Diabetes Prevention: A Clinically Sound and Community Partnered Approach

Carol Horowitz
Mount Sinai School of Medicine
It’s Broken

• Diabetes prevalence, complications widening
  – Racial and ethnic disparities widening too
• Our understanding of why things are broken has not translated into fixing it.
• If it were easy to fix, this wouldn’t be the case.
• So, what can be done?
  – New ideas
  – New partners
Today’s Talk

• Present overview of diabetes, diabetes prevention
• Introduce one potential approach to the problem:
  – Community-based participatory research
  – Describe local partnered diabetes prevention efforts
    • Highlighting different methods along the way
Diabetes Overview

• Diabetes prevalence increasing.
  – 1 in 12 US adults have diabetes (and counting)
• DM epidemic parallels obesity epidemic.
  – Morbid Obese = 7x odds of having DM
• African Americans & Latinos are more obese, have higher prevalence of diabetes and its complications.
• US children born in 2000- predicted DM
  – If preventive measures not taken:
    • 1 in 3 overall
    • 1 in 2 African Americans and Latinos

CDC 2008, Diab Care 2007, JAMA 2008
The Diabetes (DM) Roadmap
Prevalence- US Adults 2005

<table>
<thead>
<tr>
<th></th>
<th>Overwt %</th>
<th>Obese %</th>
<th>Pre-DM%</th>
<th>DM %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>68</td>
<td>34</td>
<td>25</td>
<td>8</td>
</tr>
<tr>
<td>White</td>
<td>62</td>
<td>32</td>
<td>20 (?)</td>
<td>7</td>
</tr>
<tr>
<td>Bl/Lat</td>
<td>75</td>
<td>41</td>
<td>30 (?)</td>
<td>11</td>
</tr>
</tbody>
</table>

- **Overweight/Obesity Trends**
  - Most obese groups leveling off
  - Chubby newcomers (immigrants, more wealthy, educated) catching up

- **Pre-Diabetes Trends**
  - Just triple diabetes for the most part (see next slide)

CDC, NIDDK, JAMA 2007
Demographic Drivers

• Increase in High DM Prevalence Populations (and general population)
  – Urban (obese, sedentary)
  – Overweight/obese
  – Over 65
  – Racial/Ethnic Groups
    • African/Black, American Indians, Asian, South Asian, Pacific Islander, Latinos
Death Rates: Overall - Decreasing

Age Adjusted Death Rates/100,000 - US 1950-2005

Overall

1.3x

0.6x

http://www.cdc.gov/nchs/data/hus/hus07.pdf#029
Death Rates: Overall- Decreasing
Diabetes-Specific- Stable/Increasing
Age Adjusted Death Rates/100,000- US 1950-2005

http://www.cdc.gov/nchs/data/hus/hus07.pdf#029
How Can Diabetes be Prevented?

- Curb Overweight, Obesity
  - Lifestyle (diet/exercise)
    - Prevention maintained 10 years out if maintain weight loss
  - Bariatric surgery (very risky, sometimes transient)

- Increase Physical Activity
  - Less powerful but still has impact even w/o weight loss.

- Drugs- less effective and may not prevent
  - ? just treating sugars at lower level

- Data for these benefits shown exclusively among those with pre-diabetes
What is Pre-Diabetes?

- Glucoses>normal, but not diabetic
  - Nearly all will progress to DM if no rx
  - Increased all-cause mortality
- 1 in 4 US adults have pre-diabetes
  - In 2008 only 4% aware
- Modest weight loss (5-7%) prevents diabetes
  - Among overweight adults with pre-diabetes
    - By 33% - 68%. (vs 16-31% with meds)
    - Lifestyle interventions eliminate incident diabetes disparities among Blacks, Latinos and Whites*
- Interventions rarely sustained or scaled for community benefit.

MMWR 2008, NJEM, 2002
So, all we have to do is...

