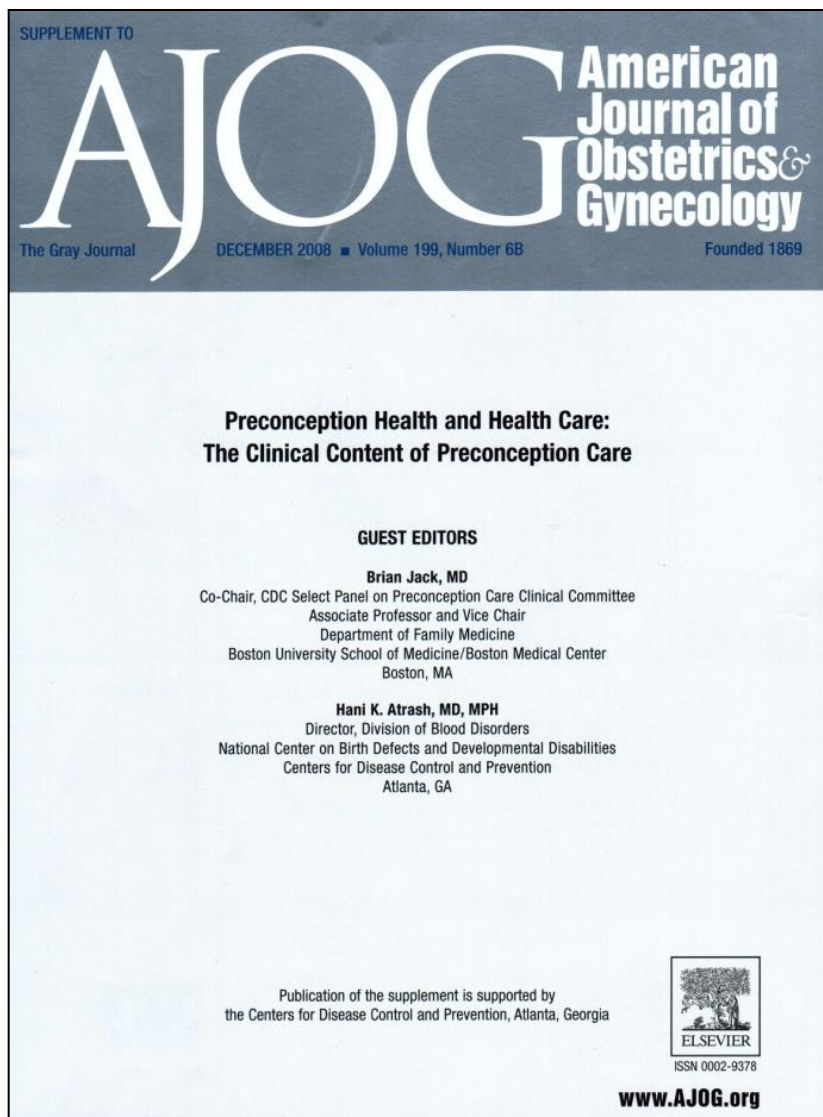




Reaching Young Women Through Health Information Technology: The Gabby Preconception Care System

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The dilemma



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

Preconception Care (PCC) 2013

- “..The provision of biomedical, behavioural and social health interventions to women and couples before conception occurs... aimed at improving their health status, and reducing behaviours and individual and environmental factors that contribute to poor maternal and child health outcomes. Its ultimate aim is to improve maternal and child health, in both the short and long term” WHO 2013 Policy Brief

PCC Risk Assessment



Introducing: Gabby



What is Gabby?

- Gabby is a Relational Agent

A computer based agent with empathic features (human gestures, facial expressions, empathic responses) tailored to the individual user's needs and circumstance.... designed on framework of theories on human interaction and effective communication

What Gabby Delivers...

