Health care-directed screening initiatives and interventions for persons with food insecurity

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"The question is no longer whether there is an appropriate role for the US health care system in addressing the social determinants of health, but what that role is, how to create the right policy context for innovation and how health care can partner more effectively with providers of social services to meet patient’s most pressing needs given the fragmented, typically under resourced nature of the social sector."

Drs. Solomon and Kanter
Kaiser Permanente, Oakland, CA
Permanente Journal(2018)22

“People are fed by the FOOD industry, which pays no attention to HEALTH...

And are treated by the HEALTH industry, which pays no attention to FOOD.”

Wendell Berry
Rapid adoption of food insecurity screening in healthcare settings

- Policy-Affordable Care Act
- Community-Referrals, Vouchers, Direct Provision
- Organizational-Health Care Food Insecurity Screening
- Interpersonal-Provider training
- Individual-Caregivers of children, older adults
Financial rewards for keeping patients healthy

Community and Healthcare


Conducts Universal SDOH Screening (self-administered)-->
EHR Algorithm Generates In-basket Message to Population Health (clinician finds in SDOH tab)-->
Contacts Patient and Refers to Food Pantry and Connects with SNAP, WIC
Targeted Screening for HOST Response
If Uncontrolled Diabetes - Population Health offers Direct Food Provision from On-Site pantry plus Diabetes Self-Management Education from RDN

www.freshfoodfarmacy.com
Providing Free Food as a Treatment for Diabetes Yields Improved Outcomes for Patients While Reducing the Cost of Care

**Meals**
175,000 meals per year. $60 per meal. $2,400 per patient per year.

**Clinical Results** (over 18 months)
≥40% decrease in the risk of death or serious complications*

- **Meals:** HbA1c levels dropped an average 2.1 percentage points with attendance of the Diabetes Self-Management Class
- **Medication:** HbA1c levels using medication drop an average 0.5 to 1.2 percentage points

**Financial Results** (over 18 months)
80% drop in costs for our pilot patients

$240,000 per member to $48,000 per member per year

Fresh Food Farmacy
Food Insecurity Screening Tools Used in Health Care

<table>
<thead>
<tr>
<th>One-Item Hunger Screening Question in Kleinman et al. 2007&lt;sup&gt;13&lt;/sup&gt;</th>
<th>One-Item Screening Question Included in SEEK Screener in Lane et al. 2014&lt;sup&gt;12&lt;/sup&gt;</th>
<th>Two-Item Hunger* VitalSign™ in Hager et al. 2010&lt;sup&gt;11&lt;/sup&gt; &amp; Baer et al. 2015&lt;sup&gt;10&lt;/sup&gt;</th>
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<tbody>
<tr>
<td>“In the past month, was there any day when you or anyone went hungry because you did not have enough money for food?” Yes, No</td>
<td>“In the last year, did you worry that your food would run out before you got money or food stamps to buy more?” Yes, No</td>
<td>“Within the past 12 months, we worried whether our food would run out before we got money to buy more.” Often True, Sometimes True, Never True</td>
</tr>
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| 83% sensitivity | 59% sensitivity | 89-97% sensitivity |
| 80% specificity | 87% specificity | 83-84% specificity |

*Individuals are considered at risk for food insecurity if they answer that either or both of these statements are “often true” or “sometimes true”.

AAP (yes/no) vs. USDA 6 item
Hunger Vital Sign (3 responses) vs. USDA 6 item
12-month and 30-day

Prevalence of Food Insecurity
12-month recall

- Makelarski et al. 2017
  - 154 Chicago adults (51% living with children under 18y)
  - USDA 6-item: 46% low or very low food insecurity (score 2-6)
  - AAP: 39% (score ≥1)
  - HVS: 53% (score ≥1)

- Poulsen et al. 2019
  - 408 Pennsylvania adolescents by parent self-administered tool
    - USDA 6-item: 21.3% low or very low food insecurity (score 2-6)
  - Geisinger AAP until fall 2018 (self-administered)
    - 610k adults, 107k completed screener (16.8%), 4.66% FI
    - 167k children, 26k completed screener (15.8%), 4.37% FI
  - Geisinger HVS fall 2018-June 2019 (self-administered)
    - 446k adults, 2% FI
    - 115k children, 2.7% FI

- HVS has 94% sensitivity compared to 6-item in adults, so why is prevalence so different at Geisinger?
  - Population – are children different? Are rural families different?
  - FI screening- is this a low completion rate, is it representative, who is not completing?

