Addressing barriers to prevention of type 2 diabetes after GDM:
A web-based lifestyle intervention for women with recent GDM to reduce postpartum weight retention

*Balance after Baby*

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Slides are not for distribution
Cumulative incidence of diabetes in DPP women who reported GDM by randomized treatment group
A Window of Opportunity

• Data suggest that lifestyle change like the DPP to prevent T2DM may be effective in women with prior GDM

• The postpartum period may provide a “window of opportunity” for lifestyle change in women with recent GDM

• Goal:
  To translate the lifestyle program of DPP for women with a recent pregnancy complicated by GDM for use by the Department of Public Health for the state of Massachusetts
Why adapt the DPP lifestyle modification program?

- Age of population (mean age 51 ± 11 yrs)
- Face to face
- Intensive
- Expensive
- Does not consider postpartum barriers
Focus Groups/Informant Interviews: Women with Prior GDM

To determine:

– interest in a postpartum lifestyle program

– identify barriers and facilitators for participation and the optimal mode of delivery

Focus Groups/Informant Interviews
Results

• 38 eligible women responded to fliers to participate in a focus group (day and evenings offered)
• 10/38 women attended a focus group
• 28/38 could not attend focus group
• 15 completed informant interviews
• 13/28 could not schedule the time for a phone interview
“You always have known that you need to exercise and eat well, but GDM puts it in a perspective of health and disease and it becomes more important.”

“Remembering the experience of pricking fingers is a powerful reminder that I don’t want to do that for the rest of my life—when I am tempted by foods, I remember that feeling.”
Barriers to lifestyle change

• **Role in the family**
  – “My kids always ask for and get the snacks/junk—cookies, fried foods, so when I try to provide healthy food, they object.”
Barriers to lifestyle change

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• **Time constraints:**
  – “It is easier to remember to be very cautious of health during pregnancy because you are worried about the baby—once you have the baby, reality hits and it is harder, there is less time to take care of yourself and less motivation to be very careful or not eat chips.”
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• Financial constraints:
  – “Going to get a salad at the salad bar costs more than a dollar cheeseburger off the value menu”
Barriers to lifestyle change

• **Access to Healthy Foods**
  – “Vending machines at work never have healthy options.”

• **Fatigue**
  – “Tired both physically and mentally.”

• **Guilt**
  – “I was exhausted and already feeling so guilty for being away from my child while I was working, so I did not exercise.”
Conclusions from Qualitative Study

- Despite interest, 28/38 could not attend one focus group
- Importance that program is accessible within these limitations
- High level of internet use/interest in web-based program
- High level of enthusiasm for program of lifestyle modification
- Importance of addressing postpartum barriers
The Brigham and Women’s Hospital Balance after Baby Program:
A web based lifestyle program to reduce postpartum weight retention in women with recent GDM

- Randomized trial of BAB program versus enhanced care
Study Outcomes

• Primary Endpoints:
  – Weight loss from 6 wk postpartum visit to 12 m postpartum
  – Weight change from prepregnancy to 12 m postpartum

• Secondary outcomes
  – Glucose tolerance (DM, IFG, IGT)
  – Dietary intake
  – Physical Activity
Translation of DPP Lifestyle Intervention for recent GDM: online program

Key components:

- **Modules**: DPP-derived
  - adapted for recently pp GDM women and reviewed by MDPH WIC and CDC
  - On-line presentations with audio-narration
- **Secure communication**: With lifestyle coach and lactation consultant
- **On-line community**: An online forum for participants
- **Toolbox**: Recipes, menu planning tips, grocery lists, strength training videos, YMCA information etc.
- **Tracking forms for self-monitoring of behaviors**: Weekly weight, food intake and physical activity
Welcome!

