service using data from U.S. Department of Commerce, Bureau of the Census, 2021 Current Population Survey Food Security Supplement.

Disparities in Food Insecurity Rates by Race, 2020



Source: USDA, Economic Research Service, using data from the December 2020 Current Population Survey Food Security Supplement, U.S. Census Bureau

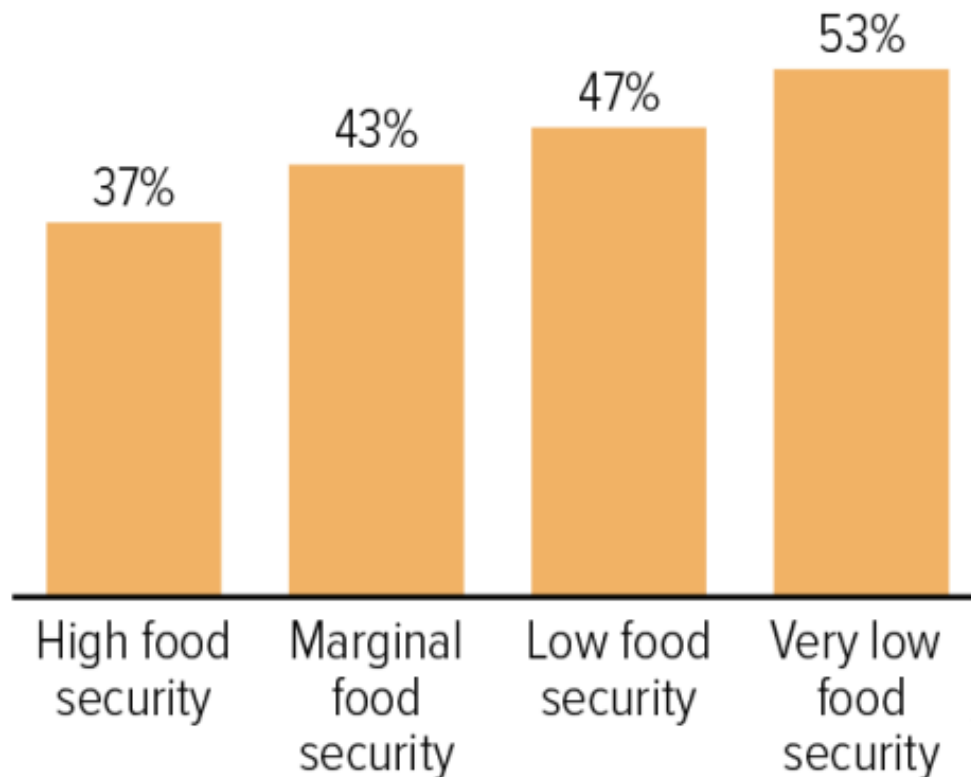
Food Insecurity Among AIAN

- Urban >1.4 times more likely to be food insecure than nonmetropolitan ($p < 0.05$)
- Varies substantially by IHS region
 - Pacific: 40%
 - Southern Plains: >30%
 - Alaska: >30%.
 - Southwest: 26%
 - Northern Plains: 28%
 - East : 22%

FIGURE 1

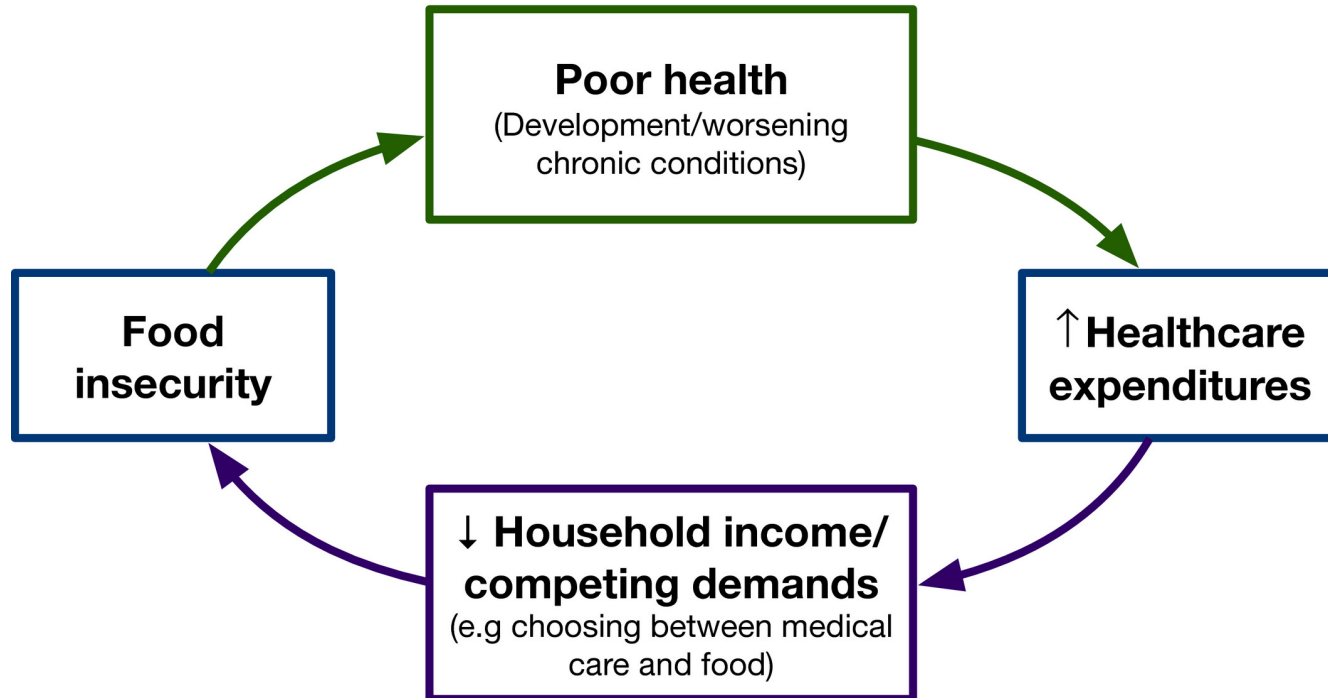
Adults in Households with Less Food Security Are Likelier to Have a Chronic Illness

Probability of any chronic illness

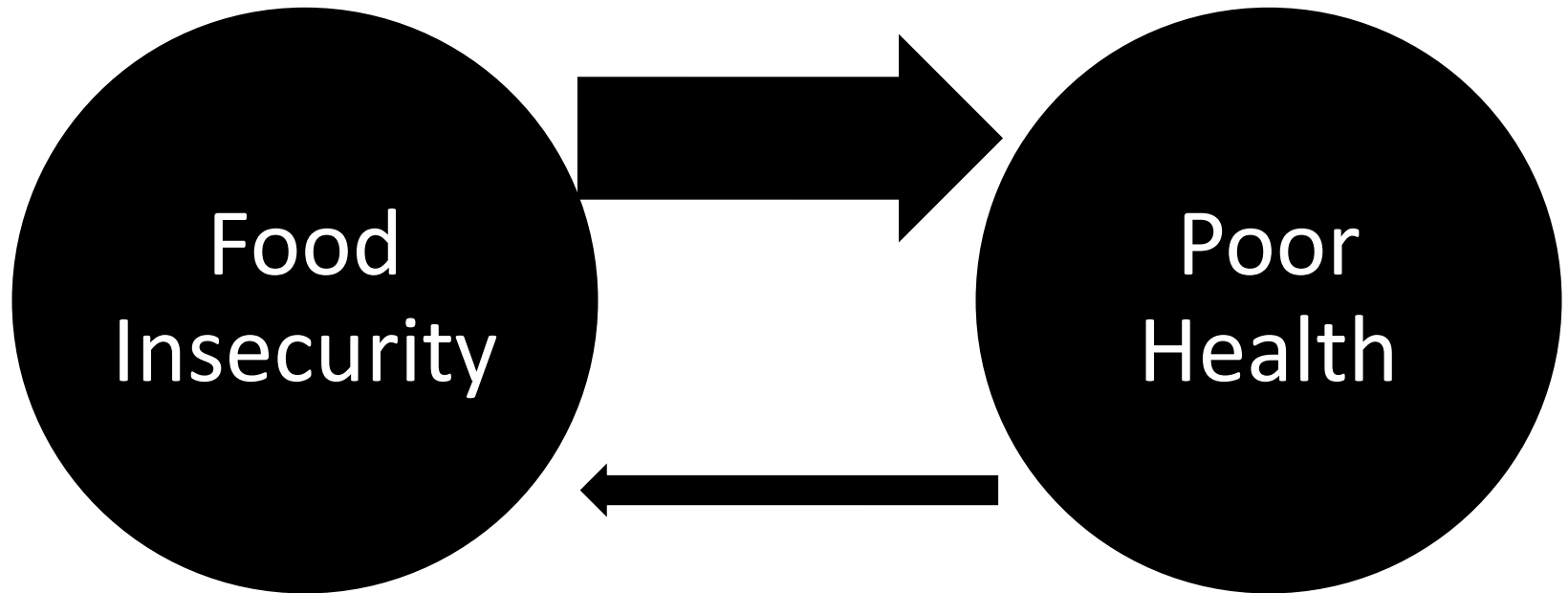


Source: Christian A. Gregory and Alisha Coleman-Jensen, "Food Insecurity, Chronic Disease, and Health Among Working-Age Adults," U.S. Department of Agriculture, July 2017. Adjusted for differences in demographic, socioeconomic and other characteristics. Sample includes working-age adults in households at or below 200% of the federal poverty level.