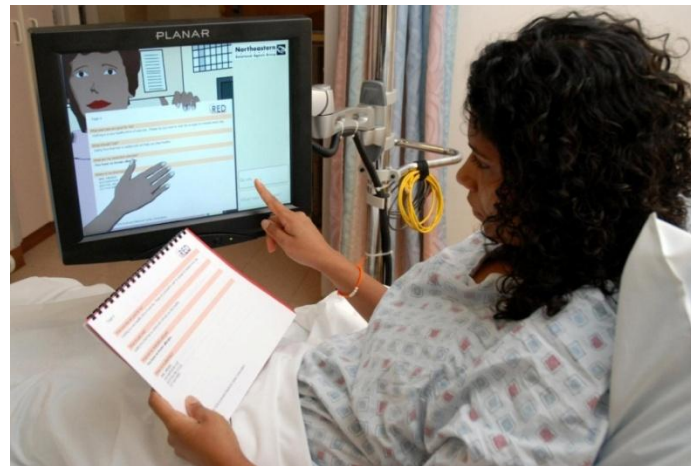
- Risk screening
- Health promotion messages;
- Tailored risk specific interventions;
- Hear and Share narrative stories;
- A “My Health To-Do List” based on the risks identified;
- Invite friends

Health Information Technology

“It was just like a nurse, actually better, because sometimes a nurse just gives you the paper and says ‘Here you go.’ Louise explains everything.”



“I prefer Louise, she’s better than a doctor, she explains more, and doctors are always in a hurry.”



Development of Gabby V1:

Focus Groups: Character Discussion

- 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

Top 10 Name Suggestions:

- Gabrielle “Gabby” for short
- Layia
- Vanessa/Venessa
- Angela
- Maria
- Jeanette
- Annie
- Lisa
- Nicole
- Natalie

“Someone I would see walking down the street.”



La-La (MTV host)



Rihanna (singer)



Gabrielle Union (actress)

Gabby 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

Firefox | Sex and Reproductive Health | wonder.ccs.neu.edu/PCC2Testing/Intake.php?D=3 | Google | Bookmarks

Sex and Reproductive Health

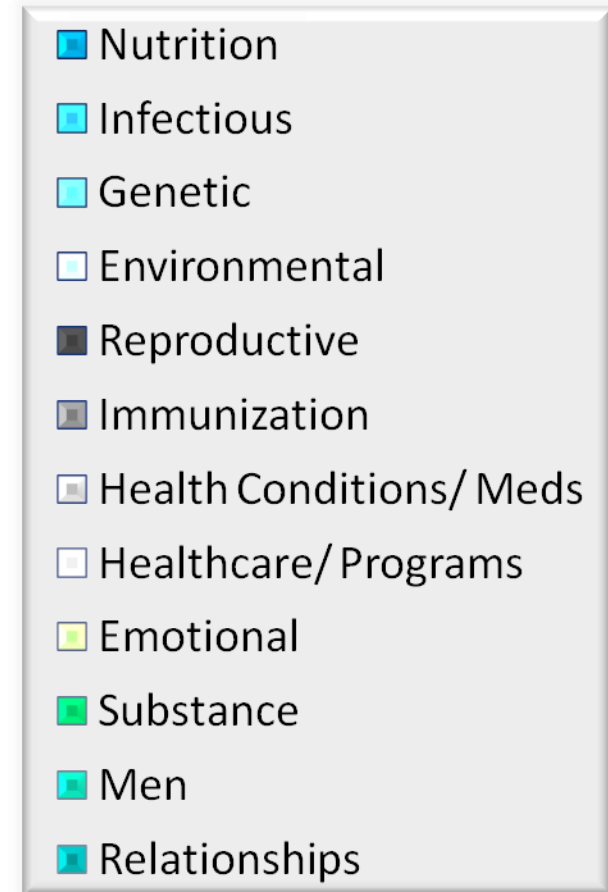
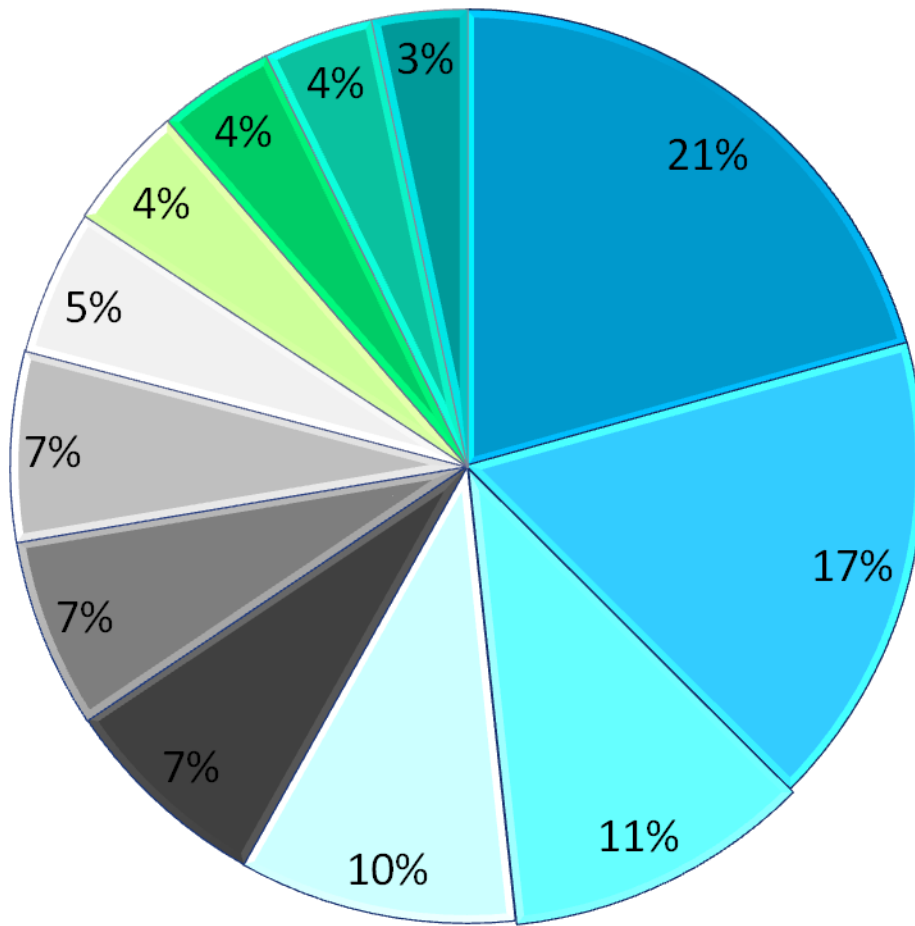
1. Have you ever had sex, like vaginal intercourse, oral sex, or anal sex?
 - ☐ Yes
 - ☐ No
2. Do you use birth control on a regular basis?
 - ☐ Yes
 - ☐ No
- 2a. Check all the types that you use now.

