Southern Indiana Farm to Health: Experiments in community-designed and –driven FIM

Julia Valliant, PhD, MHS
Research Scientist
1) Background on Food Is Medicine (FIM) strategies
2) Our work:
   - 4 years implementing & evaluating community-designed FIM in rural Indiana
3) Your questions & ideas about FIM
Motivations for Food Is Medicine work

1. Chronic diseases:
   2. Widespread and burdensome
   3. Expensive: 90% of our nation’s medical care costs
   4. Food is the #2 cause behind tobacco
   5. Dietary patterns accumulate over decades
   6. Produce prescriptions aim to help people shift their dietary patterns
   7. By increasing fruit & vegetable intake
Food is #2 cause of Indiana’s Disability-Adjusted Life Years, 2019

Institute for Health Metrics & Evaluation, Univ of Washington
Effects of FIM: Consensus in literature

Increase veg/fruit intake by 1 serving per day

That’s a lot

(In our studies: 77% of people eat less than 1 veg/day at baseline)

Effects can rival those of pharma:

Average Hba1c reduction from FIM = 0.7% / from a pharmaceutical = 0.5%

Cost effective intervention - best buy - as cost-effective as statin drugs

Short term: Good effects on nutrition security

Long term: Potential direct effects on chronic disease burden
What is Food as Medicine?

• Unlocking the power of food
• Centering food in medical care
• Effects can rival pharmaceuticals
  • Access to nutritious food
  • Ease of cooking it
  • For us – local food!
“The Tufts-Delta pharmacies stocked food along with medicines, and practitioners who worked there wrote vouchers for food at local stores.”

- 1960s Mississippi White, Freedom Farmers, 2018
Phase 1: Our FIM pilot

- The catalysts for our pilot: a rural grocery and a rural clinic
- Store’s goals: to grow business + serve community
- Clinic’s goals: tackle chronic disease burden, diabetes especially
- Store and clinic leaders imagined & planned FIM
- Networked 30 local farmers
- Weekly food pickups from farms
The place

• Hilly, rocky land

• Lots of small, food farmers

• Rural: 45 people per square mile (versus 189 for Indiana / 94 for USA)

• Lower income: Median household income is $49,000 (65% of US national median of $65,000)
Our first FIM funders

- Indiana University Center for Rural Engagement
- ^^^ Lilly Endowment
PHASE 1 FIM: 2020-2021

The Farm to Health Nutrition Box
The Farm to Health Nutrition Box

• One weekly meal kit for 3mo
• Very low dose!
• Education by a local dietitian
• *Cooking Matters* curriculum
• COVID required pivot to virtual
• Recruitment by local FQHC

Southern Indiana Farm to Health Nutrition Prescription Program

Ask your provider if you can join a research program providing access to fresh, local food as medicine. We are working to understand the health outcomes of healthy eating for patients with diabetes and pre-diabetes. You may qualify!

**Eligibility Guidelines:**

**Age 18+**

**Hemoglobin A1C Test of 7%+**

**Weight 110+ Pounds**

Interested? Tell your provider by July 24th for a chance to participate!
### Seasonal meal kit recipes

#### Figure Y. Intervention Calendar

<table>
<thead>
<tr>
<th>Month</th>
<th>Recipe</th>
<th>Local Produce Provided</th>
</tr>
</thead>
<tbody>
<tr>
<td>June</td>
<td>Herb Roasted Chicken with Vegetables</td>
<td>Carrots, Potato, Chicken</td>
</tr>
<tr>
<td>July</td>
<td>Turkey Tacos</td>
<td>Lettuce, Zucchini, Turkey</td>
</tr>
<tr>
<td>July</td>
<td>Tabouleh</td>
<td>Green Onion, Parsley, Tomato, Cucumber</td>
</tr>
<tr>
<td>July</td>
<td>Ratatouille</td>
<td>Onion, Zucchini, Tomato, Yellow Squash, Garlic</td>
</tr>
<tr>
<td>July</td>
<td>Summer Vegetable Pasta Salad</td>
<td>Cucumber, Summer Squash</td>
</tr>
<tr>
<td>July</td>
<td>Melon Salsa</td>
<td>Onion, Cucumber, Cantaloupe</td>
</tr>
<tr>
<td>August</td>
<td>Green Bean Casserole</td>
<td>Green Beans</td>
</tr>
<tr>
<td>August</td>
<td>Tomato Salsa</td>
<td>Red Onion, Tomato, Jalapeno Peppers</td>
</tr>
<tr>
<td>August</td>
<td>Tomato Sauce and Spaghetti with Meatballs</td>
<td>Onion, Tomato, Garlic, Beef, Eggs</td>
</tr>
<tr>
<td>August</td>
<td>The Works Pizza</td>
<td>Onion, Tomato, Red Pepper, Green Pepper</td>
</tr>
<tr>
<td>September</td>
<td>Roasted Butternut Squash</td>
<td>Onion, Tomato, Red Pepper, Green Pepper</td>
</tr>
<tr>
<td>September</td>
<td>Tuna Melt</td>
<td>Garlic, Sweet Potato, Beef</td>
</tr>
<tr>
<td>September</td>
<td>Sweet Potato Shepherd’s Pie</td>
<td>Onion, Garlic, Sweet Potato, Beef</td>
</tr>
<tr>
<td>September</td>
<td>Mushroom Garlic Angel Hair Pasta</td>
<td>Garlic, Red Pepper</td>
</tr>
<tr>
<td>October</td>
<td>Fall Vegetable Salad</td>
<td>Beet, Garlic, Kale, Fenrel, Apple</td>
</tr>
<tr>
<td>October</td>
<td>Sweet Potato Pumpkin Soup</td>
<td>Pumpkin, Onion, Sweet Potato</td>
</tr>
<tr>
<td>October</td>
<td>Chicken Salad with Peanut Dressing</td>
<td>Lettuce, Red Pepper, Apple, Chicken</td>
</tr>
<tr>
<td>October</td>
<td>Hoppin’ John</td>
<td>Onion, Garlic, Red Pepper, Ham</td>
</tr>
<tr>
<td>October</td>
<td>Crescent Mummy Rolls</td>
<td>None</td>
</tr>
<tr>
<td>November</td>
<td>Hearty Egg Burritos</td>
<td>Green Onion, Garlic, Bell Pepper, Eggs</td>
</tr>
</tbody>
</table>
The Nutrition Box evaluation