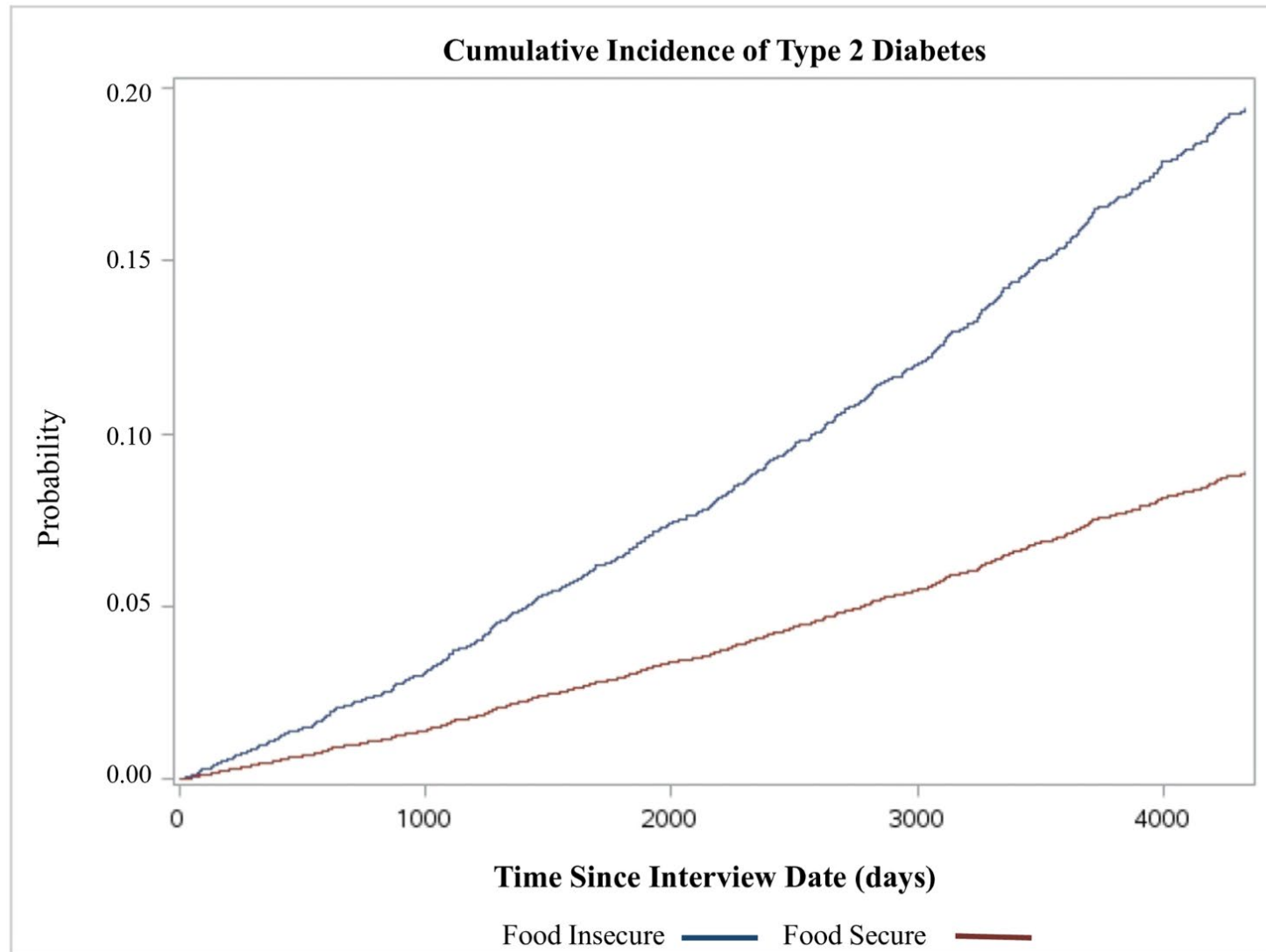
Bidirectional relationship between food insecurity and poor health



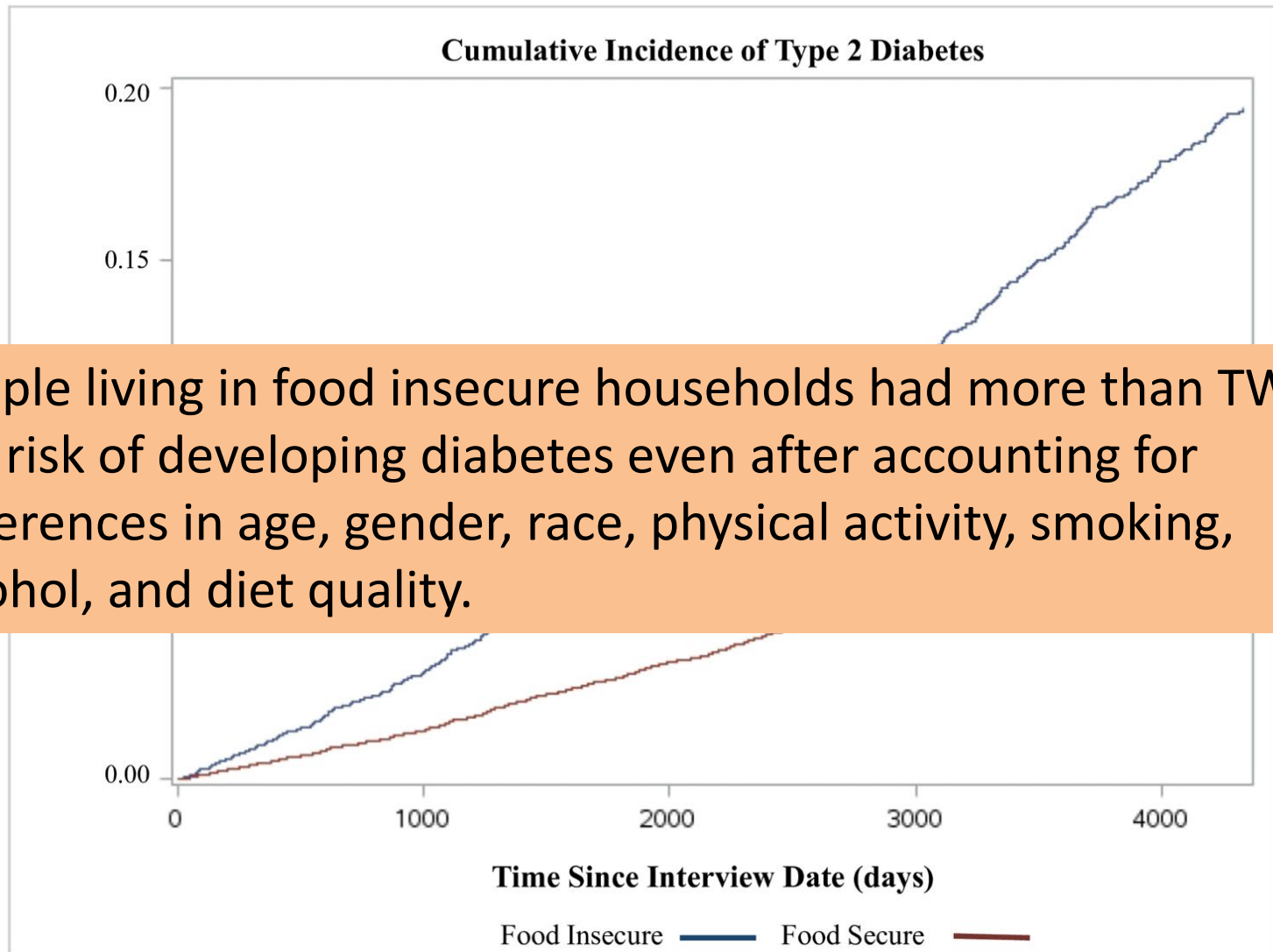
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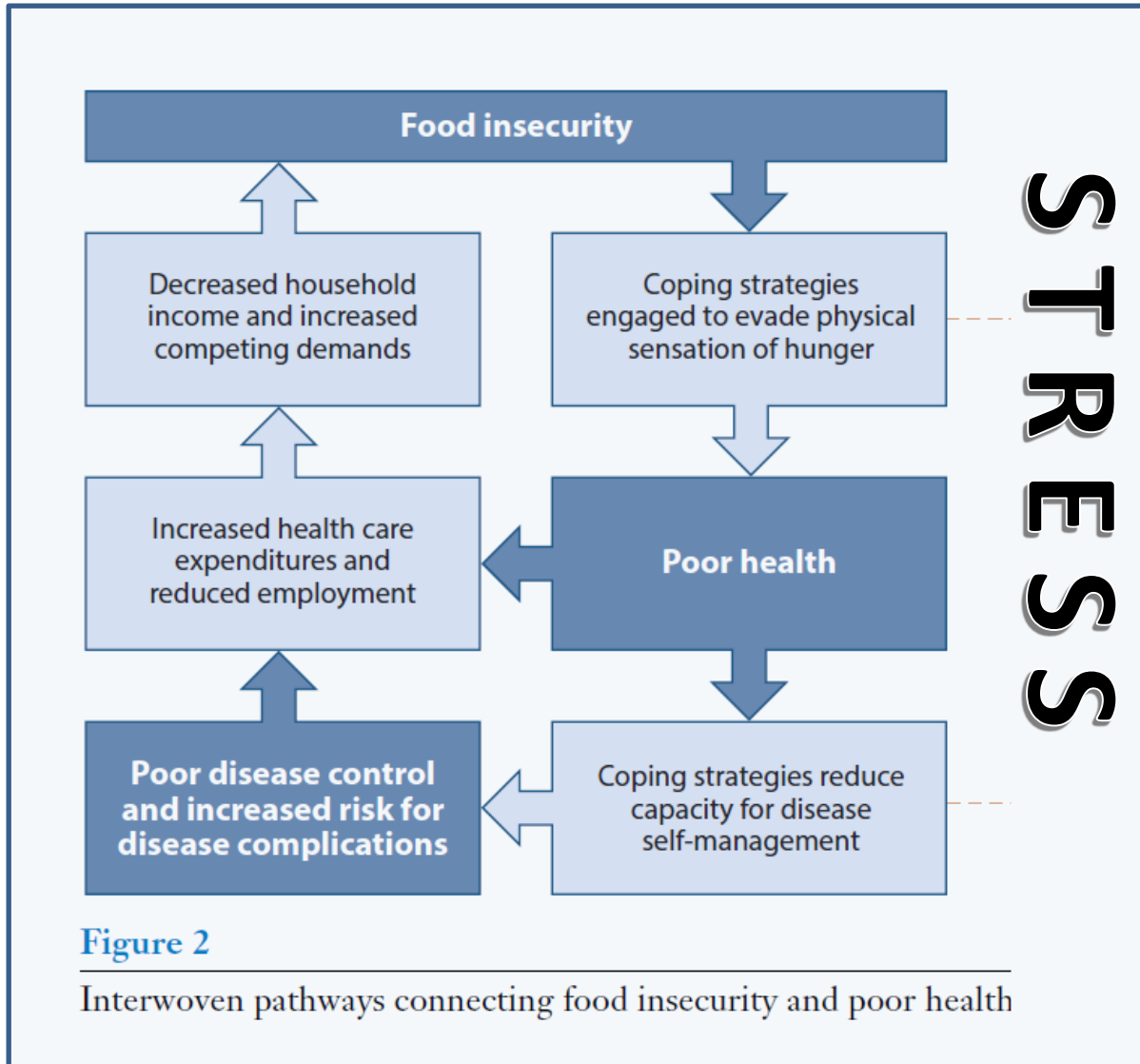
Food Insecurity → Poor Health



Food Insecurity → Poor Health



People living in food insecure households had more than TWICE the risk of developing diabetes even after accounting for differences in age, gender, race, physical activity, smoking, alcohol, and diet quality.



