Innovative Technology for Preconception Care

Presented to: Every Woman Southeast
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Project Preconception Care Research Group
Overview

• Preconception Care and Health IT
  – Preconception Health
  – Innovative PCC projects
  – Who is Gabby?

• Gabby Research
  – Results from pilot study and RCT
  – Next Gabby study
  – Future Research

• How you can be involved
Preconception health and health care focuses on taking steps now to protect the health of a baby in the future. However, preconception health is important for all women and men, whether or not they plan to have a baby one day.
The big picture

Health promotion
Immunization
Infectious disease
Medical conditions
Psychiatric conditions
Parental exposure
Family and genetic history
Nutrition
Environmental exposure
Psychosocial risk
Medication
Reproductive history
Special populations
The dilemma

How does it all relate to a future pregnancy?
The disparity


The need

There is a need for an efficient way to assess a woman’s preconception risks, in order to prioritize valuable appointment time with a provider, and to support the woman in taking action to minimize her risks.
Health Information Technology for Preconception Care
Health IT and PCC

Every Woman (Southeast, California)

Health IT and PCC

Show Your Love Campaign (CDC)

Show your love.
You're ready to get pregnant. It's time to nurture and love yourself by planning and preparing your body for pregnancy. Take these steps to improve your preconception health.

What is preconception health?
- Preconception health refers to a woman's health during the years she can have a baby.
- A woman's health before she gets pregnant can affect the health of her baby.

What can you do?
- Choose behaviors like eating a healthy diet, being physically active and taking folic acid every day.
- Stop drinking alcohol, smoking, and using street drugs.
- Get screened and tested for possible medical problems like infections or diabetes.
- Talk with your doctor about how to best manage your medical conditions and medicines with pregnancy in mind.

For more information on how to improve your health now, talk with your doctor and visit www.cdc.gov/showyourlove.

Your Baby Will Thank You For It!

http://www.cdc.gov/preconception/showyourlove/
Health IT and PCC
Before, Between & Beyond Pregnancy (PHHC Initiative and UNC School of Medicine)

http://www.beforeandbeyond.org/
Health IT and PCC

Set Your Mind, Set Your Goals (DEThrives, Delaware Health and Social Services)

Health IT and PCC

Set Your Mind, Set Your Goals (DEThrives, Delaware Health and Social Services)
Health IT and PCC

Text4Baby (National Healthy Mothers, Healthy Babies Coalition)

www.text4baby.org/
Health IT and PCC

Power Your Life (Utah Department of Health)

http://www.poweryourlife.org/
Health IT and PCC

Bedsider.org (The National Campaign to Prevent Teen and Unplanned Pregnancy)
Health IT and PCC

Live It, Change It (Arizona Department of Health Services)

http://www.azdhs.gov/liveitchangeit/
Health IT and PCC

The Stork Reality (Partners for Healthy Babies, Louisiana)

http://www.thestorkreality.com/
Health IT and PCC
ZwangerWijzer (Erasmus University, The Netherlands)

http://zwangerwijzer.nl/
Now Introducing: Gabby
Early Qualitative Work
IOM Recommendation

- Culturally tailored health education can minimize common barriers that contribute to health disparities within the African American community
  - Internet-based health education

Internet Use in the US

• In 2012, 81% of adults in the US reported using the internet (Fox & Duggan, 2013)

• Of those, 72% reported looking online for health information (Fox & Duggan, 2013)

• 94% of individuals between the ages of 18 and 29 reported internet use (Zickuhr & Smith, 2012)
Who is Our Target Population?

- Mean age of African American mothers at the time of their first child’s birth...

