Person- and Place-Based Design to Reduce Preterm Births

Robert Kahn
Michael Marcotte

December 13, 2017
9:30 AM – 10:45 AM: D
11:15 AM – 12:30 PM: E
Session Objectives

- Understand use of design thinking to help drive person and place-based care transformation.
- Create a measurement strategy of population-based outcomes and process measures to promote care for every woman.
- Design core attributes of a multi-stakeholder care system that prioritizes women’s needs
Person- and Place-Based Design to Reduce Preterm Births

Robert Kahn
Michael Marcotte
Racial Disparity in Infant Mortality (Hamilton County)

Infant deaths per 1,000 live births

Source: Fetal and Infant Mortality Review (FIMR)
Neighborhood Preterm Birth Rates per 100 births (2010-2012)

Avondale
"Insanity is doing the same thing over & over again & expecting different results."

Albert Einstein

Current Model of Pregnancy Care
Why Innovate?

• Millions spent on understanding prematurity
• Many high risk mothers say ‘No’ to early prenatal care
• Low uptake of smoking cessation intervention
• Progesterone is effective for recurrent preterm birth but has to be before 24 weeks
• Innovation is needed when the existing ideas are insufficient and we need a new view
How to Innovate: Family Centered Design

1. Frame the problem
2. Develop deep empathy
3. Ideas and insight
4. Prototype
5. Pilot test
From Siloes to Transformed System

Frame the problem
How to Innovate: Family Centered Design

1. Frame the problem
2. Develop deep empathy
3. Ideas and insight
4. Prototype
5. Pilot test
Develop deep empathy

<table>
<thead>
<tr>
<th>Name:</th>
<th>Dominique</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age:</td>
<td>27</td>
</tr>
<tr>
<td>Pregnant:</td>
<td>No</td>
</tr>
<tr>
<td>Children:</td>
<td>1 child, 17 months old</td>
</tr>
<tr>
<td>Children's Age:</td>
<td>No</td>
</tr>
<tr>
<td>Relationship Status:</td>
<td>Single</td>
</tr>
<tr>
<td>School/Work:</td>
<td>Working</td>
</tr>
<tr>
<td>Living Situation:</td>
<td>Lives alone</td>
</tr>
<tr>
<td>Time Spent in Medical Care:</td>
<td>4 months</td>
</tr>
<tr>
<td>Resources Used:</td>
<td>PCC, Prevental OB/GYN</td>
</tr>
</tbody>
</table>

**Perspective Story Resources:**
Avoided going to the doctor about her pregnancy because she was afraid they would tell her something was wrong.

**Health Behaviors:**
Eats a lot of chips and junk food, is on her feet all day, would like to take an exercise class.

**Pregnancy Health Perspective:**
Scared about her pregnancy because she didn’t know she was pregnant for the first three months and was smoking and drinking. Scared because she had a stillborn when she was 22.

**Birth Control Perspective:**
Uses condoms, but says she got pregnant “through a condom.”

**Who She Trusts:**
Her mom, who helps her cook, watches her son for her.

**Aspirations:**
To help young men in Avondale stay off the streets.

**What She Does:**
Her aspiration is to learn and be a leader.
16 WOMEN WERE INTERVIEWED
14 HAVE CHILDREN OR ARE CURRENTLY PREGNANT
2 ARE WOMEN FROM AVONDALE WITHOUT CHILDREN
2 DADS WERE ALSO INTERVIEWED

AGE SPREAD OF EXPECTANT MOMS AND MOMS

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Number of Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>19-21</td>
<td>4</td>
</tr>
<tr>
<td>22-24</td>
<td>2</td>
</tr>
<tr>
<td>25-27</td>
<td>2</td>
</tr>
<tr>
<td>28-30</td>
<td>2</td>
</tr>
<tr>
<td>31-33</td>
<td>2</td>
</tr>
<tr>
<td>34-36</td>
<td>1</td>
</tr>
<tr>
<td>37</td>
<td>1</td>
</tr>
</tbody>
</table>