Seligman & Berkowitz, Aligning Programs and Policies to Support Food Security and Public Health Goals in the United States. Annual Review of Public Health, 2019.

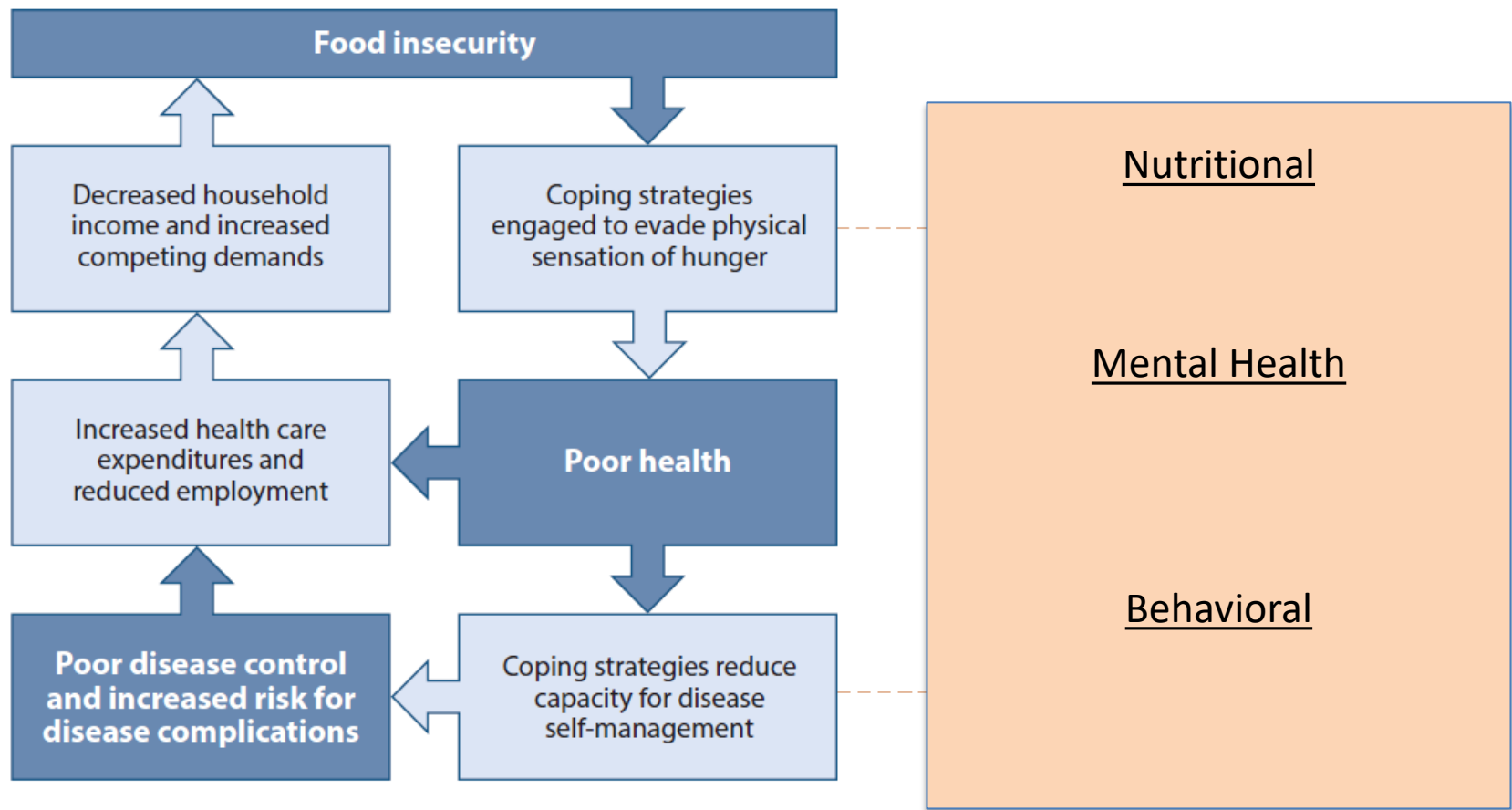


Figure 2

Interwoven pathways connecting food insecurity and poor health.

Seligman & Berkowitz, Aligning Programs and Policies to Support Food Security and Public Health Goals in the United States. Annual Review of Public Health, 2019.

These are not theoretical. All of have been shown in multiple research studies.