<input type="checkbox"/> Birth control pills	<input type="checkbox"/> IUD
<input type="checkbox"/> Birth control patch	<input type="checkbox"/> Abstinence
<input type="checkbox"/> Birth control ring	<input type="checkbox"/> Implant
<input type="checkbox"/> Birth control shot	<input type="checkbox"/> Vasectomy
<input type="checkbox"/> Male Condom	<input type="checkbox"/> Spermicide
<input type="checkbox"/> Female Condom	<input type="checkbox"/> Morning after pill
<input type="checkbox"/> Withdrawal	<input type="checkbox"/> Rhythm/natural family planning
<input type="checkbox"/> Diaphragm	<input type="checkbox"/> Other
<input type="checkbox"/> Tubes tied	
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?

Rapport-building, personalized



Risk Assessment: Risks by Domain



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Step 2: Info About Identified Risks



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- Add more risks and tasks

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
- Average 10.5 sessions per user

V1 Results:

Risk Status

Risks Identified (per person)

23 (100%)

Risks Discussed

11 (48%)

Risks Added to MHTDL

7.2 (65%)

Status at 2 months

Resolved –
3.5 (54%)

Took Action –
2.2 (29%)

No action –
1.5 (17%)

Challenges

- Not overwhelming user
- Maintaining engagement
- Supporting empowerment
- Keep users organized
 - MHTDL
- Allow user to prioritize risks to address
- Homework, relational dialogue, social media, narrative
- Empathic dialogue support self efficacy and autonomy

Gabby Version 2

Longitudinal behavior change:

- Motivational Interviewing to reach out to precontemplators
- Shared Decision Making to aide in 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
- Tips, Direct Observation, Social Reinforcement, etc

Supporting the user with information, tools, and encouragement throughout the behavior-change process

Problem Solving

Sample Problem Solving: Family Planning

=====

Barrier: I often forget to take my pill

Some Tips from Gabby:

- 1) Combine taking your pill with another task you do every day, like brushing your teeth, putting on make-up, eating breakfast, or reading before bed.
- 2) Put a post-it note with a reminder on your mirror, near your toothbrush, or somewhere else where you will see it.
- 3) Set your cell phone alarm to remind you to take it.