22.8 years old

Figure 9: Computer and Internet Use by Householder Race and Ethnicity, 2010

Focus Group Eligibility

• Inclusion criteria:
  – Female
  – Self-identify as African American
  – 15-21 years old
  – Speak English

• Exclusion criteria:
  – Currently pregnant
## Participant Demographics (N=31)

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<thead>
<tr>
<th>Age</th>
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<tbody>
<tr>
<td>15-17 years old</td>
<td>3 (10%)</td>
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<tr>
<td>18-21 years old</td>
<td>28 (90%)</td>
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</table>

<table>
<thead>
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<th>Education level</th>
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<td>≤ High school diploma</td>
<td>5 (16%)</td>
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<tr>
<td>2 year college/university student or graduate</td>
<td>6 (19%)</td>
</tr>
<tr>
<td>4 year college/university student or graduate</td>
<td>20 (65%)</td>
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</table>

<table>
<thead>
<tr>
<th>Internet Use</th>
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<tr>
<td>1-2 times per day</td>
<td>6 (19%)</td>
</tr>
<tr>
<td>3-4 times per day</td>
<td>3 (10%)</td>
</tr>
<tr>
<td>≥ 5 times per day</td>
<td>22 (71%)</td>
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</table>

<table>
<thead>
<tr>
<th>Device(s) Used to Access the Internet</th>
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</thead>
<tbody>
<tr>
<td>Home computer/laptop</td>
<td>26 (84%)</td>
</tr>
<tr>
<td>Cell phone</td>
<td>19 (61%)</td>
</tr>
<tr>
<td>School computer/laptop</td>
<td>10 (32%)</td>
</tr>
<tr>
<td>Work computer/laptop</td>
<td>7 (23%)</td>
</tr>
<tr>
<td>Friend or family member’s computer/laptop</td>
<td>7 (23%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Primary Care Physician</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Pediatrician</td>
<td>9 (29%)</td>
</tr>
<tr>
<td>Family Medicine</td>
<td>8 (26%)</td>
</tr>
<tr>
<td>OB/GYN</td>
<td>2 (6%)</td>
</tr>
<tr>
<td>Family Medicine and OB/GYN</td>
<td>7 (23%)</td>
</tr>
<tr>
<td>Unsure of physician’s specialty area</td>
<td>1 (3%)</td>
</tr>
<tr>
<td>Do not have a primary care physician</td>
<td>4 (13%)</td>
</tr>
</tbody>
</table>
Focus Group Agenda

• Reviewed existing preconception care websites
  – http://mariatalks.com/
  – http://sexreally.com/
  – http://goaskalice.com/
  – http://www.plannedparenthood.org/info-for-teens/index.asp

• Viewed images of existing and potential website characters

• Edited educational scripts about 12 domains of preconception care

• Discussed social networking features

• Provided feedback about specific components of our internet based intervention
Data Analysis

• Focus group interviews were audio recorded and transcribed verbatim

• Two research team members independently coded each transcript

• Content codes from the topics discussed during focus groups were defined in a coding dictionary
  – 74 codes

• NVIVO used to manage codes and transcript data
Findings

• Visual Layout

• Character

• Educational Information

• Social Networking Features
Visual Layout

• Less is more
• Quick and easy
• Bold colors
  – Purple
  – Orange
  – Blue
• Feminine images and designs
  – Flowers
  – Swirls
• Professional affiliation
• Different fonts in different colors
• Minimize words
• Different options to access information
  – Animated videos
  – “Ask the doctor”
  – Recorded vignettes
http://sexreally.com/
Participant Quotes

“The colors. It like grabs out at you. It looks organized. They don’t have too, too much information right there. Like I feel like-- I don’t know which website it was but it was just like stuff on this column, stuff on this column and stuff in the Middle. It was just like too much like of, like too much going on. And then Planned Parenthood is a well known place. So you know that the information will be good and useful. “

“There’s a lot of words than pictures. It seems like it’s school-related and not health related because there is nothing but the words. I don’t like it.

“It’s like very neat and organized and you know where to start. It’s like just enough information on one page, and then you can just go to the next and click on whatever. “
Character

• Animated vs. human character

• Different characters can provide different information
  – Friend or peer
  – Mentor (camp counselor)
  – Older family member
  – Nurse
  – No celebrities

• Race

• Gender

“I would stay with a minority type of person if they’re going to teach a minority group. Like, any type of minority. I would say anything but white. Because I don’t know, I think it just reaches us better if it’s someone that’s just different, like someone that’s not like typical, typical like blonde haired, blue eyes. Wouldn’t be so good to be preaching to us about things.”