- Randomized controlled trial
- All participants had diabetes (HbA1c of 7%+)
- 60 people recruited and consented
- Half randomized to intervention, half to control
- Assessment at 3 time points:
  - Baseline
  - Post-intervention (@ 3 months)
  - Long-term (@ 9 months)
# Participant profile 1

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Study participants</th>
<th>2 study counties</th>
<th>USA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Food insecurity</strong></td>
<td>68%</td>
<td>14%</td>
<td>12%</td>
</tr>
</tbody>
</table>
| **Education**    | 18% < HS  
39% HS / GED  
43% any college | 17% < HS  
45% HS / GED  
38% any college | 9% < HS  
28% HS / GED  
63% any college |
| **Race**         | 100% white  
3% NativeAmerican | 96% white  
2% NativeAmerican | 59% white  
2% NativeAmerican |
| **Disability**   | 61%                | 19%              | 13%   |
Participant profile 2

- COVID-19
- Internet
- BMI = 38
- Diabetes = 9.3% HBA1C
Results: Significant differences between groups

- Differences emerged during long-term follow-up
- Intervention participants stabilized
- Clinical markers: Obesity & diabetes
- Foods: Sodium & salad

Divergence between groups, from baseline to 9-month follow-up:
- BMI: 7.1% ($p=0.007$)
- HbA1c: 3.0% ($p=0.027$)
Results: qualitative

1. Most Significant Change methodology
2. Play Earth Eats
PHASE 2 FIM: 2021-2024

Southern Indiana Food As Medicine
Phase 2 actions

The purpose:
• Partnership building
• Develop rural local food systems & lay groundwork for future FAM collaboration

Action:
• Expand pilot from 2 counties to 7
• Expand rural grocery coverage to 4 counties

Funders:
• CDC
• Indiana Department of Health

“We saw the fragility of the global food system firsthand, not being able to get orders, so we are creating a safety net on the chance that something like that would happen again.”
- Brandon Query Bey, Healthy Initiatives Coordinator, Lost River Market and Deli
Our FIM model

How our Food As Medicine works

1) Plan a seasonal recipe calendar
   1) Feature local produce when it's abundant and low cost

2) Recruit and enroll participants through public health and medical partners

3) Purchase food, build the meal kits, give them out, include necessary kitchen tools

4) Teach participants how to cook them, and about nutrition

5) Assess how it all went for partners and participants

(Garlic butter chicken bites w/ lemon asparagus)
Our FIM model: Diversity of rural program designs

**Participants:** moms, immigrant meatpackers, shelter and food pantry patrons, senior / disabled housing residents, etc.

**Languages:** Haitian/Creole, Spanish

**Health / medical:** perinatal navigation, WIC, clinics, low-income residence communities, 4-H, schools, etc.

**Local food:** farmers markets, mobile market, local rural grocers
Linton Senior Center @ Glenburn Home incorporates fresh local foods into congregate meals
Referral tool: HoosierHelp.org

- Online tool used by FIM recruitment partners
- Refers to many types of public health services
- Most searches are for food & housing
- IU Center of Community-Engaged Dissemination & Implementation Research
# Cost to deliver

<table>
<thead>
<tr>
<th>Cost / Serving</th>
<th>Greene County FAM</th>
<th>Home Chef</th>
<th>Hello Fresh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food</td>
<td>$3.89</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Food + Labor*</td>
<td>$6.68</td>
<td>$8.99</td>
<td>$7.99</td>
</tr>
</tbody>
</table>

Other costs to consider:
- Nutrition education
- Cooking supplies
- Language translation
- Travel
- Promotion
- Venue or space fees
- Participant incentives
- Equipment

Examples of meals:
- Sesame noodles with carrots and beef
- Pasta with chickpeas and swiss chard
- Skillet brats and veggies
CONCLUSION

Reflections on our work in FIM
Pros and cons of our model

• Meal kit versus just produce
• Costs are low, but grant funded
• Need sustaining investment source
  • Insurers, employers, policy
• Good case for that (evidence, modeling)
• Reaches networks of people
  • Builds local food access & community around food
  • Dismantles loneliness

Easy one-skillet zucchini lasagna
Summary & program continuation

- Even our low-dose, community-designed intervention stimulated changes
  - Clinically relevant

- Continue building partnerships:
  - Research + programmatic
  - Local rural cross-sector leadership

- Supporting access:
  - Rural farmers markets and groceries are a huge asset
  - Individuals versus networks
Thank you!

- All the partners in Indiana’s Crawford, Daviess, Greene, Jackson, Lawrence, Orange & Washington counties
- Educators from Purdue Extension
- IU team members: Jeni Waters, Kyla Cox Deckard, Jacob Simpson, Nick Smaligo, Jodee Smith, Kathleen Sobiech & students
- And our dear funders

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