- Change the lifestyles of people in the entire world.
- Where can we begin?
  - Focus on the multicultural communities that are the epicenters of diabetes
    - A health disparities lens.
    - We’re working with populations and in settings that are not in the comfort zone of most academics and health policymakers.
Two Paths to Approach Disparities

Clinical Setting

Lessen Disparities In Health

Community Setting

Improved Community Status

Improved Health

Policy and Public Health Arena

Access

Address Social Determinants of Health

Address Quality of Care
- Services available
- Competent staff
- Structure

Improved Healthcare
- Processes

√

??

??

??

Horowitz, Lawlor IOM 2007
What are Social Determinants of Health?

- Social, economic, political environmental conditions to which a great share of health problems are attributed.
- 15% of health status is due to medical care
- Important if goal is optimal *health*, not only health care
How About A Hybrid Approach?

Merging the Paths

- Address clinical & community/social determinants of health to have a measurable impact
- Sustainable designs
- Enhance community & clinical resources & capacity

COMMUNITY

CLINICAL

HYBRID
Our Way to Hybridize: Community-Based Participatory Research (CBPR)

• Definition
  – “A collaborative approach to research that equitably involves all partners in the research process and recognizes the unique strengths that each brings”

• An approach (not a method) that alters researcher-community relationships

• CBPR is NOT:
  – “Community-placed” research
  – Sporadic or symbolic inclusion of communities
Characteristics of CBPR

• C&R contribute equally & in all phases of research.
  – Trust, collaboration, shared decision-making & ownership of research.
  – Findings should benefit all partners.
• Bi-directional, co-learning process.
  – Recognize, embrace local skills, strengths, assets.
  – Balance rigorous research & tangible community action.
• Emphasize the multiple determinants of health.
• Commit to long-term research relationships.
• Local capacity building, sustainability are key.
Who are Communities?

- Those that can directly impact or be impacted by your work
- A group of people
  - Linked by social ties
  - Common interest, perspective, goal, condition
    - churches, food vendors, mentally ill
    - clinicians (part of our hybrid model)
  - May or may not share a geographic location
### CBPR/Diabetes Prevention in East Harlem: It’s The Epicenter of DM in NYC

<table>
<thead>
<tr>
<th></th>
<th>EH</th>
<th>UES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-White</td>
<td>90%</td>
<td>6%</td>
</tr>
<tr>
<td>Living in Poverty**</td>
<td>38%</td>
<td>7%</td>
</tr>
<tr>
<td>Less Than HS Education**</td>
<td>46%</td>
<td>5%</td>
</tr>
<tr>
<td>Medicaid Recipients</td>
<td>41%</td>
<td>3%</td>
</tr>
<tr>
<td>Think Neighborhood is Unsafe*</td>
<td>58%</td>
<td>7%</td>
</tr>
<tr>
<td>Rate Health Poor/Fair**</td>
<td>30%</td>
<td>10%</td>
</tr>
<tr>
<td>Obesity Prevalence*</td>
<td>31%</td>
<td>7%</td>
</tr>
<tr>
<td>Diabetes Prevalence**</td>
<td>15%</td>
<td>2%</td>
</tr>
<tr>
<td>Diabetes Death Rate/1000*</td>
<td>54%</td>
<td>10%</td>
</tr>
<tr>
<td>Preventable Hospitalization/1000*</td>
<td>45%</td>
<td>7%</td>
</tr>
<tr>
<td>All Cause Mortality/1000*</td>
<td>10%</td>
<td>7%</td>
</tr>
</tbody>
</table>

* = EH Has Highest Rate in NYC  
** = EH Has Highest Rate in Manhattan

---

US Census 2000, NYCDOH, SPARKS
CBPR/CBPA Diabetes Prevention Groups: The EH Diabetes Center of Excellence

• Which gave rise to
  – The EH Partnership for Diabetes Prevention (NIH)
  – The Communities IMPACT Diabetes Center (CDC)