Motivational Interviewing

Motivational Interviewing is a client-centered counseling approach to help resolve ambivalence about behavior change. (Miller & Rollnick 2002)

RA Scripting includes elements of MI such as...

- Ask permission
- Reflective listening
- Eliciting change talk



Link to Alcohol Counseling

- <http://agentserver.bmc.org/pcc2/>

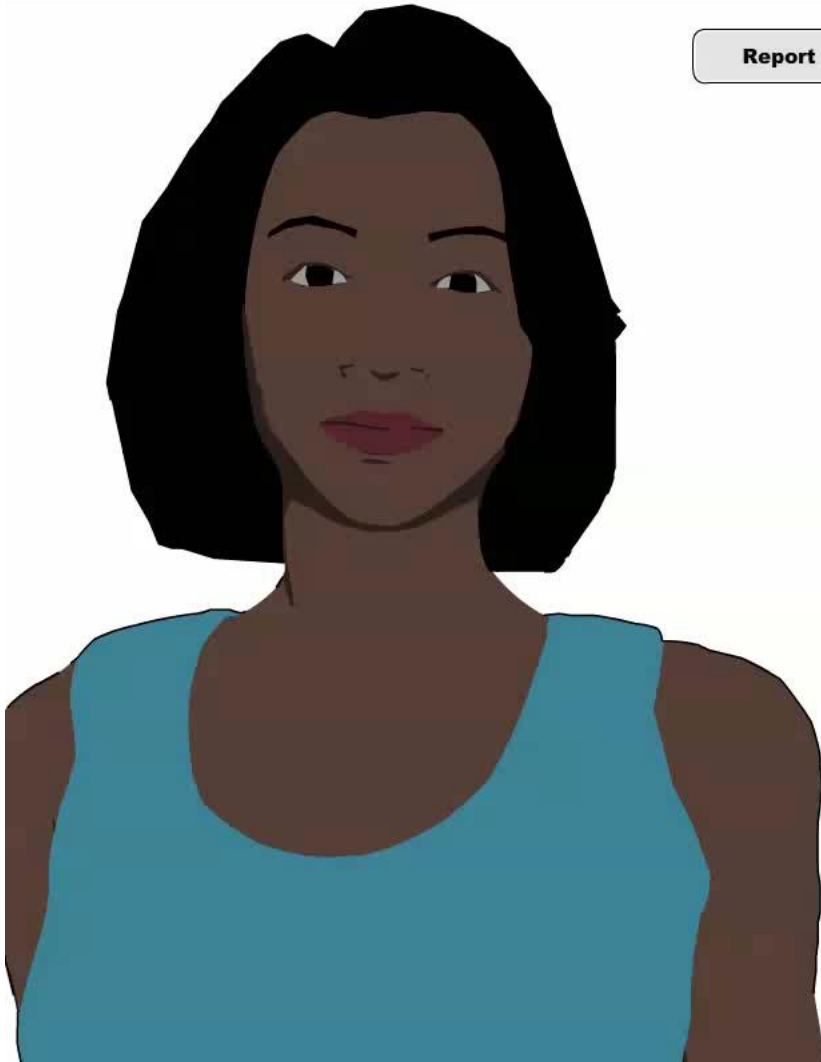
Shared Decision Making Tool

This tool aides in helping the user make a decision about contraceptive use by:

- 1) providing information about options,
- 2) assessing values about 4 attributes of contraceptive methods, and
- 3) confirms choice adoption.