AGES OF NON-MOMS: 17 & 24

- 4 CURRENTLY PREGNANT
- 2 CURRENTLY PREGNANT WITH OTHER CHILDREN
- 14 RECEIVED CLINICAL PREGNATAL CARE
- 4 PREGNANCIES RESULTING IN PREMATURE BABIES

19 STAKEHOLDERS WERE INTERVIEWED

9 MEDICAL CARE PROVIDERS
3 REPRESENTATIVES FROM EVERY CHILD SUCCEEDS
7 REPRESENTATIVES FROM COMMUNITY AGENCIES
How to Innovate: Family Centered Design

1. Frame the problem

2. Develop deep empathy

3. Ideas and insight

4. Prototype

5. Pilot test
• Synthesize multiple perspectives and data points
• Identify points of divergence and convergence
  – Define the elements of a healthy pregnancy
  – Identify gaps
• Personas
• Scenarios
Participatory Design

• Design session:
  • Brought together mothers, agencies, faith leaders, community members, health care professionals, funders
  • Generated conversations about the deeper needs for mothers, fathers, children and community
  • Generated ideas based on the insights
Sustained, Empathic Care: 
Person centered re-design
Preliminary Concepts

• Social Connection
  – Neighborhood Feast
  – Justice League of Moms

• Care Reimagined
  – Family Centered care
  – Newborn videos
  – Wellness promoters

• Personal Empowerment
  – Personal Contingency Plan
How to Innovate: Family Centered Design

1. Frame the problem
2. Develop deep empathy
3. Ideas and insight
4. Prototype
5. Pilot test
NEIGHBORHOOD FEASTS

Women, moms, families, community leaders, and providers come together to plan and host a neighborhood feast for themselves and a number of their peers. The community cooks and breaks bread together, sharing their stories and building new connections.
Family Centered Design for Empathy and Accountability

1. Frame the problem

2. Develop deep empathy

3. Ideas and insight

4. Prototype

5. Pilot test
Family Strong Community Feast

Pilot test
## Improve and Innovation: Drivers and Design

<table>
<thead>
<tr>
<th>Concept:</th>
<th>Contingency Plan</th>
<th>Placed Based Care</th>
<th>Family Centered Care</th>
<th>Partnership Agreement</th>
<th>Mentors</th>
<th>Community Feast</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Driver</strong></td>
<td>Timely, valued services that reduce hardships</td>
<td>Early, sustained, valued, evidenced based care</td>
<td>Early, sustained, valued evidenced based care for every mom</td>
<td>Activated mothers supported by engaged communities</td>
<td>Activated mothers supported by engaged communities</td>
<td>Activated mothers supported by engaged communities</td>
</tr>
<tr>
<td><strong>Purpose</strong></td>
<td>Mothers will make positive choices about their wellbeing and the resources they use, reducing primary care treatable emergency department visits</td>
<td>Expand touch points for care; remove myths and misinformation around birth control; Provide a stigma-free venue for learning about and accessing birth control, giving women the tools to be powerful in how they plan their family and future.</td>
<td>Strengthens a woman’s support network with quality information and the ability to act, honors the importance of family, builds trust.</td>
<td>Create a broader understanding of the importance of health in pregnancy and find women who are not receiving prenatal care.</td>
<td>Increase narratives about positive futures and paths to success; builds trust, spreads accurate information regarding pregnancy, birth and parenting, increases social connection</td>
<td>Increases empathy and trust among neighborhood residents and resources, builds relationships and connections capable of collaboration</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>Women and families work with a care provider to develop a personalized plan of what to do and who to call when they are worried about their family’s safety or wellbeing</td>
<td>Providers and wellness promoters team up in a mobile unit that goes to women’s neighborhoods to provide friendly and judgment-free guidance and access to birth control, health insurance, and social services</td>
<td>The care team works with an expectant mother and her support network, facilitating their discussion to define the family’s goals and actionable ways to achieve them. The care team provides tools for supporting the family’s progress at home.</td>
<td>Community organizations agree to partner to spread the word about prematurity, identify mothers needing support and connecting them to needed services</td>
<td>Mothers select mentors from a group recruited to support them through the first 6 months of their baby’s life.</td>
<td>Women, moms, families, community leaders, and providers come together to plan and host a neighborhood feast for themselves and a number of their peers. The community cooks and breaks bread together, sharing their stories and building new connections</td>
</tr>
</tbody>
</table>
Resources