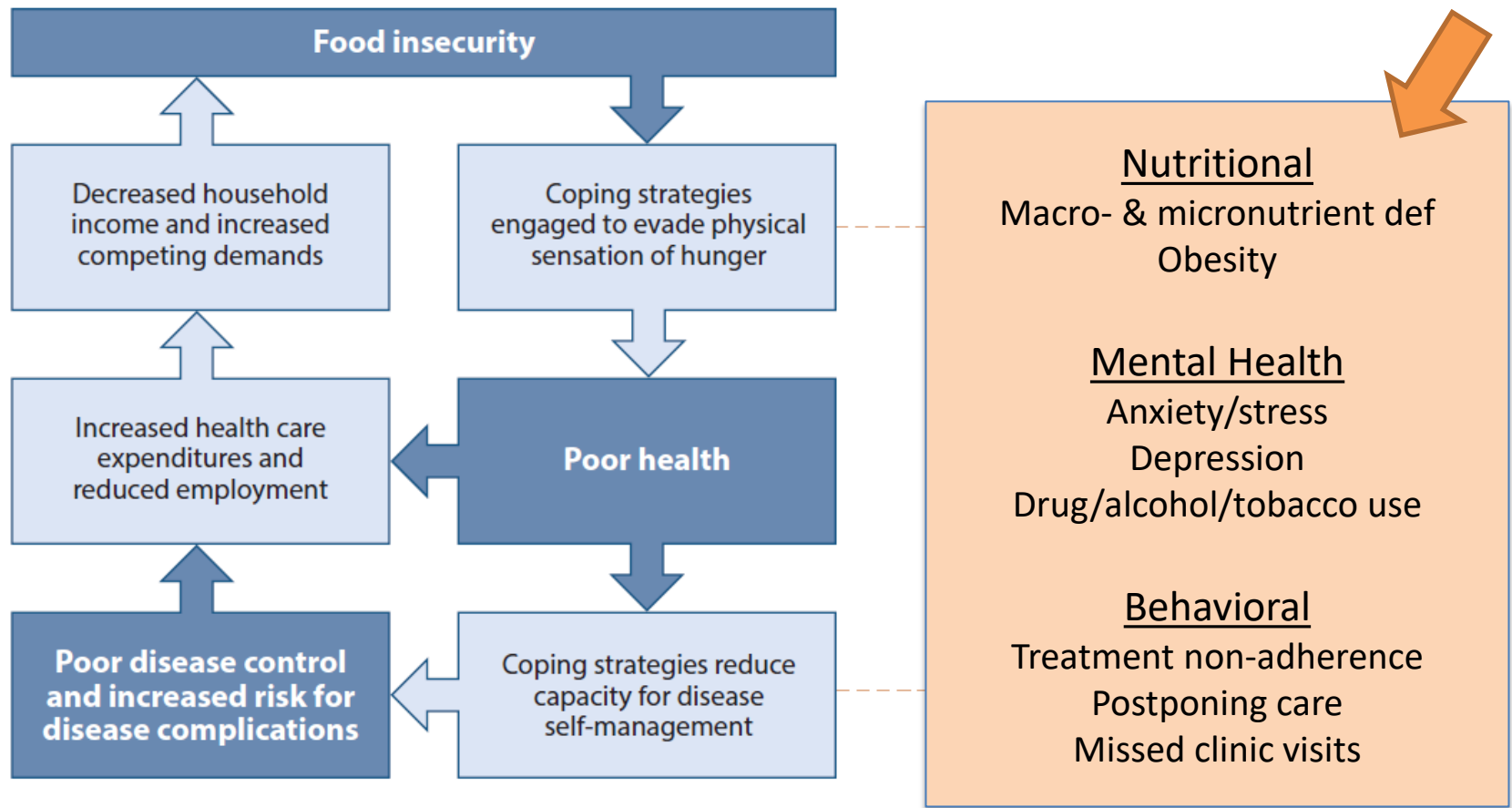


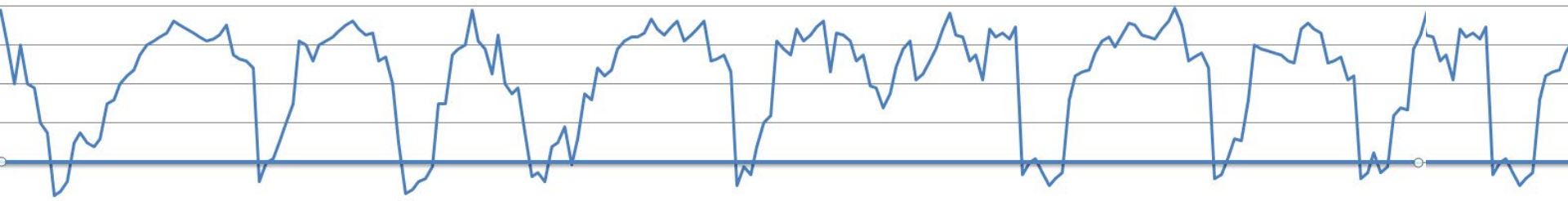
Figure 2

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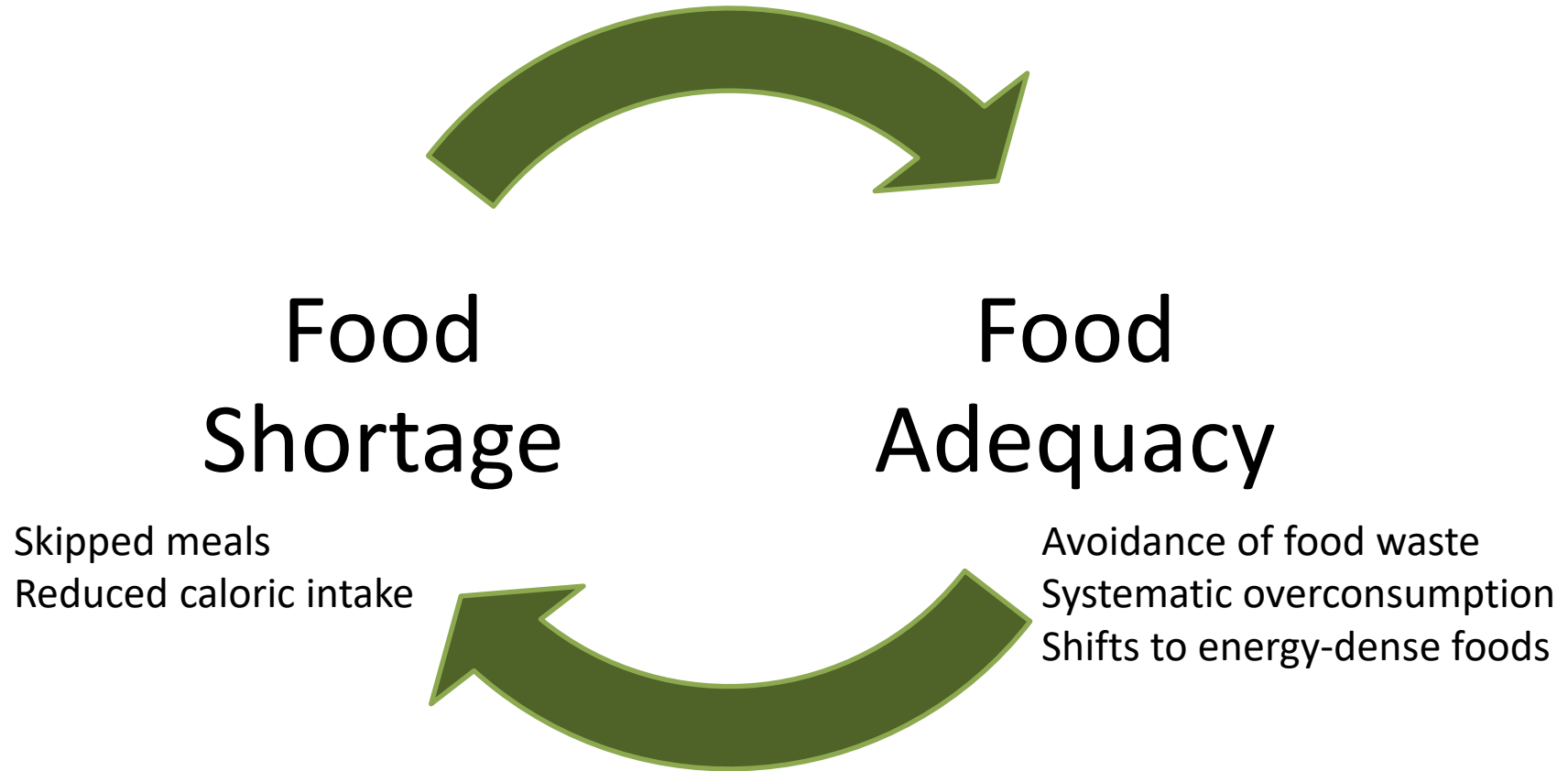
Weiser, Palar, et al. Food Insecurity and Health: A Conceptual Framework. Chapter in: Food Insecurity and Public Health. CRC Press, 2015.

Food Insecurity is Cyclic & Episodic

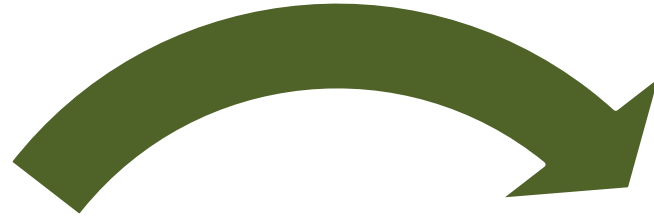
- Variation is monthly, seasonal, & random
- Average 7 episodes per year
- Dietary intake fluctuates, particularly among mothers



Compensatory Strategies



Diabetes is the Most Challenging Condition to Manage Clinically in the Context of Food Insecurity



Food Shortage

Food Adequacy

Skipped meals
Reduced caloric intake

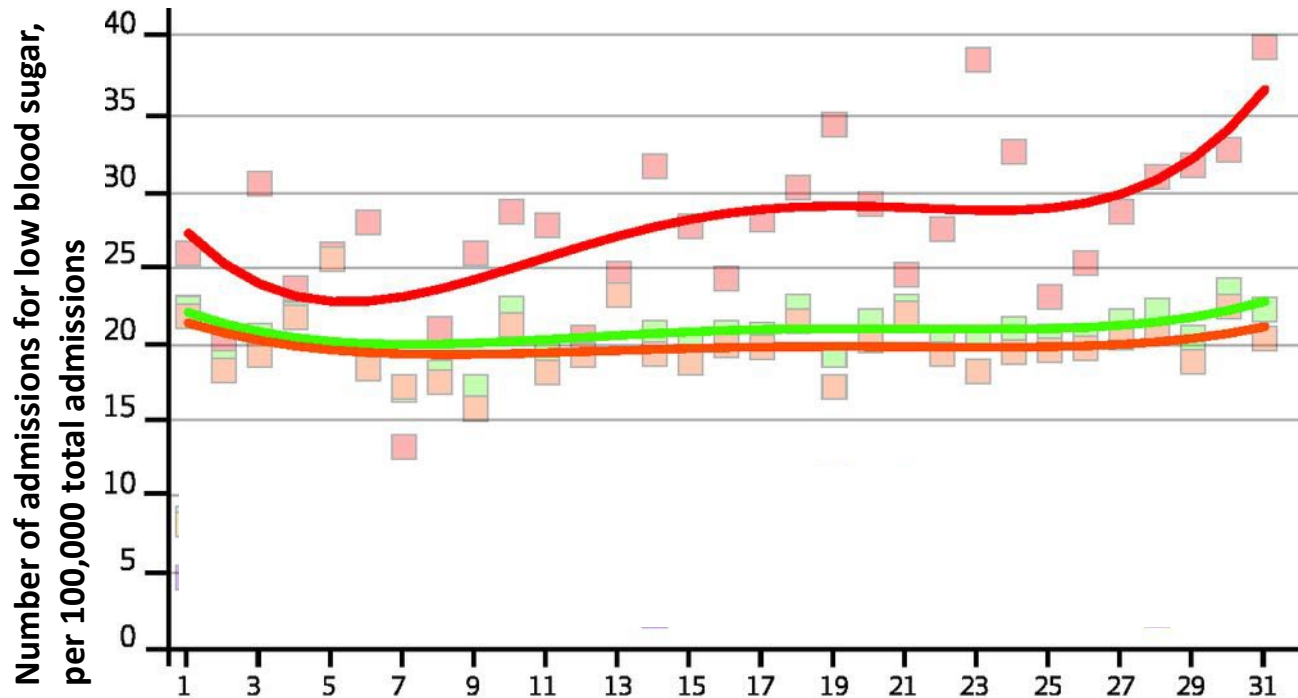
Avoidance of food waste
Systematic overconsumption
Shifts to energy-dense foods



HYPOGLYCEMIA

HYPERGLYCEMIA

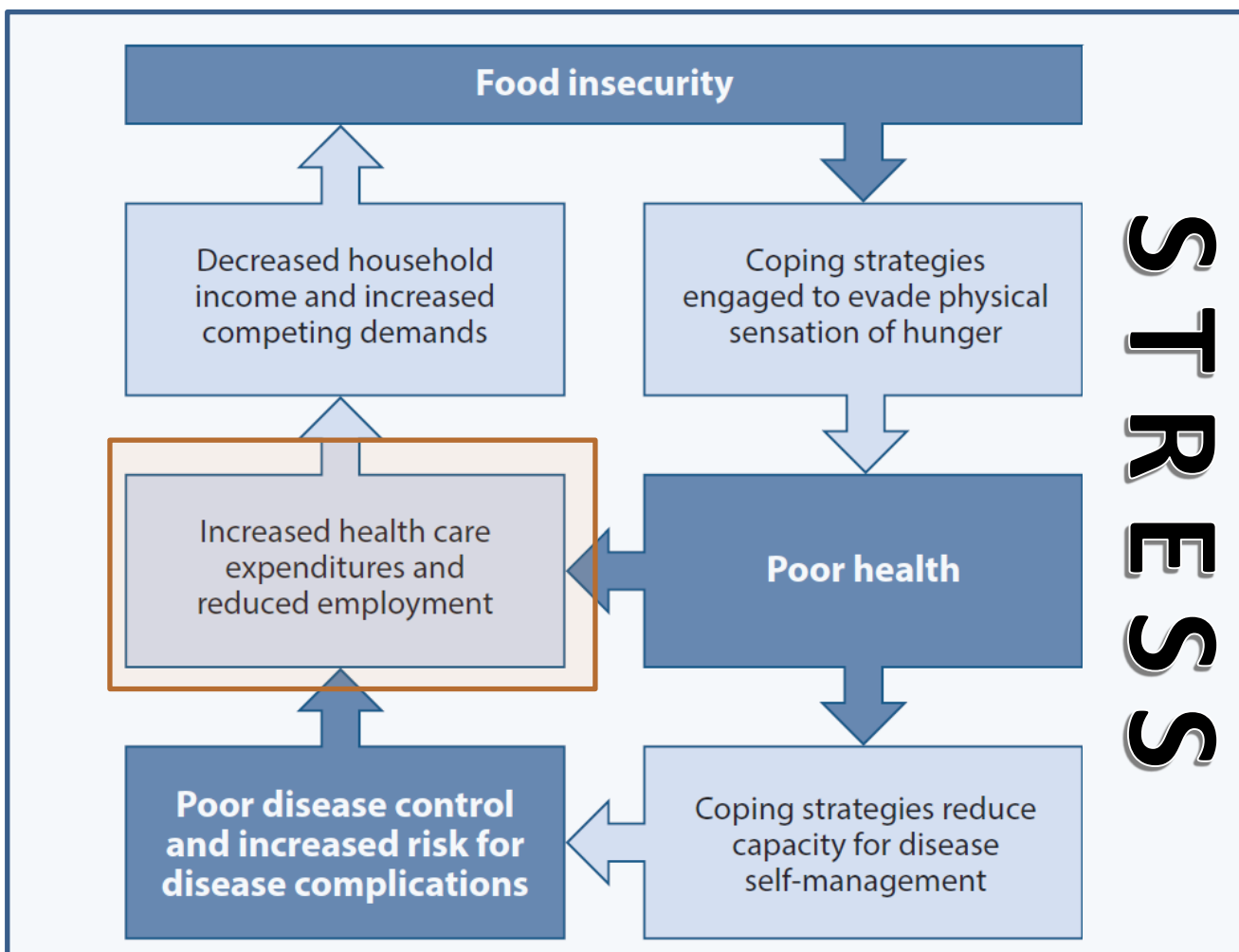
Admissions for Low Blood Sugar Increase by 27% in Last Week of the Month for Low-Income Population



Food Insecure Adults with Diabetes Have Higher Average Blood Sugars

()	Food Secure	Food Insecure	()
HbA1c >7% (NHANES, known diabetics <200% FPL)	49%	70%	Adjusted RR 1.35 (1.05-1.74)
Mean HbA1c (ICHHC, n=711)	8.1%	8.5%	p=0.007
Mean HbA1c (MFFH, n=621)	8.0%	8.4%	p=0.01

Seligman, *Jl Nutrition*, 2010; Seligman, *Diabetes Care*, 2012; Lyles, *Diabetes Care*, 2013.