“It looks like Michelle Obama. We don’t want Michelle Obama. Not if we’re going to relate to her for this. Not for these purposes.”
Development of Gabby

- **Clothing**
  - “Layering”
  - Blue scrubs with institution’s logo or lab coat
  - “Fitted” shirt that shows curves

- **Accessories**
  - Glasses
  - Badge or Stethoscope
  - Wedding ring, earrings, necklace

- **Hairstyle**
  - “Honey” colored highlights or dark brown hair
  - Short bob with “professional” side bangs OR shoulder length wavy curls

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**Top 10 Name Suggestions:**
- Gabrielle
- Layla
- Vanessa/Venessa
- Angela
- Maria
- Jeanette
- Annie
- Lisa
- Nicole
- Natalie

“Gabby” for short

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La-La (MTV host)  
Rihanna (singer)  
Gabrielle Union (actress)
“Someone I would see walking down the street”
“Layering”

• Clothing
  – White lab coat
  – Blue scrubs with institution’s logo embroidered on them
  – “Fitted” button-up shirt
  – Shirts that show breast definition and waist curvature

• “Shading” Animated Characters
  – Different colors for skin, lips, and hair
  – Light lipstick color (e.g. soft pink), natural lip color, or shiny lip gloss
  – Eyebrows should be arched, long, and thick
  – Eyeliner or eye shadow to make the eyes “pop”

• Accessories
  – Glasses
  – Badge (include name, profession, and institution)
  – Stethoscope
  – Wedding ring
  – Earrings
    • Studs (pearl studs not recommended)
    • Small or medium hoop earrings
    • Dangle earrings
    • Diamond tear drop necklace
    • Charm necklace/Chain with pendant
Educational Information

• Realistic vs. fairytale endings

• Factual data and statistics
  – Provide pros and cons

• Empower users
Social Networking Features

• Reasons to visit and return to the website
  – New information or features posted daily or weekly
  – Monthly or bi-monthly drawings for popular items (e.g. iPad)
  – Receive money, gift cards, or “electronic bucks” after several logins
  – Opportunities to receive free health related products or promotions

• Facebook
http://goaskalice.com/
Focus Group Implications

• Findings indicate that a culturally tailored preconception care website is perceived to be an acceptable educational tool by young, African American women

• Findings may improve the usability and effectiveness of existing and future internet based health education programs targeting young, African American women
Gabby Version 1
Video: Meet Gabby
Gabby Version 1 (V1)

1. Take PCC Risk Assessment
   - 12 domains, total of 107 risks
   - Identify baseline stage of change before each risk is discussed

2. Learn about identified risks
   - What is it?
   - Why is it important?
   - Why is it important to Reproductive Health?
   - Listen to stories from other users about that risk

3. “My Health To-Do List” (MHTDL)
   - Add to MHTDL
   - Don’t add to MHTDL

4. Customize MHTDL with tasks:
   - Go to website
   - Talk with family or friends
   - See doctor, etc

5. Update MHTDL by:
   - Crossing off task
   - Crossing off risk
   - Add more risks and tasks
Step 1: PCC Risk Assessment

Sex and Reproductive Health

1. Have you ever had sex, like vaginal intercourse, oral sex, or anal sex?
   - Yes
   - No

2. Do you use birth control on a regular basis?
   - Yes
   - No

2a. Check all the types that you use now.
   - Birth control pills
   - Birth control patch
   - Birth control ring
   - Birth control shot
   - Male Condom
   - Female Condom
   - Withdrawal
   - Diaphragm
   - IUD
   - Abstinence
   - Implant
   - Vasectomy
   - Spermicide
   - Morning after pill
   - Rhythm/natural family planning
   - Other

3. Do you want to have a baby in the next year?
   - Yes
   - No
   - Don't Know

4. Have you ever been pregnant?
   - Yes
   - No

4a. How many times have you been pregnant? This includes all miscarriages and abortions.

4b. How many live births have you had?