**Interpersonal**

- Patients appear to be receptive to screening for food insecurity, alone or with other SDOH.
  - Most studies report that 10-30% of patients are uncomfortable with screening or do not want to discuss with provider.
  - Some parents feel concerned about how results of food insecurity will be used—reported to Child Protective Services.
  - Families with low food security may be less likely to complete.
  - Potentially helpful to complement FI screening with desire for assistance.

- Providers generally report high acceptability of screening as long as they have access to resources to address identified needs.
  - Completion prior to exam room may be preferred to reduce workflow disruption.
  - Ongoing provider training supports feelings of competency to address positive screen.
  - EHR screening and decision tools, resources, referrals facilitate patient screening and provider engagement.


<table>
<thead>
<tr>
<th>Study</th>
<th>Ed &amp; Passive Referral</th>
<th>Navigation &amp; Active Referral</th>
<th>Food Vouchers</th>
<th>Direct Provision of Food</th>
<th>Grade</th>
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<tbody>
<tr>
<td>Beck, 2014</td>
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<td>Cohen, 2017</td>
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<td>Fleegler, 2007</td>
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<td>Fox, 2016</td>
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<td>Hassan, 20015</td>
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<td>Knowles, 2018</td>
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Referral interventions were associated with moderate increase in use of food resources.

RURAL Study


- Rural health clinic that was naïve to SDOH screening
- Integrated team- pediatricians, CRNP, LSW, child psychologist and support staff
- AAP FI tool, Housing Insecurity screening tool, defined the workflow (self-administered on paper), distributed community resource guides, and developed protocol for referrals.
- 63% of patients (parents children 0-5y) completed screening
  - 37% of children missed because tool not distributed
- Prevalence of Food Insecurity: 16.9% ; higher than state and US rates
Research topics

- Organizational- system alignment, human and electronic resources, workflow, clinical decision support, change in health care utilization, cost related to value
- Implementation: screening frequency (annual), non-English screenings, variability in completion rates, benefits of universal vs. targeted screening, coordinator or navigator roles
- FI screening- representativeness of populations, RURAL, children
- Patient- acceptability by degree of FI and other SDOH; tailored and responsive framing of messages, uptake of referrals, behavior and health outcomes, change in FI status
- Interventions- efficacy of combinations of screen/refer/connect/host; effective and efficient models for coordinating with social services
**PREVENT**- case-matched controlled study. Screen/Refer/Connect/Host with food provision and education (Geisinger Health Plan)

Food Insecure (6-item), parent/child 6-12 yr with overweight or obesity
Hello Fresh- 3 days/week, family 4 X 13 weeks + 2 days/week, family 4 X 7 weeks + $50 grocery card X 6 weeks; Weekly RDN telehealth follows same pattern. Food preparation equipment inventory.

**WEE Baby Care**- pragmatic RCT that Screened/Connected health care, WIC, parent for 6 months vs. fragmented usual care (HRSA)

Infants 0-6m and mother, WIC-eligible, recruited from clinic
Patient-centered, coordinated and integrated curriculum X 6 mo. vs. usual fragmented care
Desired, feasible, reliable. WIC (90%), PCP (50%), Mom (65%)

**Encircle**- pragmatic, randomized cluster controlled trial that Screen/Refer/Connect/Host-education (PCORI)

Parents of rural, preschool-age children. Randomization at PCP level, evaluate intent and uptake of screenings and referrals.
3 arms- usual care, screening, screening plus telehealth parent education, Cooking Matters® grocery store tour