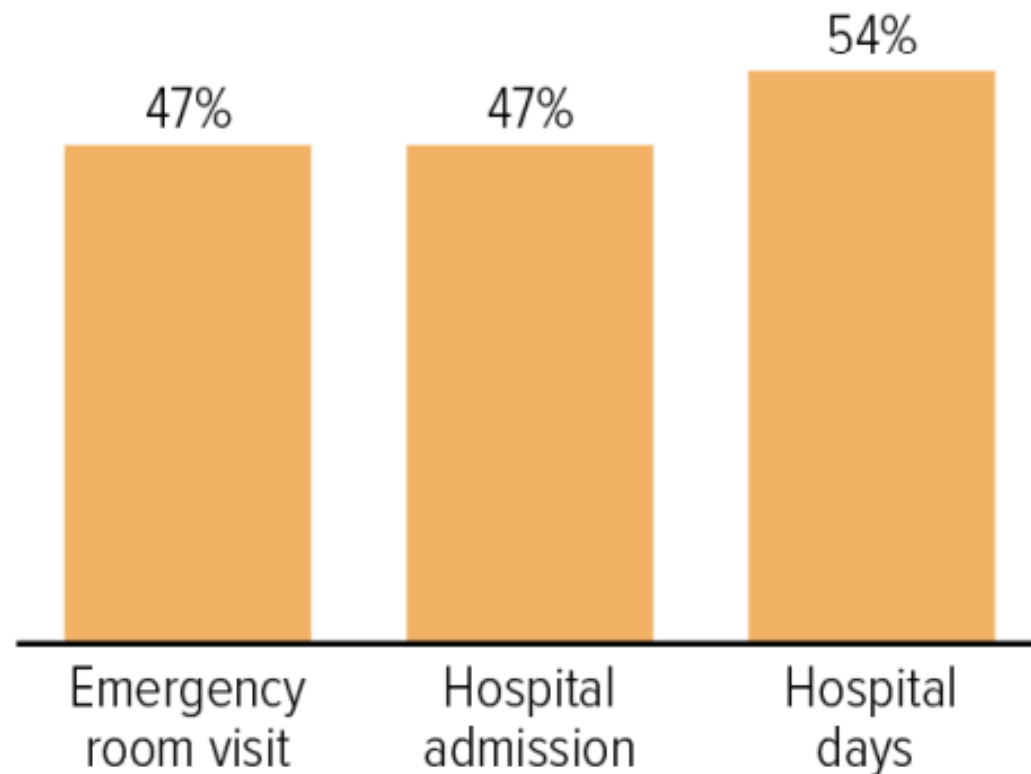
Seligman & Berkowitz, Ann Rev Pub Hlth, 2018, in press.



FIGURE 4

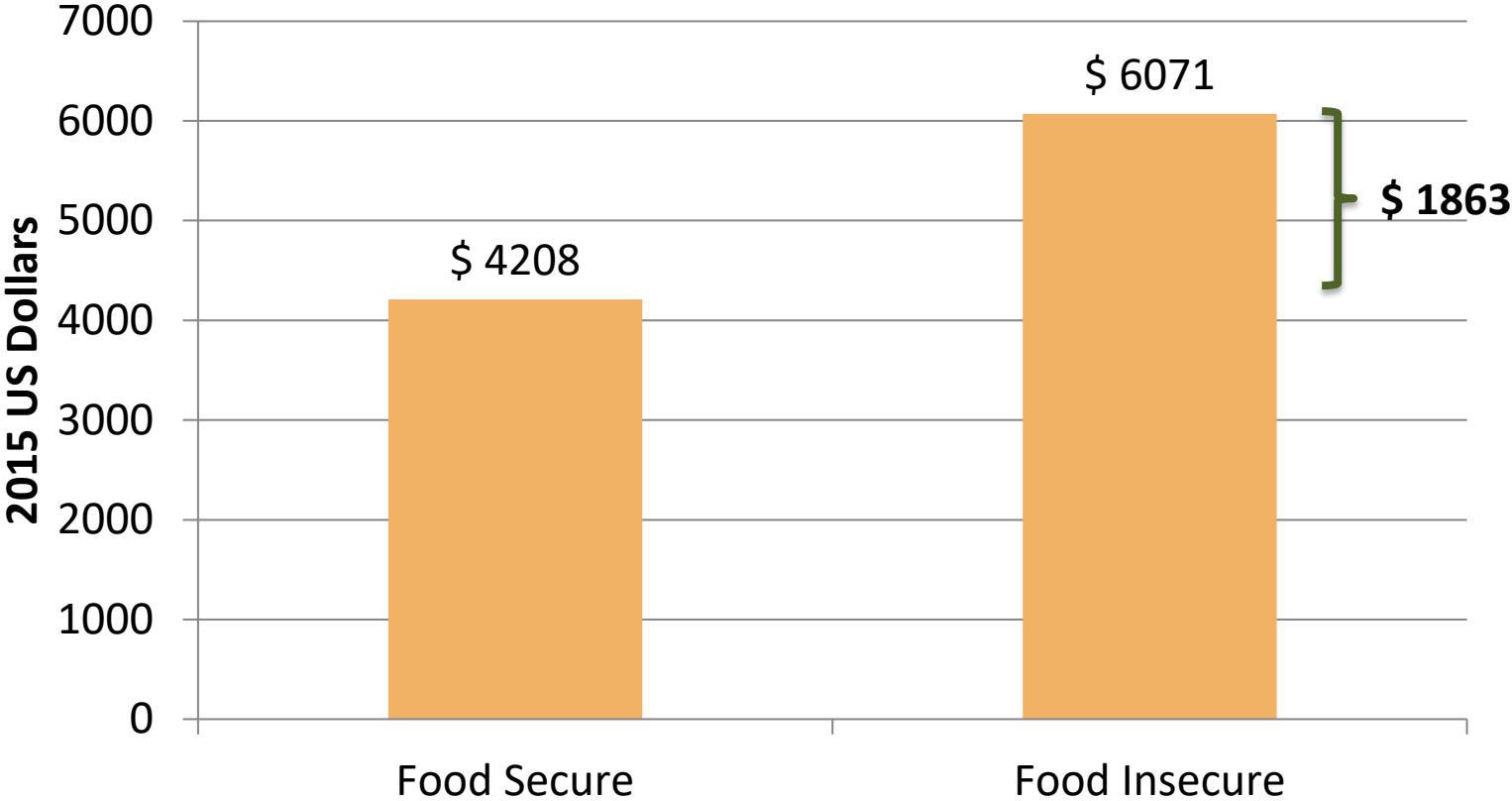
Adults in Food-Insecure Households Have More Emergency Room Visits and Hospital Admissions

Percent more likely relative to food-secure households



Berkowitz, Seligman, and Basu. JAMA Int Med, 2018.

Food Insecurity Associated with 44% Increase in Annual Health Care Expenditures



NHIS-MEPS data adjusted for: age, age squared, gender, race/ethnicity, education, income, rural residence, and insurance.

If my clinic helps a patient
become more food secure,
will it make a difference in their
health?