• Community, Clinical, Academic Public Health Collaborations
  – Improve Health of EH Residents with/at risk for DM
Diabetes Prevention Assessments (examples)

- **Environmental Survey**
  - Food availability
    - Partnered survey of all food stores
  - Physical activity barriers
    - 41% sidewalks have barrier

- **Individual Survey**
  - Vision - survey of individuals
    - >50% of local seniors can’t see labels, meds

- **Photovoice...**

Horowitz et al AJPH 2004, JGIM 2008,
Photovoice: Needs Assessment/Advocacy

• Ask people to photograph & discuss important issues
  – Assume people behind the lens have richest knowledge of their experience, are best suited to convey them
  – Enables people to define, convey what’s important & needs to be addressed and to advocate for their community.

• Vision Voice
  – Red carpet screening of our film June 8th at EH Film Festival (free if mention IMPACT)!

• Gestational Diabetes Photovoice
  – What makes it easier/harder to prevent future diabetes?

Wang, Burris 1997
“When I see my husband, it reminds me that I have to take care of myself to avoid diabetes in the future. When I see my husband shooting insulin and constantly having to check his sugar, it makes me think about that in the future I don’t want to go through the same...he has to take care of his sugar so that in the future he does not have problems with his vision since his vision is something necessary for the financial well-being of our family.” English translation
Environmental Diabetes Prevention: Public Health Initiatives

• Food
  – Bodegas, green carts farmer’s markets
  – Calorie labeling
  – Business school challenge
  – Save Half for Later

• Physical Activity
  – Zumba, community gardens
  – Walking trails (indoor, outdoor)
Social/Educational Individual Diabetes Prevention Strategies

- Social Support, Community Organization
  - This is the place to tackle diabetes, this is how...
  - Community awareness campaigns
  - Pictures in a minute...

- Rational screening and referral

- Education with a Twist
  - Peer-Led, Community-Based
  - Co-developed by clinical and community
  - Interventions local people actually WANT!

Horowitz et al JGIM 2004, West et al Diabetes Educator, 2010
Education, Salsa Dancing, modeling healthy foods and portion sizes
Food for Life Festival (restaurants make healthier items, locals try them)
Making Prevention Fun
### Project HEED
**Help Educate to Eliminate Diabetes**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feb 05</td>
<td>Community/Academic Partners Wrote Grant Proposal</td>
</tr>
<tr>
<td>Sep 05</td>
<td>“Seinfeld” Grant Funded by NIH</td>
</tr>
<tr>
<td>Oct-Dec 05</td>
<td>Community Action Board (CAB) Formed</td>
</tr>
<tr>
<td>Jan-Sep 06</td>
<td>Community-Based Assessments Conducted</td>
</tr>
<tr>
<td>Jan-March 06</td>
<td>Selected Pre-Diabetes</td>
</tr>
<tr>
<td>Nov-March 07</td>
<td>Intervention Methods, Type Chosen and Developed</td>
</tr>
<tr>
<td>April 07</td>
<td><strong>Intervention Begun</strong>- To test effectiveness of a peer-led diabetes prevention intervention on weight loss among overweight adults with pre-diabetes</td>
</tr>
<tr>
<td>Nov 07</td>
<td>Submitted Grant for 5 Year Expansion</td>
</tr>
<tr>
<td>Feb 08</td>
<td>Funding Began for 5 Year Expansion</td>
</tr>
<tr>
<td>Mar 09- Jan 12</td>
<td>Larger Scale Intervention with 500 people</td>
</tr>
</tbody>
</table>
EH Partnership for Diabetes Prevention

Community Action Board

- From Business, Housing, Social Service, Faith-Based, Health, Grass Roots (including 3 FQHC’s- Boriken, Settlement, IFH)
  - Most members (15/20) also local residents
- Scientific Advisory Board as Needed
- Work through subcommittees
  - Intervention, Evaluation, Community Engagement, …
Study Design - The Rigor

