Promising approaches for delivering and scaling-up Diabetes Prevention Program - translation in underserved communities nationwide

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Presenter Disclosure

Debra Haire-Joshu

Research Support

- P30 DK092950 (Haire-Joshu, PI) NIDDK/NIH
- U01 DK094416 (Klein, Haire-Joshu, Cahill PI) NIDDK/NIH
- R18 DK089461 (Haire-Joshu PI) NIDDK/NIH
- R01 HL143360 (Tabak, PI) NIH
Reversing the obesity epidemic

Women (18-39 yrs)

- Average annual weight gain (0.5-1 kg per year)
- Vulnerable to weight gain vs. other life periods
- Limited reach of efficacious interventions
- Diabetes Prevention Program-58% delay diabetes incidence
- Women half as likely to enroll-less likely attend ≥1 session

St. Louis context

B) The concentration of poverty
Percent of all residents living in poverty by ZIP code

- 1% – 8% (Lowest)
- 9% – 18% (Middle)
- 19% – 54% (Highest)
- No data

Source: American Community Survey 2007–2014 5 year estimates

A) The concentration of African American population
Percent African American population by ZIP code

- 1% – 5% (Lowest)
- 6% – 44% (Middle)
- 45% – 97% (Highest)
- No data

Source: US Census 2010

Purnell J. For the Sake of All Report, 2014
Mortality rates by race and zip code

Figure 17. Life expectancy at birth by ZIP code

Source: City of St. Louis Department of Health Center for Health Information, Planning, and Research; Census 2010; Missouri; Death-Mega 2010

Notes: Life expectancies were calculated using a calculator developed by the City of St. Louis Department of Health Center for Health Information, Planning, and Research; ZIP code life expectancies were derived using population counts from Census 2010 and deaths from Death-Mega 2010

Purnell J. For the Sake of All Report, 2014
Partnerships with home visiting organizations

Strengths
• Meet family priorities
• Address essential conditions, needs
• Reinforce ongoing support, change

Challenges
• Non health care focused
• Criteria for reimbursement
• What and how to include content

Parents As Teachers: national home visiting program

Mission: To promote optimal early child development by supporting and engaging parents through home visitation

Standard curricula and trainings for parent educators N=4849

Prenatal until child enters to school

Up to 25 home visits per year

4727 sites across 50 states

188,253 parents 226,904 children

Free to parents, through state & federal $$

American Indian 5% Black 20% Hispanic 22% White 59%

Parents as Teachers 2017-2018 Annual Report; Parents as Teachers 2014-2015 Affiliate Performance Report
Healthy Eating & Active Living Taught at Home (HEALTH)

**Diabetes Prevention Program (DPP)**

- Mos 1-6: 1 session/wk
  - Coaches, contact, supervised
- Mos 7-12: 1 session/mo
  - Group support

**Translate DPP to PAT**

- Mothers with preschooler who have obesity or overweight
- When compared to PAT, PAT+HEALTH women will achieve 5% wt. loss/24 mos
Embed DPP within PAT home visits: guiding principles

The what
• DPP ‘key ingredients’
• Specific behaviors (e.g. SSB, portions, walking)
• Adapt content--parent modeling, child development

The how
• Assure relevance to family needs first
• Family strength—solution focused interaction
• Flexible delivery
Baseline characteristics: PAT vs. PAT+HEALTH (N=179)

<table>
<thead>
<tr>
<th></th>
<th>Standard PAT (N=97)</th>
<th>PAT+HEALTH (N=82)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal age (yrs) mean (SD)</td>
<td>33 (5)</td>
<td>32 (6)</td>
<td>0.91</td>
</tr>
<tr>
<td>BMI (kg/m²) mean (SD)</td>
<td>34.5 (5.2)</td>
<td>34.4 (5.3)</td>
<td>0.91</td>
</tr>
<tr>
<td>Race: non-white (%)</td>
<td>39</td>
<td>44</td>
<td>n/a</td>
</tr>
<tr>
<td>WIC (%)</td>
<td>46</td>
<td>58</td>
<td>0.14</td>
</tr>
<tr>
<td>Annual household income &lt; $30,000 (%)</td>
<td>38</td>
<td>40</td>
<td>0.65</td>
</tr>
</tbody>
</table>
## Results: behavior and % weight outcomes baseline-24 months

<table>
<thead>
<tr>
<th></th>
<th>Standard PAT</th>
<th>PAT+ HEALTH</th>
<th>P value BL-24 mos</th>
</tr>
</thead>
<tbody>
<tr>
<td>Added sugars from food (tsp)</td>
<td>15.3 to 13.0</td>
<td>14.9 to 10.8</td>
<td>0.01</td>
</tr>
<tr>
<td>Added sugars from SSB (tsp)</td>
<td>8.5 to 6.6</td>
<td>8.1 to 5.1</td>
<td>0.01</td>
</tr>
<tr>
<td>Physical activity-vigorous</td>
<td>28% to 20%</td>
<td>10% to 30%</td>
<td>0.004</td>
</tr>
<tr>
<td>5% weight loss at 24 mth.</td>
<td>11%</td>
<td>26%</td>
<td>0.01</td>
</tr>
<tr>
<td>Waist circumference (cm)</td>
<td>111.1 to 115.3</td>
<td>110.5 to 108.5</td>
<td>0.04</td>
</tr>
</tbody>
</table>