Supplemental
Nutrition
Assistance
Program

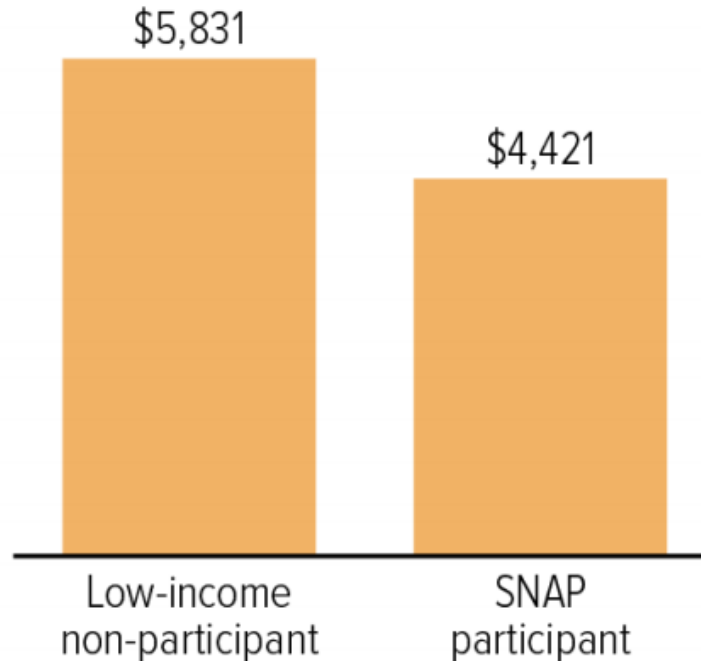
**reduces food
insecurity by 20-30%**



FIGURE 10

A SNAP Participant Incurs \$1,400 Less for Health Care

Estimated annual per-person health care spending



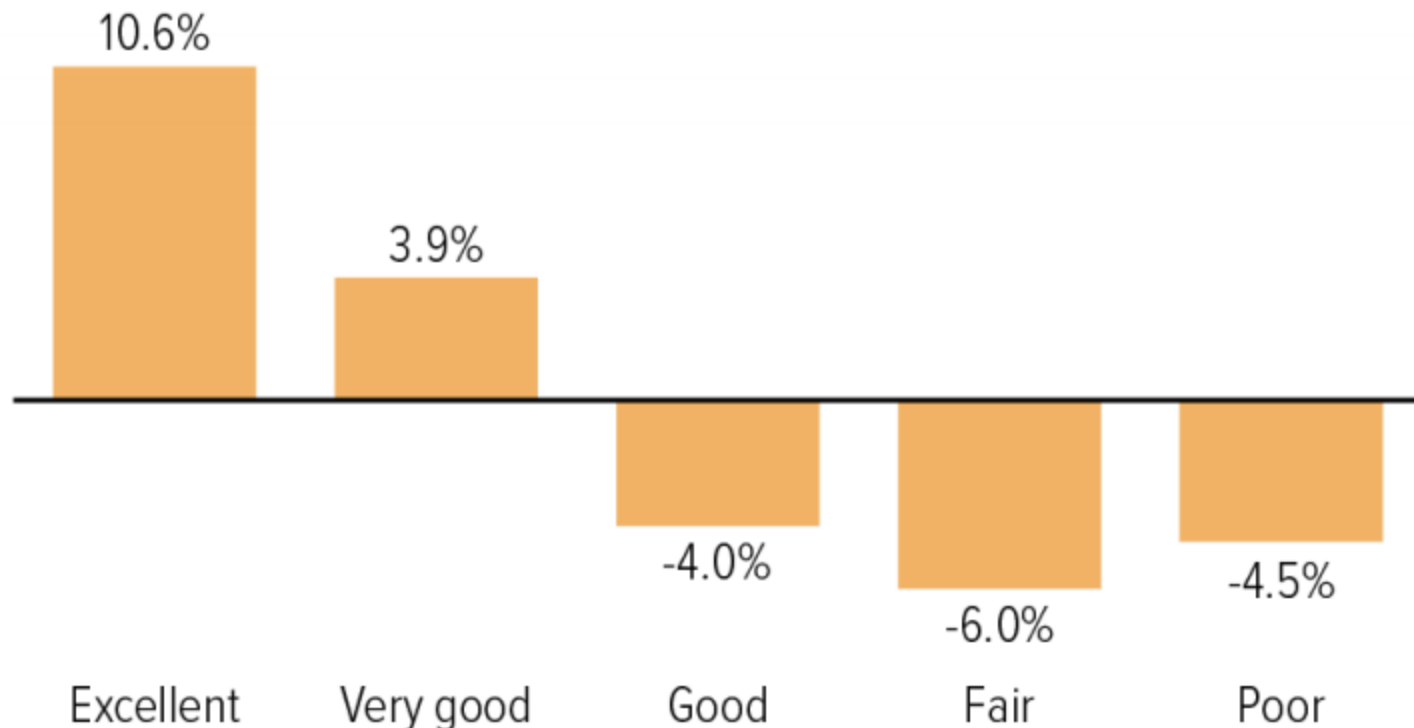
Note: Health care spending includes out-of-pocket expenses and costs paid by private and public insurance, including Medicare and Medicaid.

Source: Seth Berkowitz, Hilary K., Seligman, and Sanjay Basu, "Impact of Food Insecurity and SNAP Participation on Healthcare Utilization and Expenditures," University of Kentucky Center for Poverty Research, 2017.

FIGURE 6

SNAP Participants Report Better Health Than Eligible Non-Participants

Percent more or less likely to describe health as:

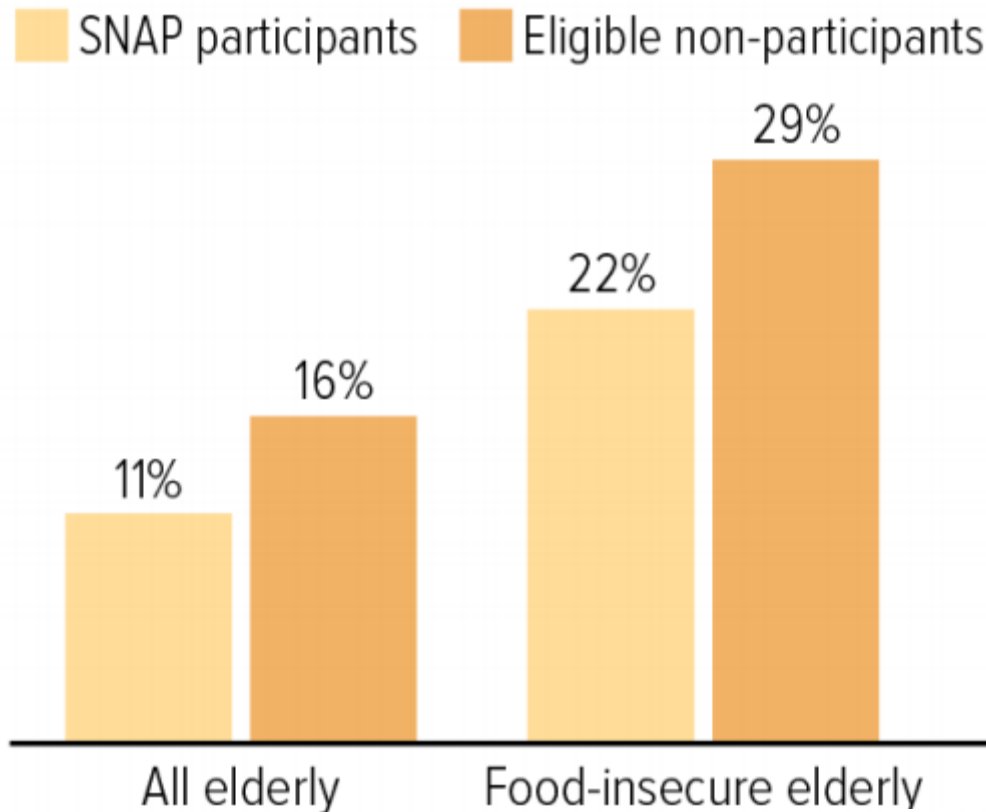


Source: Christian A. Gregory and Partha Deb, "Does SNAP Improve Your Health?" Food Policy, 2015. Adjusted for differences in demographic, socioeconomic and other characteristics. Sample includes adults aged 20 to 64 in households with income at or below 130% of the federal poverty level.

FIGURE 8

Elderly SNAP Participants Less Likely to Skip Needed Medications

Percent who skip or stop medications, take smaller doses, or delay a prescription due to cost



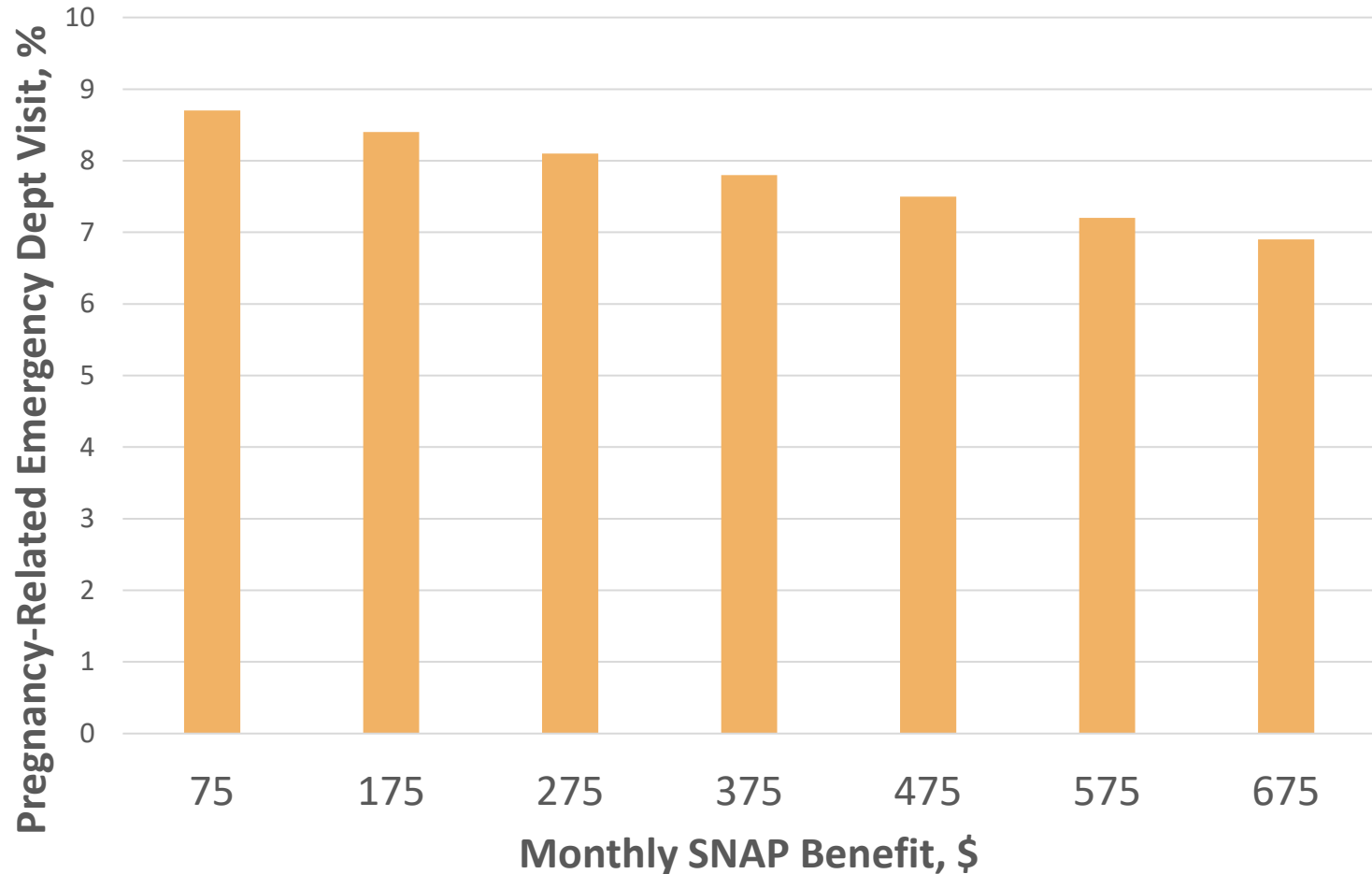
Source: Mithuna Srinivasan and Jennifer A. Pooler, "Cost-Related Medication Nonadherence for Older Adults Participating in SNAP, 2013–2015." *American Journal of Public Health*, December 2017

SNAP & Impact on Health Outcomes

- Less hypoglycemia at end of month
- Fewer pregnancy-related ER visits
- Fewer child ER visits for asthma
- Fewer adult ER visits for HTN
- Fewer hospitalizations and shorter length-of-stay
- Lower health care expenditures



Higher Benefits Associated with Better Outcomes



STANDARDS OF MEDICAL CARE IN DIABETES—2016

- Two A recommendations
 - **“Providers should evaluate hyperglycemia and hypoglycemia in the context of food insecurity and propose solutions accordingly.”**
 - “Provider should recognize that homelessness, poor literacy, and poor numeracy often occur with food insecurity, and appropriate resources should be made available for patients with diabetes.”

“Screen and Intervene”

Identification
of food
insecurity by
positive
clinical screen



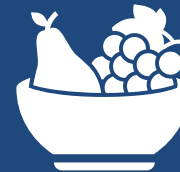
Referral to
someone who
can make a
connection to
a program



Enrollment in
on-site,
community, or
federal food
program



Improved diet
quality, food
security, and
clinical
satisfaction



Improvement
of health and
utilization
outcomes



Standardized Clinical Measurement: Hunger Vital Sign

1. Within the past 12 months we worried whether our food would run out before we got money to buy more.
2. Within the past 12 months the food we bought just didn't last and we didn't have money to get more.