Gabby Decision Aide

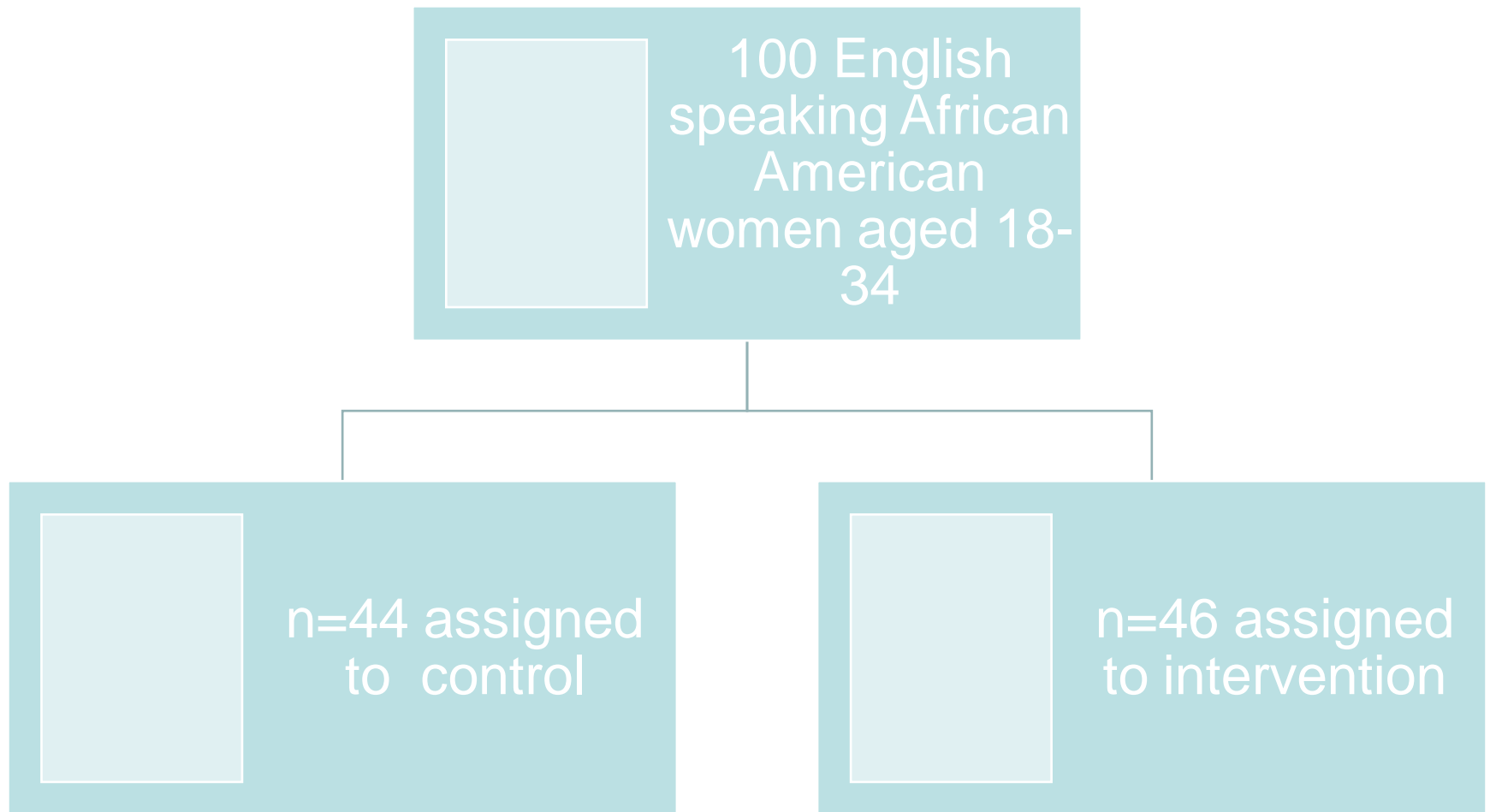
[Report A Bug](#)



Gabby Version 3



2013 Pilot RCT



2013 HRSA funded Pilot RCT

- 100 18-34yo African American, English speaking women enrolled from 20 states and D.C. from a cohort of women trained in the Office of Minority Health Preconception Peer Educator Program and those attending HRSA Healthy Start sites.
- Primary Outcome: Reduction in PCC risks at 6 months
- N=90 took risk assessment
- 44 control, 46 intervention
- 138 interactions for 46 participants
- Range of 0-11 times per user.
- Average those who logged in at least once (n=42) ~3 times/user
- # of risks identified, average of 24

RCT Version 3 (n=90)

Age (mean SD)	23.79(5.87)
Computer Attitude:	
‘I Love playing with them’, n(%)	81(90.0%)
I use computer regularly, n(%)	42(46.7%)
Education:	
College or above, n(%)	59(65.6%)
Less than college, n(%)	31(34.4%)
Single (Never Married) or Divorced, n(%)	78(86.7%)
Health Literacy, Adequate, n(%)	76(84.4%)
Employed, Yes, n(%)	67(74.4%)
Student, yes, n(%)	39(43.3%)

RCT Version 3 (n=90)

