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

United States Department of Agriculture
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.

Source: US Department of Agriculture
1 in 10 US Households Food Insecure in 2021

U.S. households by food security status, 2021

- **Food-secure households**: 89.8%
- **Households with low food security**: 6.4%
- **Households with very low food security**: 3.8%

Disparities in Food Insecurity Rates by Race, 2020

Who is missing?

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

<table>
<thead>
<tr>
<th>Category</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>High food security</td>
<td>37%</td>
</tr>
<tr>
<td>Marginal food security</td>
<td>43%</td>
</tr>
<tr>
<td>Low food security</td>
<td>47%</td>
</tr>
<tr>
<td>Very low food security</td>
<td>53%</td>
</tr>
</tbody>
</table>

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

Poorest health
(Development/worsening chronic conditions)

Food insecurity

↑ Healthcare expenditures

↓ Household income/competing demands
(e.g. choosing between medical care and food)

Bidirectional relationship between food insecurity and 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.

**Figure 2**
Interwoven pathways connecting food insecurity and poor health
Interwoven pathways connecting food insecurity and poor health.

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

**Nutritional**
- Macro- & micronutrient deficiency
- Obesity

**Mental Health**
- Anxiety/stress
- Depression
- Drug/alcohol/tobacco use

**Behavioral**
- Treatment non-adherence
- Postponing care
- Missed clinic visits

Figure 2
Interwoven pathways connecting food insecurity and poor health.

Food Insecurity is Cyclic & Episodic

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

Food Shortage
- Skipped meals
- Reduced caloric intake

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

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

Food Shortage
- Skipped meals
- Reduced caloric intake

Food Adequacy
- 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

Seligman HK et al. Health Aff 2014;33:116-123
Food Insecure Adults with Diabetes Have Higher Average Blood Sugars

<table>
<thead>
<tr>
<th>()</th>
<th>Food Secure</th>
<th>Food Insecure</th>
<th>()</th>
</tr>
</thead>
<tbody>
<tr>
<td>HbA1c &gt;7% (NHANES, known diabetics &lt;200% FPL)</td>
<td>49%</td>
<td>70%</td>
<td>Adjusted RR 1.35 (1.05-1.74)</td>
</tr>
<tr>
<td>Mean HbA1c (ICHC, n=711)</td>
<td>8.1%</td>
<td>8.5%</td>
<td>p=0.007</td>
</tr>
<tr>
<td>Mean HbA1c (MFFH, n=621)</td>
<td>8.0%</td>
<td>8.4%</td>
<td>p=0.01</td>
</tr>
</tbody>
</table>

Food insecurity

- Decreased household income and increased competing demands
- Coping strategies engaged to evade physical sensation of hunger
- Increased health care expenditures and reduced employment
- Coping strategies reduce capacity for disease self-management

Poor health

- Poor disease control and increased risk for disease complications

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

Percent more likely relative to food-secure households

- Emergency room visit: 47%
- Hospital admission: 47%
- Hospital days: 54%

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 (SNAP) reduces food insecurity by 20-30%.
A SNAP Participant Incurs $1,400 Less for Health Care

Estimated annual per-person health care spending

- Low-income non-participant: $5,831
- SNAP participant: $4,421

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

FIGURE 6

SNAP Participants Report Better Health Than Eligible Non-Participants

Percent more or less likely to describe health as:

- Excellent: 10.6%
- Very good: 3.9%
- Good: -4.0%
- Fair: -6.0%
- Poor: -4.5%

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

SNAP participants  Eligible non-participants

11%  16%  22%  29%

All elderly  Food-insecure elderly

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

![Bar Chart]

Pregnancy-Related Emergency Dept Visit, %

Monthly SNAP Benefit, $

75 175 275 375 475 575 675

Arteaga, Heflin, & Hodges. Pop Res & Pol Rev, 2018
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
Clinical Screen for Food Insecurity

“On-Site” Programs
- Food pantry in clinic
- Mobile food distribution in clinic
- SNAP enrollment assistance

Community Programs
- MTM’s/MTG’s
- Food Pantry
- Produce Prescriptions

Federal Nutrition Programs
- SNAP
- WIC
- Numerous Others

Food Is Medicine

= “food is medicine”

Clinical Referral
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

Medically Tailored Meals Programs
Home-delivered meals tailored to dietary needs of specific illnesses
*Food & Friends, Mom’s Meals*

Medically Tailored Food Programs
Food or groceries tailored to specific illnesses; sometimes home-delivered
*Food & Friends’ Groceries-to-Go*

Produce Prescriptions Programs
Vouchers for fresh produce prescribed to address diet-related illnesses
*DC Greens’ Produce Rx*

Population-Level Healthy Food Programs
Combining food access and health care initiatives for all food-insecure individuals, regardless of health status
*DC Central Kitchen’s Healthy Corners*

Screen and Intervene
Tailored questions about food security and/or health status used for service referral to all programs
DC Health requires food insecurity screenings in all healthy food programs like Produce Plus and Joyful Markets

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

“Meeting Individual Social Needs Falls Short Of Addressing Social Determinants Of Health,” Health Affairs Blog, January 16, 2019. DOI: 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
NASEM Health Care System Activities that Strengthen Social Care Integration: 5 A’s

Adjustment

Assistance

Awareness

Alignment

Advocacy

Activities focused on individuals

Activities focused on communities
5 A’s for Food Security

Awareness
- Screen patients for food insecurity

Adjustment (Social Risk-Informed Care)
- Adjust insulin doses to avoid hypoglycemia when food budgets run low

Assistance (Social Risk-Targeted Care)
- Connect patients with food security interventions or support

Alignment & Investment
- Co-locate food programs in clinical settings
- Source locally grown food for cafeteria
- Share data about health disparities with food security CBO

Advocacy
- Advocate for streamlined enrollment into SNAP

Credit: siren
Laura Gottlieb
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.

**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

• 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