• HBR Article: “Design Thinking” by Tim Brown

• Marshmallow Challenge Exercise
  • http://marshmallowchallenge.com/Welcome.html

• “The Inmates Are Running the Asylum” Cooper, 2004

• ABC Nightline: Ideo shopping cart video
  – http://vimeo.com/16456835
Design Exercise

• Pick one insight or concept you might want to try
• Discuss a small possible test in your setting
• Identify key potential partners for success
• One step you could take in next week
StartStrong Quality Improvement
Earliest preterm births in the neighborhood

50% of infant deaths occur by end of 2nd trimester

Kahn 2015
Avondale System of Care: ~205 births/year, 18% PTB rate

10% Reduction in Prematurity by June 30, 2016

BASIC NEEDS: Housing, Partner Violence, Legal Assistance, Food Assistance, Mental Health Svcs.

90% in PNC by 12 weeks

90% Enrolled in HV by 15 weeks

85% Delivered after ≥37 weeks

90% Referred for Resources by 18 weeks

10% Reduction in Prematurity by June 30, 2016

Community based care

Every Child Succeeds
Health Care Access Now
Outreach Ministries
EARLY, SUSTAINED, VALUED EVIDENCE BASED PRENATAL CARE FOR EVERY MOM

Gestational Age at Entry into Prenatal Care (PNC)* for Avondale (Zip Code 45229) Women by PNC Site

90% in PNC by 12 weeks

*Prenatal care for women seen

Source: TriHealth/UCMC
EARLY, VALUED, ACCESSIBLE, COORDINATED CARE IN COMMUNITY

90% Enrolled in HV by 15 weeks

Gestational age at Referral and Enrollment into Every Child Succeeds for pregnant women in Avondale (45229)

Desired Direction: \(<\) GA

Data Run: 6/17/14 Updated: 6/18/14

Note: Some referrals have duplicate or missing GAs
Singleton Extreme Preterm Births
Obstetric estimate of gestation <28 weeks

Source: Hamilton County Public Health. Updated by J. Besl 7/17/17
Infant mortality rate by subcounty area: 2007-2011
Hamilton County

Infant deaths per 1,000 live births
Infant mortality rate by subcounty area: 2012-2016

Hamilton County
Key Learnings

• Shared vision and system for learning together from very start
• Strong leadership communicating well
• Focus on trust and relationship building
• Metrics chosen to require silos are broken down
• Shared data used to drive improvement
• Comprehensive systems view was essential for all partners
• Willingness to do more for families with social needs as priority
Transformation

• Good Samaritan Hospital Faculty Medical Center redesign using nurse case managers teamed with community health workers
• New UC Medical Center Model for place based clinics
• Ohio Dep’t of Health funding expanded CHWs
• New grant to expand Legal Aid services to pregnant women
QI Exercise

• Consider a potential population and condition to focus on
• Characterize the system of key stakeholders (MDs, RNs, CHWs, resources/agencies, community, families)
• Identify a driver or two that might be adapted for use
• Think of one test you could try when you get back
SMART AIM

Reduce preterm births by 10% by June 30, 2016

GLOBAL AIM

Improve maternal and infant health outcomes and care at substantially reduced cost

KEY DRIVERS

EARLY, SUSTAINED, VALUED EVIDENCE BASED PREGNATAL CARE FOR EVERY MOM
Reliable, Evidence Based, Easy Access Healthcare centered around women and families

EARLY, SUSTAINED, VALUED EVIDENCE BASED PEDIATRIC CARE FOR EVERY CHILD
Reliable, Evidence Based, Easy Access Healthcare centered around women and families
Robust system for finding all parents and social networks affecting them

EARLY, VALUED, ACCESSIBLE, COORDINATED CARE IN THE COMMUNITY
Highly linked, reliable system of health and social care that meets needs of every pregnant woman and infant.