Alcohol n(%)	44(48.9%)
Anxiety/Depression, n(%)	18(20.0%)
At risk for an STI, n(%)	82(91.1%)
At risk for Hepatitis B, n(%)	25(27.8%)
At risk for Hepatitis C, n(%)	51(56.7%)
STI, n(%)	31(34.4%)
Drugs, n(%)	20(22.2%)
FHx Mental Illness, n(%)	27(30.0%)
Not tested for STI, n(%)	59(65.6%)
Interpartner Violence, n(%)	51(56.7%)
No/ineffective birth control, n(%)	42(46.7%)

RCT Version 3 (n=90)

Herbal or Weight Loss Supplements, n(%)	50(55.6%)
Ethnicity-Based Health Risk, n(%)	87(96.7%)
Exercise, n(%)	43(47.8%)
No HPV vaccine, n(%)	45(50.0%)
Need more Iron, n(%)	65(72.2%)
Over the Counter medicines, n(%)	23(25.6%)
Overweight, n(%)	19(21.1%)
Trouble paying bills, n(%)	28(31.1%)

RCT Version 3 (n=90)

% Correct on the Contraception Test, Mean (SD)	0.61(0.23)
% Correct on the Nutrition Test, Mean (SD)	0.79(0.18)
Perceived Social Support, Mean (SD)	71.23(12.67)
General Self Efficacy Scale, Mean (SD)	33.89(4.20)

Preliminary Evidence

- RA System is feasible and acceptable to age grp
- Many unaddressed risks identified
- Multiple risks per person (physical, social, emotional)
- Risks can be interactive

To be determined.....

Does system use lead to behavior change?

- More sessions = more behavior change?
- Targeting stage of change effective with RA?
- Interface with social media

Conclusions

- Gabby can help:
 - Screen for PCC risks
 - Deliver tailored health messages and behavior-change content
 - Provide accurate information, every time
 - Prepare patients for office visits and make visits more effective
 - Document education and understanding
 - Provide time and cost savings
- Gabby is:
 - Accepted by patients
 - Usable within a wide range of computer & health literacy skills
 - Able to be 'scaled' for far reaching impact

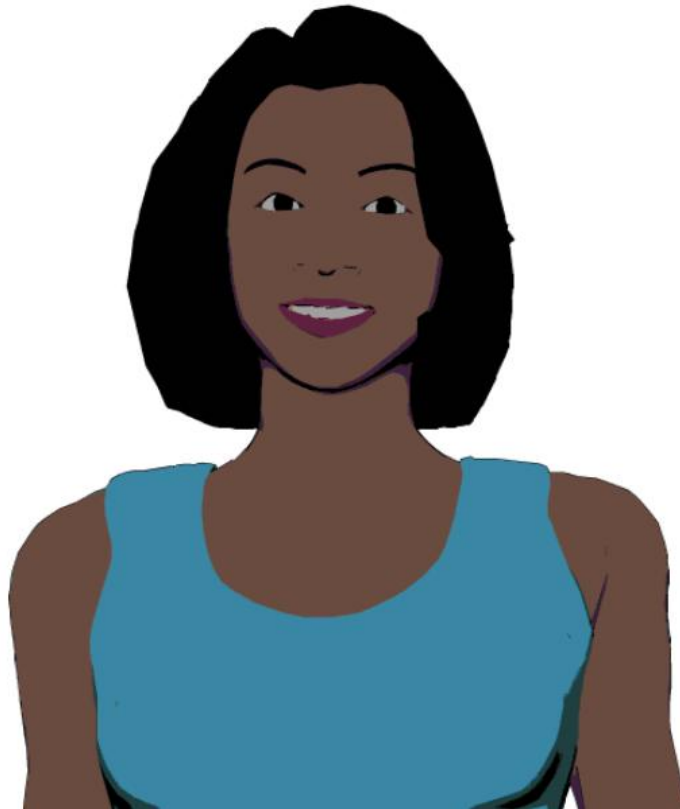
Summary

- Improving health behaviors improves health across generations.
- Risk assessment is essential first step in targeting high risk behaviors for adolescents.
- Computer systems are good for eliciting full scope of health behavior risk assessment and engaging in behavior change deliberation.

Next Steps

- RA system targeting health behavior risk assessment for young men
- New RCT, n=530 to assess clinical efficacy in reducing PCC risks in African American women
- India?

Thank you!



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