4c. How many stillbirths have you had? This is when a baby dies in the womb after the 20th week of pregnancy.

4d. How many miscarriages have you had?

4e. How many times have you had a miscarriage after 14 weeks of pregnancy?
Step 2: Info About Identified Risks
Gabby Version 1 Testing

Usability Testing:

- 15 women recruited from the community
- Individual 2 hour session to: take risk assessment; hear about 6 risks; use story-authoring function, MHTDL; one-on-one interview

Pilot Testing:

- 9 students - “Preconception Peer Educators”
- Participants used system for 2 months
- Follow-up phone call for outcome data
V1 Results

Risk Assessment: Risks by Domain

- Nutrition: 21%
- Infectious: 17%
- Genetic: 10%
- Environmental: 11%
- Reproductive: 7%
- Immunization: 7%
- Health Conditions/ Meds: 7%
- Healthcare/ Programs: 7%
- Emotional: 4%
- Substance: 4%
- Men: 4%
- Relationships: 3%
V1 Results:
Risk Status

Risks Identified (per person) 23 (100%)

Risks Discussed

Risks Added to MHTDL

<table>
<thead>
<tr>
<th>Status at 2 months</th>
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<tbody>
<tr>
<td>Resolved – 3.5 (54%)</td>
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<tr>
<td>Took Action – 2.2 (29%)</td>
</tr>
<tr>
<td>No action – 1.5 (17%)</td>
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</table>
## V1 Results:
### Stage of Change

### All Risks discussed with Gabby, n=67

<table>
<thead>
<tr>
<th>Initial Stage</th>
<th># risks (%)</th>
<th>Pre-contemplation</th>
<th>Contemplation</th>
<th>Preparation</th>
<th>Action / Maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Contemplation</td>
<td>16 (23)</td>
<td>5 (31.2)</td>
<td>3 (18.6)</td>
<td>0 (0)</td>
<td>4 (25.0)</td>
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<tr>
<td>Contemplation</td>
<td>12 (17.9)</td>
<td>1 (18)</td>
<td>2 (8.3)</td>
<td>0 (16.7)</td>
<td>8 (66.7)</td>
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</table>

### All Risks Discussed with Gabby and Added to MHTDL, n=43

<table>
<thead>
<tr>
<th>Initial Stage</th>
<th># risks (%)</th>
<th>Pre-contemplation</th>
<th>Contemplation</th>
<th>Preparation</th>
<th>Action / Maintenance</th>
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<tr>
<td>Pre-contemplation</td>
<td>1 (2.3)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>1 (100)</td>
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<tr>
<td>Contemplation</td>
<td>11 (25.5)</td>
<td>1 (9.1)</td>
<td>2 (18.2)</td>
<td>0 (0)</td>
<td>8 (72.7)</td>
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</table>

- Gabby best at moving those in “Contemplation” to “Action/Maintenance”
- V2 programming to move from “Pre-contemplative” to “Contemplative”
Gabby Version 2
Gabby Version 2

Longitudinal behavior change:

• Motivational Interviewing to reach out to precontemplators
• Shared Decision Making to assist with complicated decisions (i.e. contraceptive choice)
• Problem Solving to provide solutions to common barriers
• Goal setting to provide long-term motivation
• Homework to keep users engaged outside of system
• “Sequential Discrete” to walk users through processes step-by-step (i.e. making and going to a healthcare appointment)
• Tips, Direct Observation, Social Reinforcement, etc

Supporting the user with information, tools, and encouragement throughout the behavior-change process
## Script-Writing Chart