Often or sometimes true to EITHER question suggests food insecurity (97% sensitivity, 83% specificity)

For test characteristics among households with children: Hager, Pediatrics, 2010

For test characteristics among households without children, population-based:

Gundersen & Seligman, PHN, 2017

Best Practices in HVS Administration

- “I ask all of my patients about access to food. I want to make sure you know all of the community resources available to you. Many of them are free of charge.”
 - Stigma, “neglect”
- Medical provider should follow up on a +HVS, but may not be the best person to administer HVS
- Frequency
 - Screen everyone once
 - Screen high-risk populations regularly: FI is dynamic!

Clinical Implications for Food Insecure Patients with Diabetes

- In the setting of frequent/severe hypoglycemia:
 - Before you liberalize glycemic targets, screen for food insecurity
- Medication:
 - Metformin, if clinically appropriate
 - If using sulfonylureas: glipizide preferred immediately before meals (skip if not eating)
 - Prescribe with meals, rather than a time of day
 - If using long-acting insulin: dose low using a peakless analog (e.g., glargine)
 - If using short-acting insulin: OK to use immediately after meal if meals are unreliable
- Prescribe glucose tabs
- Smoking cessation & substance abuse counseling
- Talk about “a day in which you can’t eat” rather than a “sick day”

**Recommendations all consistent with ADA Standards of Care for pts experiencing food insecurity*

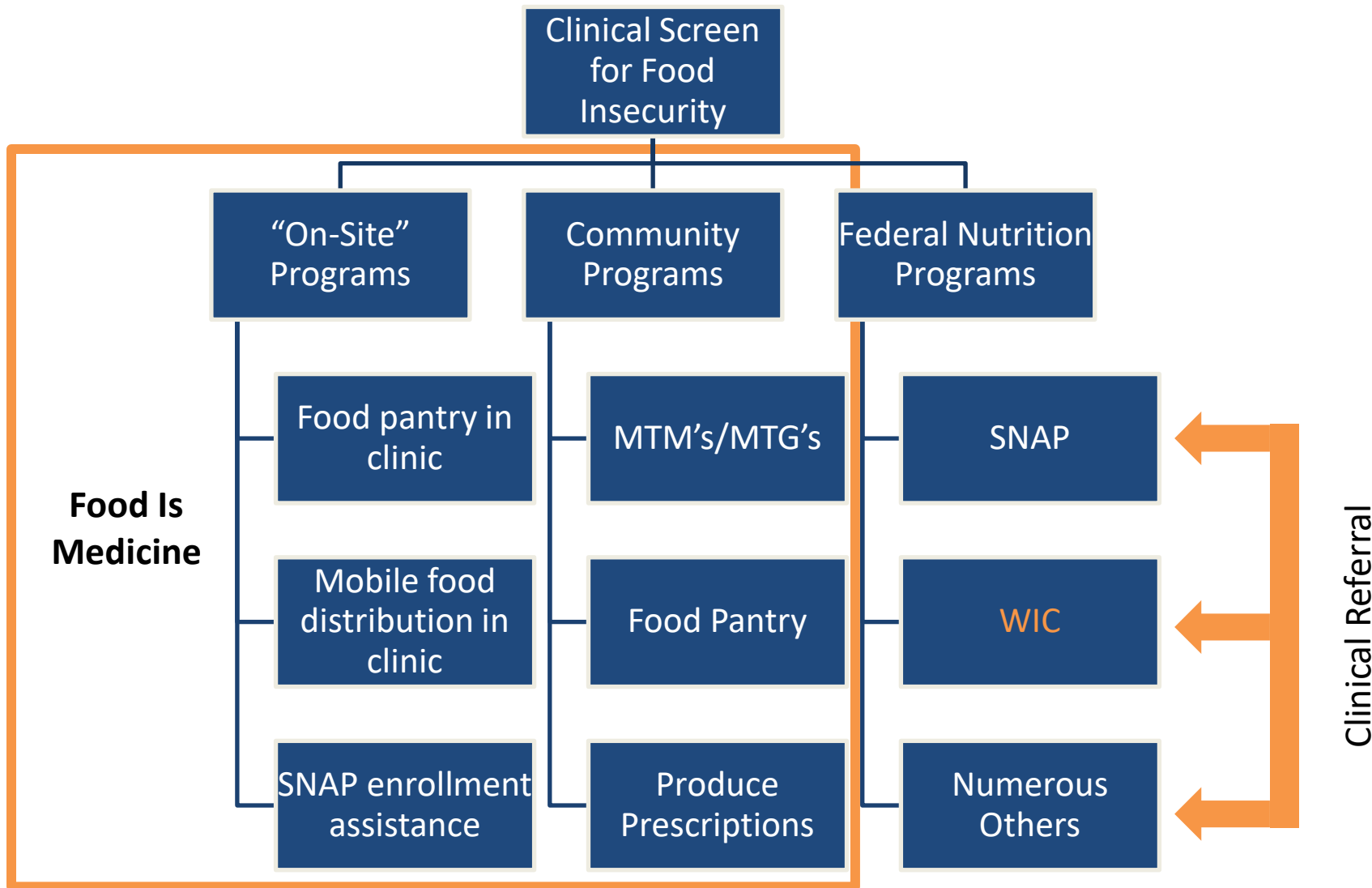
Dietary Counseling


- **Stress portion control rather than dietary substitutions**
- Frozen fruits and vegetables
- Farmers' markets
- Nutritionist referral
- DSME sensitive to needs of food insecure patients



Food Is Medicine

- Integration of specific food and nutrition interventions in, or in close collaboration with, the health care system
 - Medically-Tailored Meals
 - Medically-Tailored Groceries
 - Produce Prescriptions
 - On-site interventions
- Target population: individuals with or at high risk for serious health conditions
 - Often prioritizes people with or at high risk of food insecurity



 = "food is medicine"

Summary of Research

- WIC: Strong evidence improves diet quality, birth outcomes, immunization rates, child academic performance
- SNAP: Strong evidence improves health outcomes, reduces medication non-adherence, and reduces health care expenditures
- FDPIR: I am aware of no data in the scientific literature
- MTM: Moderate evidence can reduce hospital admissions and readmissions, lower medical costs, and improve medication adherence
- MTG: Very limited data
- PPR: Early evidence of impact on diet quality and food security as well as diabetes outcomes
- On-site programs: Very limited data

DC Programs

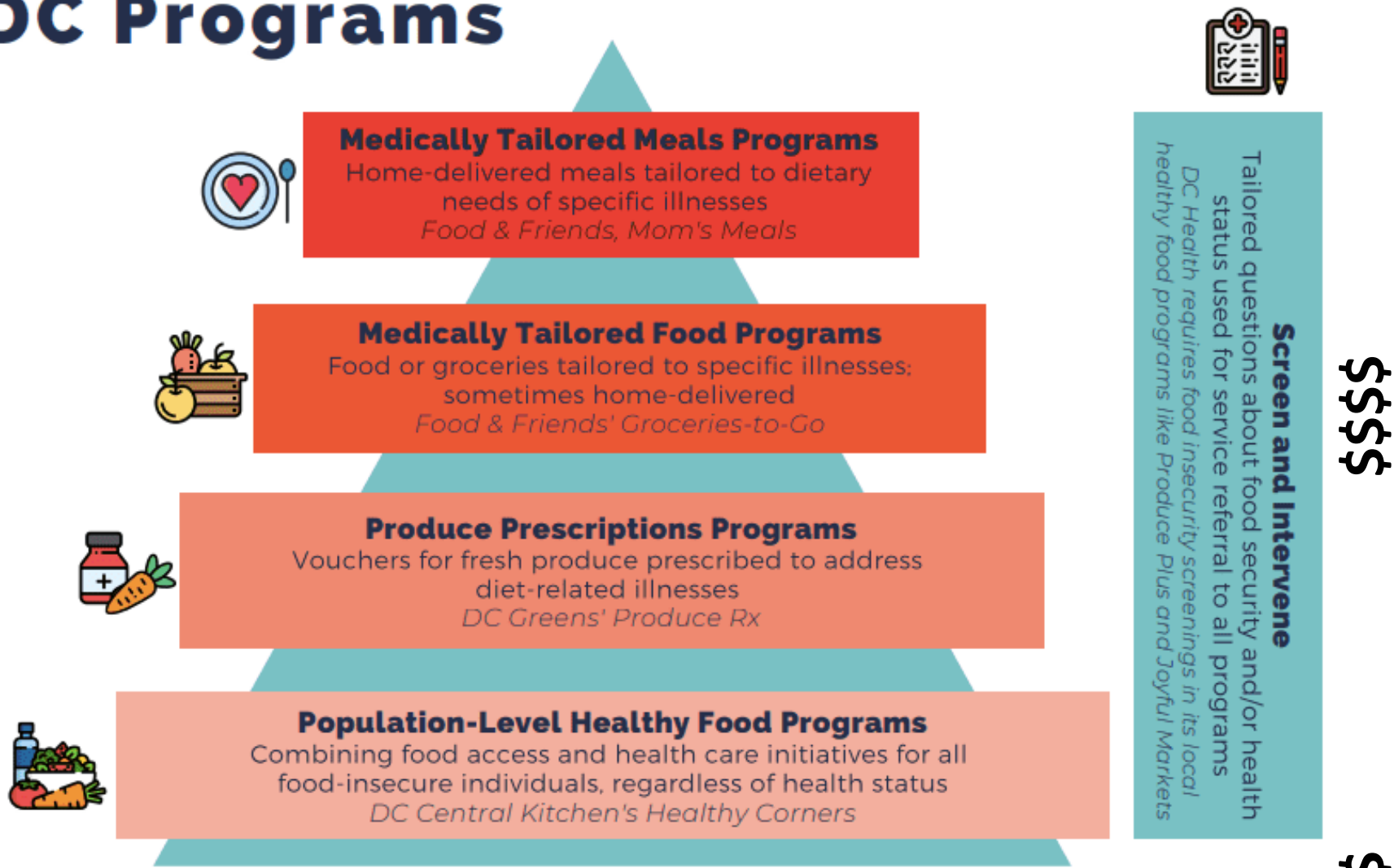
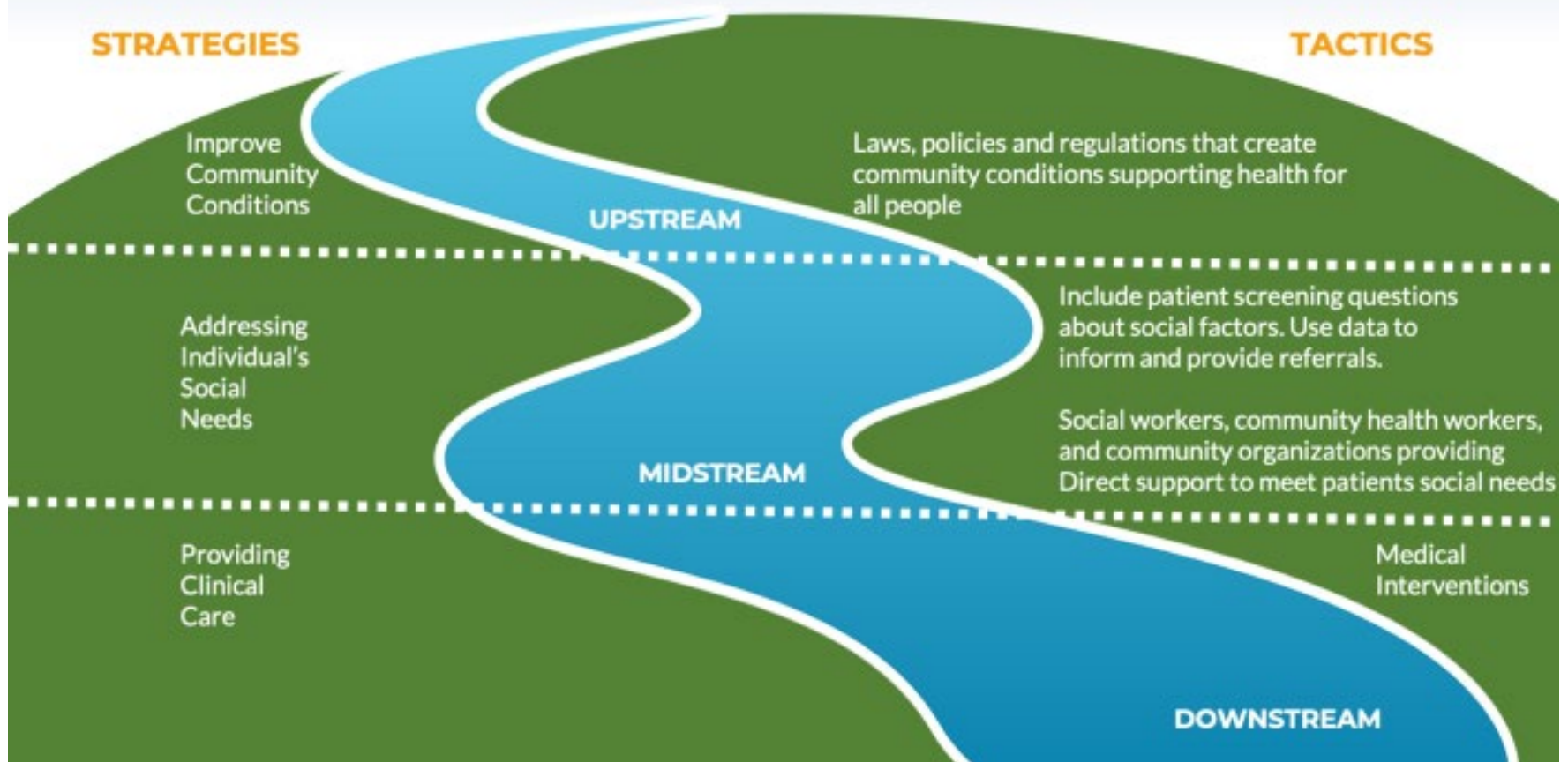