1. Pre-screen-to find overweight EH residents
2. Return fasting for oral glucose tolerance test
3. If eligible (pre-diabetes level glucoses)
   - Survey, check BP, draw blood for cholesterol.
4. Randomize
   - Intervention vs. delayed intervention (after 1 year)
5. Follow-up (3, 6, 12 months)
Our Intervention, Project HEED: Peer-Led Weight Loss Workshop

- 8-session peer-led program
- Goal: 5% weight loss
- Practical, culturally, economically appropriate
- Simple, low-cost so sustainable
- Small steps to improve diet and exercise, for lifelong benefit
- Local English and Spanish classes

Peer leaders, workshop graduates
Pilot Results- 3 Months of Work

Approached (555)
- 50% Not eligible
- 5% Refused

Consented (249)
- 29% Did not Return for Testing

Tested for Pre-Diabetes (178)
- 29% Normal Glucose
- 13% Diabetes

Enrolled those with Pre-Diabetes in Trial (99)
Results: Population Enrolled

- 85% Female
- 89% Latino, 9% Black
- 77% Non-English Speaking
- 70% Unemployed
- 58% Did Not Complete High School
- 52% Below Poverty Level
- 49% Uninsured
- 49% Depressive Symptoms
Results: Significant Weight Loss, Maintained at 12 Months

Average Weight Loss in Pounds at 6 Months (n=79) p<0.01

Parikh et al AJPH, 2010
Other Important Findings

- Higher than reported incidence of pre-diabetes and diabetes.
  - Only 29% with normal glucoses
- Higher than reported progression to diabetes.
  - 25% in HEED at one year
  - 10% in national studies
Reasons for Successful Weight Loss

- Participants empowered to make changes to improve health by making and achieving realistic goals.
  - Support from trusted peer leaders and other participants
  - Diagnosis of pre-diabetes may inspire change
- Medically underserved population may be more interested in diabetes screening and receptive to lifestyle interventions.
HEED Conclusions

• Developed a study both rigorous and practical in community settings.

• Community leadership led to reaching and motivating populations historically difficult to engage in research.

• Intervention has potential to be sustainable and useful in many communities.
Discussion: CBPA (approach)
Distinction between Community and Academics Blurs

• All partners are enthusiastic champions.
  – Mutual commitment to timing and process
  – Benefits community, clinical, & academics
    • So all stay involved
    • Both gain legitimacy in each others’ worlds

• We do “CBP” and “R”
  – CBP:
    • Community control leads to great decisions
    • Relevance and promise build to programs people want to be part of
  – R:
    • Can develop programs respected in the scientific community.
What’s Working: Community Perspective

• Co-owners of Projects.
  – So resonate with community
    • Break research down to layman’s terms so understood, accessible
  – Able to advocate for local needs and approaches
    • Insist clients’ needs be met as condition of participation

• Trusted, respected by community.
  – History of service engenders trust projects and makes them effective

• Community partners have academic mentors.
  – Learning value of research, evaluation, new tools usable to gain resources and inform/influence policy
What’s Working: Academic Perspective

- Partnership leads to new ideas and approaches.
- Research is both rigorous and practical.
- Research blends with service.
  - Makes work incredibly rewarding and tangible
  - Work may continue after grants end
- Academics have community mentors.
  - Keep them from making important mistakes
  - Contribute new ways of thinking about what’s really going on with diabetes and how to do something about it
Conclusions

• Diabetes is common and preventable
  – Need to address multiple determinants of health for impact

• Community partnerships can lead to better, more feasible and durable programs.
  – A peer-led, community-developed intervention can promote weight loss among adults with pre-diabetes.

• It’s easy to get involved.
  – There’s plenty of room at the table!
  – Think of how you can use these tools to help your patients individually and to benefit your community.
THANKS to Community Partners and Funders:

New York State Diabetes Prevention and Control Program

NIH- NIMHD (National Institute on Minority Health and Health Disparities)

NCATS- CTSA and The CDC- REACH US