<table>
<thead>
<tr>
<th>Risk</th>
<th>MI</th>
<th>SDM</th>
<th>Problem Solving</th>
<th>Goal Setting</th>
<th>Sequential Discrete</th>
<th>Tips</th>
<th>Homework</th>
<th>Curriculum</th>
<th>Other</th>
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<td></td>
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<tr>
<td>Diabetes</td>
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<td></td>
<td>X</td>
<td>X</td>
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<tr>
<td>Pre-Diabetes</td>
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<td>X</td>
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<td>HTN + Cardiovascular</td>
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<td>X</td>
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<td>Vitamin D</td>
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<td>X</td>
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<td>Overweight/Obese</td>
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<tr>
<td>Alcohol</td>
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<td>X</td>
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<td>Illicit Drugs</td>
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<td>Prescriptions</td>
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<tr>
<td>“Go to the Doctor”</td>
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<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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</tbody>
</table>
1. Take Risk Assessment
2. Meet Gabby
3. Review results (“My Survey Results”)
4. Choose risk to learn about with Gabby
5. Listen to first informational script(s) from Gabby.
6. Answer Stage of Change question for that risk and listen to stage-appropriate scripts
7a. Add to risk to MHTDL
7b. Don’t Add to MHTDL
8a. Longitudinal behavior change scripts
8b. Choose new risk to discuss from “My Survey Results” OR “My Health To-Do List”
Gabby V2: RCT

Enrolled March – July 2013

• 100 participants (50 intervention, 50 controls)
• 6-month intervention period
• Recruited from: OMH Preconception Peer Educators (86); Healthy Start, Jacksonville, FL (8); BMC Health Expo (4); word of mouth (2).
• Eligibility: Female, African American, 18-34, speak English, not currently pregnant
• All participants enrolled over the phone, answered baseline questionnaires, then given a link to the online risk assessment.
  – Controls: received a letter in the mail with their results
  – Interventions: given a link to talk to Gabby about their results
• All participants contacted for outcome call at 6-months.
<table>
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<th>Variable</th>
<th>Controls (n=45)</th>
<th>Interventions (n=46)</th>
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<td>Age (Mean(SD))</td>
<td>25.31 (3.64)</td>
<td>25.93 (3.40)</td>
</tr>
<tr>
<td>Hispanic, Latino, Spanish origin? (N(%))</td>
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<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1 (2%)</td>
<td>3 (7%)</td>
</tr>
<tr>
<td>No</td>
<td>44 (98%)</td>
<td>43 (89%)</td>
</tr>
<tr>
<td>Education (N(%))</td>
<td></td>
<td></td>
</tr>
<tr>
<td>At least some college</td>
<td>40 (89%)</td>
<td>42 (91%)</td>
</tr>
<tr>
<td>Less than college</td>
<td>5 (11%)</td>
<td>4 (9%)</td>
</tr>
<tr>
<td>Household Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than $20,000</td>
<td>3 (7%)</td>
<td>3 (7%)</td>
</tr>
<tr>
<td>$20,000-$50,000</td>
<td>7 (16%)</td>
<td>12 (26%)</td>
</tr>
<tr>
<td>$50,000 or more</td>
<td>23 (51%)</td>
<td>14 (30%)</td>
</tr>
<tr>
<td>Don’t Know/Refused/Missing</td>
<td>12 (27%)</td>
<td>17 (37%)</td>
</tr>
<tr>
<td>Currently a student (N(%))</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>20 (44%)</td>
<td>19 (41%)</td>
</tr>
<tr>
<td>No</td>
<td>25 (56%)</td>
<td>27 (59%)</td>
</tr>
<tr>
<td>REALM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Score (Mean (SD))</td>
<td>62.95 (5%)</td>
<td>61.3 (12%)</td>
</tr>
<tr>
<td>&gt;High School (N(%))</td>
<td>5 (12%)</td>
<td>4 (9%)</td>
</tr>
<tr>
<td>High School (N(%)</td>
<td>38 (88%)</td>
<td>39 (91%)</td>
</tr>
</tbody>
</table>
How easy was it to talk to Gabby?