ACTIVATED MOTHERS SUPPORTED BY ENGAGED COMMUNITIES
Engaged and activated parents, families, and communities to meet pregnant mom and infant needs

TIMELY VALUED SERVICES THAT REDUCE HARDSHIPS
Reduced hardships undermining health (e.g. toxic housing, stress, safety, hunger, income)

LEARNING SYSTEM
Transparent measurement & data sharing, community QI capacity to drive continuous learning
Session Objectives

- Understand use of design thinking to help drive person and place–based care transformation.
- Create a measurement strategy of population-based outcomes and process measures to promote care for every woman.
- Design core attributes of a multi-stakeholder care system that prioritizes women’s needs
A special thanks to our donors
SUPPLEMENTAL MATERIAL
Estimated maternal and newborn hospital costs for singleton deliveries at 25-36 weeks of gestation
2009-2012 vs 2013-2016
ZIP Code 45229 (Avondale-North Avondale)


Source:
Birth data from Hamilton County Public Health

$1.35 million saved
$337 thousand saved per year
## Infant Mortality Learning Collaborative

- 20 Community Obstetric Teams
- 7 Community Agency Teams

### PROTOTYPE GROUP DRAFT MEASURE

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EARLY CARE</strong></td>
<td>% of new (excluding transfer) patients enrolled in prenatal care at ≤ 12 complete weeks (i.e. by 12 weeks and 6 days) of gestation</td>
</tr>
<tr>
<td><strong>RELIABLE POSTPARTUM CARE</strong></td>
<td>% of patients attending postpartum visit by 90 days postpartum (Medicaid standard)</td>
</tr>
<tr>
<td><strong>TRUSTED CONNECTIONS</strong></td>
<td>% of patients who received first home visit with a CHW, HV, or CM within 10 days or less from the time of referral from the OB practice</td>
</tr>
<tr>
<td><strong>TRUSTED CONNECTIONS</strong></td>
<td>% of *eligible patients referred to Community Health Worker (CHW), Home Visitor (HV), or Case Managers (CM) within 2 business days of the first OB visit</td>
</tr>
<tr>
<td><strong>EARLY CARE</strong></td>
<td>% of women who received their first OB visit with a physician or advanced practice nurse within 4 business days of initial contact with the health center documented EHR</td>
</tr>
</tbody>
</table>
# CCLC Prototype (PT) Model

<table>
<thead>
<tr>
<th>Proven Prototype</th>
<th>Still In Progress Prototype</th>
</tr>
</thead>
</table>
| **PROVEN PROTOTYPES**  
*HAVE EVIDENCE THAT WORKS* | **“STILL IN PROGRESS” PROTOTYPES**  
*TESTING/NEED MORE EVIDENCE THAT IT WORKS* |

## PT 1: Rapid Access to OB Care
- Get them in for care early - by 12 weeks
- Flex/block times for same day access

## PT 2: Trusted and Empathetic Smoking Cessation Processes
- ASK/ASSIST & smoking status by 28 wk. documented
- Empathy for patients in crisis

## PT 3: Build Trusted Relationships
- Reliable follow-through on getting patients to services they need (e.g. stable housing, food, crib)

## PT 3: Warm/Rapid Handoffs to CHW/HV
- Every Medicaid mom needs a CHW/HV
- Provider knows CHW/HV name and co-manages care for patient

## PT 4: Preoccupation with System Failure
- Weekly huddle looking at data from previous week
- Analyzing failures

## PT 3: Use of new “HUB”
- Standard documentation across Ham. county (e.g. CHW/HV name in charts)
- Shared measures & reliable data entry
- Effective and efficient use 211

## PT 3: CHW/HV is Place Based
*e.g. CHW/HV sees 35 patients in 1 zip code*

## PT 3: CHW/HV is Center Based Care
*e.g. CHW/HV sees 35 patients from any zip code @X Center*
AIM:

- Increase the number of Avondale and Price Hill patients receiving a community health worker visit within 10 days of receiving the referral from 38% to 50% by December 31, 2016.
Process Steps for Warm Handoffs