Image from DC Food Policy Council

FIM Movement: Challenges

- Often funded by short-term grants
- Often implemented with goal of demonstrating ROI
- Access is almost always time-limited
- Referrals are limited by fragmentation and inadequate funding of the social safety net
- Priority populations often change
- Optimal dose and duration still not clear
 - Likely differs by target population
- Movement from one program to another as needs change
- Most studies are single site/pre-post or model health outcomes based on assumed changes in diet quality

SOCIAL DETERMINANTS AND SOCIAL NEEDS – MOVING UPSTREAM



“Meeting Individual Social Needs Falls Short Of Addressing Social Determinants Of Health,” Health Affairs Blog, January 16, 2019. DOI:

[10.1377/hblog20190115.234942](https://doi.org/10.1377/hblog20190115.234942)

Social Determinant of Health



- Fundamental drivers of the conditions in which people are born, grow, live, work, and age
- Focuses on underlying social and economic conditions
- Root causes

Social Need



- Downstream manifestations of the impact of the social determinants of health
- Acute needs

“Meeting Individual Social Needs Falls Short Of Addressing Social Determinants Of Health, ” Health Affairs Blog, January 16, 2019. DOI: [10.1377/hblog20190115.234942](https://doi.org/10.1377/hblog20190115.234942)

NASEM Health Care System Activities that Strengthen Social Care Integration: 5 A's

Activities focused on individuals

Adjustment

Assistance

Awareness

Activities focused on communities

Alignment

Advocacy

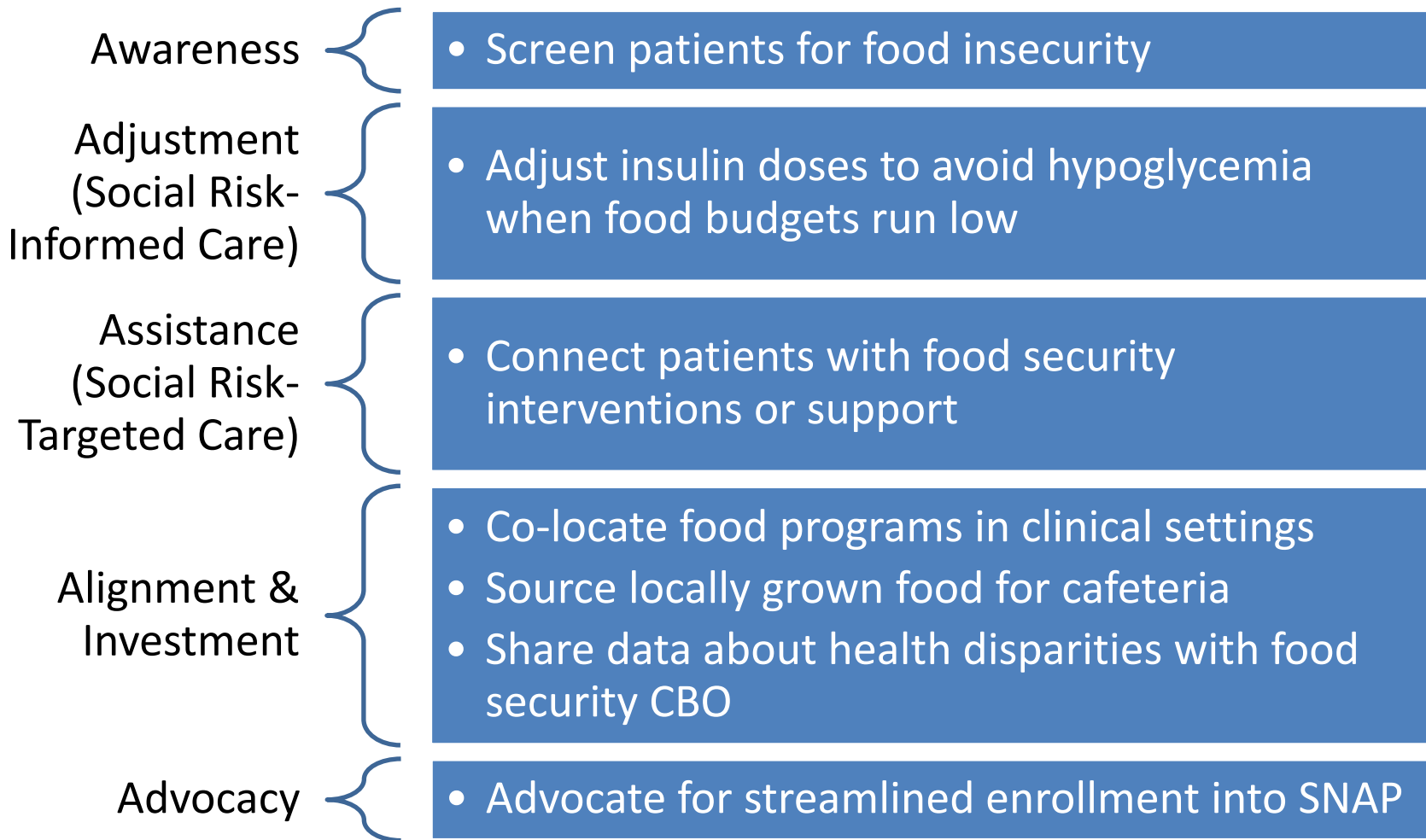
The National Academies of
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CONSENSUS STUDY REPORT

**INTEGRATING
SOCIAL CARE
INTO THE
DELIVERY OF
HEALTH CARE**

MOVING UPSTREAM
TO IMPROVE THE
NATION'S HEALTH

5 A's for Food Security



Credit: siren

Laura Gottlieb

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DM Meds: long-acting insulin qhs, glyburide, MTF

SH: 3 teenaged children, works as a house cleaner



- Numerous reasons to suspect food insecurity: diabetes with hypoglycemia, low-income, children in household
- HVS positive
- Not enrolled in SNAP (mixed documentation)
- Clinical management: support SNAP enrollment, discuss blood sugar management on days when no \$ for food, refer to food pantry for vegetables and other healthy “luxury items”



Conclusions

- Food insecurity is an important determinant of health
 - Much more prevalent in Black, Latino and Tribal communities
 - Contributes to disparities in diabetes outcomes
- FIM interventions & SNAP can support food security, healthier dietary intake, and improved diabetes outcomes

Good Clinical Resources

- Addressing FI: A Toolkit for Pediatricians
 - <http://frac.org/aaptoolkit> -- updated 2021
- CME: Screen & Intervene: Addressing FI Among Older Adults
 - <http://frac.org/news/free-online-course-help-health-care-providers-address-senior-hunger>
- Identifying Food Insecurity in Health Care Settings: A Review of the Evidence
 - https://sirenetwork.ucsf.edu/sites/sirenetwork.ucsf.edu/files/SIREN_FoodInsecurity_Brief.pdf
- FI and Health: A Toolkit for Physicians and Health Care Organizations
 - <https://hungerandhealth.feedingamerica.org/wp-content/uploads/2017/11/Food-Insecurity-Toolkit.pdf>