Welcome to the Balance after Baby program! Balance after Baby is a lifestyle program created at Brigham and Women's Hospital for women like you who recently experienced a pregnancy with a diagnosis of gestational diabetes. The Balance after Baby website is your home base for this program: a place to find information, communicate with your lifestyle coach, and interact with women like you as you participate in the program. We encourage you to explore the website and ask questions as you make changes to reach your healthy eating and physical activity goals.
### Demographics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>N=75</th>
</tr>
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<tbody>
<tr>
<td>Age, mean (SD)</td>
<td>33.4 (5.4)</td>
</tr>
<tr>
<td>Race, N (%)</td>
<td></td>
</tr>
<tr>
<td>• Caucasian</td>
<td>41 (55%)</td>
</tr>
<tr>
<td>• African American</td>
<td>22 (29%)</td>
</tr>
<tr>
<td>• Asian</td>
<td>10 (13%)</td>
</tr>
<tr>
<td>• Unspecified</td>
<td>2 (3%)</td>
</tr>
<tr>
<td>Hispanic/Latina, N (%)</td>
<td>15 (20%)</td>
</tr>
<tr>
<td>Single, N (%)</td>
<td>15 (20%)</td>
</tr>
<tr>
<td>C-section, N (%)</td>
<td>32 (43%)</td>
</tr>
<tr>
<td>Prepregnancy BMI, mean (SD)</td>
<td>30.3 (6.0)</td>
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<tr>
<td>Insulin during pregnancy, N (%)</td>
<td>54 (72%)</td>
</tr>
<tr>
<td>Parity, N (%)</td>
<td></td>
</tr>
<tr>
<td>• 1</td>
<td>33 (44%)</td>
</tr>
<tr>
<td>• 2</td>
<td>21 (28%)</td>
</tr>
<tr>
<td>• ≥3</td>
<td>21 (28%)</td>
</tr>
</tbody>
</table>

63% minority
• Primary languages spoken at home:
  – 70% English
  – 30% Other [Including: Spanish, Mandarin, French (including Patois or Creole), Portuguese, Russian, Arabic, Marathi, Tamil, Telugu]
Mean weight at baseline, 6 months, and 12 months

* p=0.022

~6 lb weight loss
Mean weight change prepregnancy to 12 months

*\( p=0.035 \)
Other Outcomes

• **Caloric Intake:** Women in intervention group reported eating less calories than in control group: -177 ± 84 kcal at 6 months and -180 ± 101 kcal (p=0.041, p=0.079 respectively)
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- **Diabetes**: None of the women in the intervention group and 3 of the women in the control group developed T2DM.
Qualitative Data from Intervention Participants

Focus on Facilitators
Window of Opportunity

• “I was so ready to get my body back and start doing something about it”
Window of Opportunity

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• “I think the diagnosis in general was scary for me, so I am really careful...”
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• “I think the diagnosis in general was scary for me, so I am really careful...”

• “At least I feel that I would like to live a little bit longer, and I will, for the baby.”
Role in the Family

•“My husband has lost a ton of weight. He has looked at some of the modules and started using some of [the] tips as well and ended up losing 30+ lbs.”
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“My stepson’s LDL cholesterol came down a lot. Levels have come down because I have made changes in the house with foods. My husband’s BP came down.”
“I used to use a gallon of oil per month. Now I spend less money because now a small bottle lasts a long time. I think junk food is more expensive than healthy food. There was a big change in one year.”
Time Constraints

- “My husband hooked up the computer to the radio so that I could listen to the modules while I was cooking or doing other things”
Guilt for Being Away from Child

• “I think physical exercise is very helpful and sometimes I can take my baby outside and take my husband outside. We walk more now.”
Summary: Prevention of T2DM post GDM - Barriers

Barriers to lifestyle interventions/programs to prevent T2DM in pp women with recent GDM include

1) Family pressures
2) Financial pressures
3) Time constraints
4) Guilt for putting oneself as a priority
Summary: Prevention of T2DM post GDM- Facilitators

Facilitators to lifestyle interventions/programs to prevent T2DM in pp women with recent GDM include:

1) Window of opportunity
2) Integrating family members in activities of lifestyle change
3) Demonstrating benefit to family of lifestyle change
4) Teaching healthy eating at low financial cost
5) Remote access to lifestyle change support
Next Steps

To carry out a larger study of longer duration at more sites with inclusion of mobile phones
Taking Early Action for Mothers with GDM (TEAM GDM) Study Group

BWH:
Jacinda Nicklas MD, MPH- Primary care
Jennifer Page, RD, LDN & Audrey Young, RD, LDN- Lifestyle Coaches
Liberty Reforma, BA . Abbie Marrale, BS, Janet Lui, BS- Research assistants
Ellen W. Seely, MD- Endocrinologist, Patient oriented researcher
Sue Levkoff, MSW, ScD- Behavioral scientist
Chloe Zera, MD, MPH- MFM

MDPH

CDC:
Lucinda England, MD, MPH

Grants:
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NIH NHLBI K24: 9K24HL096141