Current Process

- Posted reminder
- EPIC prompt
- No show mitigation
- Planned CHW supply

CHW/HV offered w/in 2 days

- No time
- Emergent need
- Forget
- Children/FOB distract
- No show
- No CHW/HV available

CHW/HV accepted

- No Trust
- Bad previous experience
- Problems at home
- Criminal record
- Afraid of CPS notification
- No belief we can help
- Hopelessness
- Not in control of home environment
- Unstable living arrangement

Referral/ sent assigned

- Referral lost
- Fax doesn’t go through
- Forget to send
- Too busy
- No CHW/HV available
- Don’t know who or how to assign
- Don’t know who to send to

CHW/HV informed

- No way to contact CHW
- Assigner not available
- Forget to notify
- Equipment failure
- Staff not following process

CHW/HV contacts

- Wrong number
- Doesn’t answer
- Lost number
- Policies limit type of contact
- Mom without cell minutes
- Mom has no phone

Visit scheduled

- Mother declines
- Work schedule
- Location doesn’t work
- Planned travel
- No FMC appt. avail within 10 days

Visit happens w/in 10 days

- Not home
- Can’t find home
- Won’t come to door
- Wrong address
- No show
- Locked bldg.
- Living arrangement not accepting of visit

Failure Modes

Interventions

- Posted reminder
- EPIC prompt
- No show mitigation
- Planned CHW supply

- Relaxed time
- 100% follow through
- Open dialogue
- Mom focused
- Enough time

- EPIC
- Formalize process
- Back up planned
- Automate reminder

- Text
- Check-in process
- More than one way planned

- Meet at clinic
- Contact NCM
- NCM calls with CHW/HV
- Engage other trusted person

- Flexible scheduling
- NCM contacts
- Focus on benefits

- Double check address
- GPS
- Call to remind
SMART AIM

Increase the number of Avondale/Price Hill FMC patients receiving community health worker visit within 10 days of referral from 38% to 50% by December 31, 2016.

GLOBAL AIM

Eliminate all infant deaths in Hamilton County

KEY DRIVERS “WHAT”

1. Rapid, trusted Mom, NCM, CHW relationships
2. Perceived need
3. Enough CHW/HV supply
4. Services to meet needs (ex. housing, transportation)
5. Rapid referral and contact
6. Team comfort and confidence with one another
7. Preoccupation and mitigation of system failures

INTERVENTIONS “HOW”

Welcome contact 1st visit red carpet
Pre-visit planning and huddle
Reliably use Contingency Plan discussion prompts
Develop models to project need and match supply
Legal Aid partnership for housing, domestic violence and benefits issues
Automated referral through EPIC
CHW calls/texts with NCM/mother within 4 days
Flexible scheduling of visit time and location
Weekly huddle to discuss hard to engage mothers
*Infant Mortality Learning Collaborative Core Team QI Results & Process Improvement KDD
Faculty: Elizabeth Kelly, Mike Marcotte, Rob Kahn

**GLOBAL AIM**
Eliminate all infant deaths in Hamilton County

**SMART AIM**
Reduce the Infant Mortality rate (IMR) in Hamilton County from 9.5 to the National IMR of 5.98 (31 fewer infant deaths per year) by December 31, 2020.

**KEY DRIVERS “WHAT”**
1. Early and Valued Access to OB and CHW/ HV Care
2. Trusted and Empathetic Smoking Cessation Processes
3. Trusted Relationships, Patient Centered Care, & Warm Hand-offs to CHW/ HV
4. Preoccupation with System Failures