Maternal Weight Change over 24 Months in HEALTH Effectiveness Trial by Randomization Assignment


Adj Δ=4.7 kg
p=0.002

Baseline 12-month 24-month
Weight Change (kg)

Months after randomization

Standard PAT  PAT+HEALTH
Scale-up and sustainability

- HEALTH D&I-National trial in partnership with PAT
- Pragmatic group randomized trial
- 28 sites across multiple states
- Data from 3 levels: mother, sites, parent educators
  - Weight
  - Acceptable, Appropriate, Adapt
  - Context
- Translation of HEALTH to national practice
Weight management with pregnant and underserved African American women with obesity

• Multisite national trial

• Different weight management interventions during and post pregnancy

• Washington University site: Randomized control trial

• Standard PAT vrs. LifeMoms PAT+ on GWG & 12 mo. postpartum weight

U01 DK094416 (Haire-Joshu, Klein, Cahill PI)
Pregnant African American Women with overweight-obesity (N=276)
- 54% single
- 92% poverty
- 51% moved once, 12% twice while pregnant
- Crime 111% > natl avg

Prenatal Clinic Care
- OB visit
- 2nd monthly
- 3rd bimonthly, wkly

Parents As Teachers Home Visiting
- PAT standard prenatal-postpartum curriculum
- PAT+ embed lifestyle
- 10 prenatal; 12 postpartum visits
## Baseline characteristics: PAT vs. LifeMoms PAT+

<table>
<thead>
<tr>
<th></th>
<th>PAT (N=134) Mean ± SD</th>
<th>LifeMoms PAT+ (N=133) Mean ± SD</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal age (yrs)</td>
<td>26.0 ± 4.9</td>
<td>24.7 ± 4.9</td>
<td>0.04</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>31.9 ± 4.9</td>
<td>32.8 ± 5.1</td>
<td>0.16</td>
</tr>
<tr>
<td>Body weight (kg)</td>
<td>86.1 ± 15.2</td>
<td>87.3 ± 16.1</td>
<td>0.52</td>
</tr>
<tr>
<td>Overweight (n, %)</td>
<td>52 (38.8)</td>
<td>42 (31.6)</td>
<td>0.22</td>
</tr>
<tr>
<td>Obesity (n, %)</td>
<td>82 (61.2)</td>
<td>90 (67.7)</td>
<td>0.27</td>
</tr>
<tr>
<td>Medicaid (n, %)</td>
<td>119 (92.2)</td>
<td>119 (90.8)</td>
<td>0.42</td>
</tr>
</tbody>
</table>
## Results: prenatal and postpartum weight outcomes

<table>
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<tr>
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<th>PAT vs. LifeMoms PAT+</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prenatal (N=267)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total GWG (kg)</td>
<td>9.64 vs. 8.05</td>
<td>0.02</td>
</tr>
<tr>
<td>Weight gain per week (kg)</td>
<td>0.48 vs. 0.40</td>
<td>0.04</td>
</tr>
<tr>
<td>Weekly GWG &gt; than guidelines</td>
<td>77.4% vs. 62.4%</td>
<td>0.01</td>
</tr>
<tr>
<td>Change in body fat (kg)</td>
<td>2.18 vs. 0.25</td>
<td>0.01</td>
</tr>
<tr>
<td><strong>Postpartum (N=209)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Return to baseline or less weight</td>
<td>21.5% vs. 38%</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Cahill, Haire-Joshu et al, Obesity, 2018; Haire-Joshu, Cahill et al Obesity, 2019
Maternal gestational and postpartum weight change over 24 months by randomization assignment


Baseline Gestational Weight Gain 12-Months Postpartum

Weight Change (kg)

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<tr>
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<th>LifeMoms PAT+</th>
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</thead>
<tbody>
<tr>
<td>Baseline</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gestational</td>
<td>8.0</td>
<td>9.6</td>
</tr>
<tr>
<td>Weight Gain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12-Months</td>
<td>5.7</td>
<td>2.5</td>
</tr>
<tr>
<td>Postpartum</td>
<td>Adj Δ=3.2 kg</td>
<td>p=0.01</td>
</tr>
</tbody>
</table>

Conclusions and next steps

1. ‘Non-health care’ organizations addressing essential conditions may be a roadmap to promote health equity

2. Long-term follow-up is needed to capture full impact of interventions that prioritize ‘real life needs’

3. Bringing effective lifestyle interventions to scale should be priority