78.13% thought that it was easy to talk to Gabby.
V2 Results: Risks Identified
(at Baseline, n=91)
Results: Risks Resolved

<table>
<thead>
<tr>
<th>Randomization</th>
<th>N</th>
<th>Mean</th>
<th>Std Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>43</td>
<td>5.2</td>
<td>4.4</td>
</tr>
<tr>
<td>Intervention</td>
<td>37</td>
<td>8.1</td>
<td>4.7</td>
</tr>
</tbody>
</table>

$p < 0.05$

Those who had access to Gabby resolved approximately **3 more risks** than those who did not.
Interventions (n=50) logged on 2.82 times on average (min 0, max 12)
V2 Results: Knowledge Scores, Nutrition and Contraceptives

<table>
<thead>
<tr>
<th></th>
<th>Controls</th>
<th>Interventions</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline Score (% correct)</td>
<td>Baseline Score (% correct)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>60.41</td>
<td>60.80</td>
<td></td>
</tr>
<tr>
<td></td>
<td>65.58</td>
<td>64.32</td>
<td>0.65</td>
</tr>
<tr>
<td></td>
<td>% Increase</td>
<td>% Increase</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.72%</td>
<td>1.62%</td>
<td></td>
</tr>
<tr>
<td><strong>Contraception</strong></td>
<td>3.72%</td>
<td>1.62%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.16%</td>
<td>9.01%</td>
<td>0.06</td>
</tr>
<tr>
<td><strong>Nutrition</strong></td>
<td>1.16%</td>
<td>9.01%</td>
<td></td>
</tr>
</tbody>
</table>

Those who talked to Gabby increased their Nutrition knowledge score by an average of **9%**, while Controls saw an increase of **1.16%**.
How much do you trust Gabby?

- Don't Trust: 12.5
- Neutral: 28.3
- Trust: 59.4
Have you used info from Gabby to improve your health?
Would you recommend Gabby to someone you know?

- Yes: 65.6%
- Don't know: 21.9%
- No: 12.5%
Top reasons for recommending Gabby:

• To be healthier and to learn more about your health
• To have the “My Health To-Do List” to track your health
• To learn about screenings or tests you may need
• To learn about vitamins or minerals your body needs
• To help you plan for pregnancy
• To make it easier to talk to a healthcare provider
• To learn ways to manage your stress
• To help you manage your weight
• To help and encourage you to get more exercise
• To help you choose a birth control method
What’s next?

V3: RCT of 530 participants (NIMHD, R01MD006213)
• Enrollment began March 2014
• National sample, enrolled via phone
• One-year intervention period

Kellogg Foundation Funding – 2 years of development:
• Comprehensive content overview and update
• Expand Family Planning Discussion
• Make connections between risks to leverage past success

PCC for Men – Administrative Supplement from HRSA-BMCH
How you can help us recruit!

Be part of a Women’s Health Research Study
Help us test a computer program and learn more about your health

What is it?
We are inviting African American women to be a part of a study about an online women’s health program, called The Gabby Project. It’s all about being healthy for yourself now, and also to help you have a healthier pregnancy and baby in the future.

What will you do?
There will be about 530 women in the study. About half will use the online program for one year, and the other half will not. The group you will be in will be chosen at random. After 6 months and 12 months we will call the women from both groups to talk about their health status and ask the group that used the online program for feedback.

Are you eligible?
You may be eligible if you speak English and are:
- 18-34 years old
- Black or African American
- Not currently pregnant

All participants will receive $25 in gift cards for completing the 6-month and 12-month follow up phone calls. You may be eligible to win $100 gift card(s) in a monthly raffle. Feel free to share this information with friends who might also be eligible and want to participate. Thank you!

For more information contact our research team at:
pccestudy@bmc.org
Or text GabbyStudy to: 857-293-9874

Gabby
How you can help us recruit!

To be eligible, individuals must be:
- Female
- African American or Black
- Ages 18-34

They must also speak English, and not be currently pregnant.

Please invite women who might be interested to email pccstudy@bmc.org OR Text “GabbyStudy” to 857-293-9874
Thank you!

We would like to thank our funders:
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HRSA B-MCH: R40 MC21510
NIMHD: R01 MD006213
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Paula Gardiner, MD, MPH  Dan Schulman, PhD
Kenn Harris  Emily Vishnja
Cathryn Imperato, DNP  Leanne Yinusa-Nyahkoon, ScD
Stephen Martin, MD  ..and more...
Divya Mehta
Link to Gabby demo: https://agentserver.bmc.org/pcc3/webAgentTanya.swf

nicole@mail.com, 12345