**INTERVENTIONS “HOW”**
- **HOLD TIME on schedule to be able to fit patients and provide SAME DAY ACCESS**
- **USE STANDARDIZED PROGRAM (e.g. 5A’s) TO HELP MOMS QUIT SMOKING**
- **PRE-CLINIC HUDDLE to review daily plan for how many need to complete ASK / ASSIST (Quit Line)**
- **CHW-HV & Providers co-manage to ensure ALL patients needs are MET & DOCUMENT updates**
- **CHW-HV meets at OB office for visit(s)**
- **CCLC Teams Weekly QI – Data Huddle:**
  *Review DATA, analyze FAILURES from previous week, & ID interventions to test to mitigate failures and improve processes*

*CCLC Teams:
- 20 Obstetric Teams
- 7 Community Teams (Comm. Health Worker/ Home Visitor Agencies)
Project Name:  Cradle Cincinnati Learning Collaborative Infant Mortality reduction Initiative 2.0
Project Leaders:  Kelly/Marcotte
Revision Date: 04-05-2017

SMART AIM
Transformation of Prenatal Care model in all 20 prenatal sites by implementing a Change Bundle* by Jan 1, 2019

Key
Dotted box = Placeholder for future additions
Green shaded = what we’re working on right now

Goal: to reduce infant mortality in Hamilton Co to 5.98/1000 live births by 2020 (national average)

KEY DRIVERS
- Team based care with strong provider champion
- Creating an infrastructure to support early access to prenatal care
- Maternity Medical Home
- Optimize all aspects of Patient/family centered care
- Align prenatal care teams and home visitation agencies with Cradle Cincinnati community interventions and Data

INTERVENTIONS (LOR)
- Trauma Informed Care*
- Motivational interviewing*
- Leadership training
- StartStrong Model*
- Walk in/same day appointments*
- ER follow up care manager
- Optimal identification of women at risk for preterm Birth (OPQC)*
- Smoking cessation pathway*
- Spacing/safe sleep pathways
- PRAF 2.0*
- Coordination with Managed Care Medicaid
- Consistent referral to HV/CHW at first prenatal visit*
- Hand off to pediatric provider*

*proposed components of the Change Bundle
Agency in Care

PERSONALIZED CONTINGENCY PLANS

Women and families work with a care provider or community wellness promoters to develop a personalized plan of what to do and who to call when they’re worried about their family’s safety or health.
Develop deep empathy

<table>
<thead>
<tr>
<th>AGE:</th>
<th>19</th>
</tr>
</thead>
<tbody>
<tr>
<td>PREGNANT:</td>
<td>7 months at time of interview</td>
</tr>
<tr>
<td>CHILDREN:</td>
<td>None</td>
</tr>
<tr>
<td>RELATIONSHIP STATUS:</td>
<td>In a relationship, boyfriend currently incarcerated</td>
</tr>
<tr>
<td>SCHOOL/WORK:</td>
<td>In process of finishing her GED</td>
</tr>
<tr>
<td>LIVING SITUATION:</td>
<td>Living with mother</td>
</tr>
<tr>
<td>TIME ENTERED PREGNATAL CARE:</td>
<td>2 months</td>
</tr>
<tr>
<td>RESOURCES USED:</td>
<td>PCP, Prenatal OB/GYN, ECS</td>
</tr>
<tr>
<td>PREGNANCY HEALTH PERSPECTIVE:</td>
<td>Wants her baby to be 5 pounds. Doesn't think it's a possibility that her baby would be born premature. &quot;If babies are born premature, spend 2-3 days in the hospital, and they'll be alright.&quot;</td>
</tr>
<tr>
<td>BIRTH CONTROL PERSPECTIVE:</td>
<td>Didn't think that she could get pregnant because of scoliosis. &quot;The ring causes cancer and the shots put too many chemicals inside.&quot;</td>
</tr>
<tr>
<td>WHO SHE TRUSTS:</td>
<td>Her mom. She used to rebel from her, but now she trusts her for information about her pregnancy</td>
</tr>
<tr>
<td>WHAT STOOD OUT:</td>
<td>Her journey of a rebelling as a teenager, but entering a state of reflection and curiosity in her later pregnancy months. However, she doesn't have a strong toolset to find information</td>
</tr>
</tbody>
</table>

| HEALTH BEHAVIORS: | Smokes, eats healthy only when her mother cooks for her |