The Memphis Model: Community-wide Faith-Based Collaboration Prevents Re-admission

Teresa Cutts, Ph.D.
Director of Research for Innovation
cutts02@gmail.com, 901.516.0593

Be treated well.
The Memphis Model
The Memphis Model “maps” (aligns and leverages) existing assets — integrating congregational and community caregiving with traditional healthcare to create a system of health built on webs of trust.

Integrated into hospital initiatives: re-admission prevention in CHF/AMI/PNI, Charity Care management, HCAHPS, , ambulatory care ACO, care transitions, Sickle Cell Clinic, ESRD

IRHAP
International Religious Health Assets Programme

ARHAP African Religious Health Assets Programme
• 7 hospital system, $1.4 billion, 10,000+ employees
• State’s largest provider of indigent care
• UMC Arkansas, Memphis, and Mississippi Conferences
• Viewed as caring about community
3 Safety Net Partners

MIFA
Metropolitan Inter-Faith Association

Christ Community Health Services

CHURCH HEALTH CENTER

Be treated well. Methodist Healthcare Faith & Health
Memphis: **City of Assets**

B. B. King, The Blues, Beale Street
Memphis: City of Assets

Elvis the King, Graceland
Memphis: City of Assets

Jesus the King

2,000+ Congregations
Mostly Christian
Memphis: **City of Disparity**

Martin Luther King, Jr.  
1968 Assassination  
City filled with racism, elitism, disparity
Memphis: City of Disparity

Egregious disparity: Income, Heart Disease, Diabetes, Cancer, Suicide/Homicide, Limb Amputation
The Big Question

In a place with such inequity, distrust and disparities in health,

could MLH possibly help Memphis become a community of justice, compassion, trust and wholeness?
Like Elvis,

Methodist Healthcare

Has Left the Building!
2004: Baptist Clergy & Methodist South CEO Join Forces
2005: CEO Gary Shorb brings Rev. Dr. Gunderson
Who sees Memphis with Fresh Eyes for Assets
2006: MLH partners with congregations & community organizations to improve access and health status for all.

Dir. Faith & Community Partnerships, Rev. Bobby Baker
452 trained liaisons
12,916 members registered

Training Participation:
687 in Care & Visitation
246 in Care for Dying
240 in Mental Health First Aid
121 in Aftercare
49 in Transplant
35 in Pastoral Care
62 in Disease Live With
173 in Navigate Health System
Person-Centered Journey of Health
CHN
Director
1
CHN

Director

Navigators

Congregations

Liaisons

CHN Members

1

9

452

548

12,916

Paid Staff

Volunteers
Memphis Model: **Theory**

**Distinctions in Community Health Engagement Process**

- Eye for Assets
- Build webs of trust (relational vs. hospital-centric) that supports the person’s journey of health
- Grounded on intelligence of the Black Church
Memphis Model: **Theory**

- GIS, data, technical and quality hospital initiatives (e.g., prevent re-admissions) support and serve the network’s **relational and connectional** quality
- **Community scale** change rather than specific cases of disease intervention
- Community transformation through **partnership** and open sharing of results — **invitation and transparency**
Memphis Model: **Theory**

- Honors blended intelligence of stakeholders and all partners
- Integrates learning from qualitative and quantitative data streams to improve the person’s journey of health *and* engage healthcare leaders
Data Stream Synergy

• **Weaves data** from hospital (clinical, marketing, quality and financial metrics), as well as public health, social science, faith community (theology and religious studies) perspectives.
CHN vs. Non-CHN Patient Data

LOS-No Differences
Readmits and Mortality Rates Differ
Aggregate savings of charges for the CHN patients that accrue to both payers and hospital.
Savings to Patients on Readmits*: CHN vs. Non-CHN

* Based on Medicare Inpatient Deductible, net savings of $110,000
<table>
<thead>
<tr>
<th>Hospital Metrics</th>
<th>Pre-CHN</th>
<th>Post-CHN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total admissions</td>
<td>159</td>
<td>101</td>
</tr>
<tr>
<td>Admits/patient</td>
<td>3.2</td>
<td>2.0</td>
</tr>
<tr>
<td>Total readmits</td>
<td>37</td>
<td>17</td>
</tr>
<tr>
<td>Readmits/patient</td>
<td>0.74</td>
<td>0.34</td>
</tr>
<tr>
<td>Total patient days</td>
<td>1,268</td>
<td>772</td>
</tr>
<tr>
<td>Days/admit</td>
<td>8.0</td>
<td>7.6</td>
</tr>
<tr>
<td>Days/patient</td>
<td>25.4</td>
<td>15.4</td>
</tr>
<tr>
<td>Total charges</td>
<td>$6,396,111</td>
<td>$3,740,973</td>
</tr>
<tr>
<td>Average charge/admit</td>
<td>$40,277</td>
<td>$37,409</td>
</tr>
<tr>
<td>Average charge/patient</td>
<td>$127,922</td>
<td>$74,819</td>
</tr>
<tr>
<td>ER admissions</td>
<td>84.9%</td>
<td>80.2%</td>
</tr>
</tbody>
</table>
Longitudinal Database: Predictive Modeling

It includes 409,061 records, from 240,057 individual patients.

As the Congregational Health Network was tracked in EMR starting in Nov. 2007, we only focused on CHN electronic medical records after Jan. 1st, 2008 in this analysis.

Indiana University Team: Priscilla Barnes, Ph.D. (Dept.of Applied Health), Stephanie Dickinson, MS (Dir. Statistical Consulting Center), Hao Guo, MS (Research Analyst); MLH Staff from Faith & Health and Clinical Decision Support
**CHN Population in 2011**

**Total Enrolled** through EMR=12,916

**Number coming through our system**=2306

**Gender & Ethnicity**
- 67% Female; 33% Male
- 87% African-American; 11% European-American; .7% Mixed; .3% Hispanic, <.1% Asian or American Indian

**Top Diagnosis**: CHF

**Mean age**=58 years; **Age over 65**: 36%
Time-to-Readmission was defined as the time from the discharge date of patient’s one hospital visit to the admission date of the patient’s next hospital visit.

Patients without documented second hospital visits were censored at the end date of the observation (Dec. 31, 2011).
Logistic Regression
* Dependent variable:
  Treatment group (1=CHN, 0=Non-CHN)
  *Conditioning variables:
    sex, age, race, insurance type, facility, zip code, admit date, length of stay, and charges in hospital
*Estimated propensity score: Predicted probability

Matching
The propensity-score-matched sets (1:2 matching) were formed using calipers of width 0.01

Propensity Score Matching
Patients are matched on their first visit after Jan 1st, 2008.
Methods

- Propensity score matching was applied to remove selection bias.
- The Kaplan-Meier method was used to estimate distributions for time-to-readmission.

- Cox’s proportional hazard regression model stratified on the matched pairs and included possible covariates was applied to determine whether patients in the Congregational Health Network had longer time-to-readmission.
Figure 1. Kaplan-Meier Survival Curves depicting time to readmission for patients in the Congregational Health Network (CHN) and out of the network (Non-CHN)
Cox’s proportional hazards regression model
stratified on the matched pairs

The estimated hazard for patients in the Congregational Health Network is significantly lower than the estimated hazard for the patients out of the network (hazard ratio for readmission, 0.82; 95% confidence interval, 0.73 to 0.93; p<0.01).

CHN days=426 vs. non-CHN=306
Figure 2. Kaplan-Meier Survival Curves depicting time to readmission for chronic heart failure patients in the Congregational Health Network (CHN) and out of the network (Non-CHN).
Cox’s proportional hazards regression model stratified on the matched pairs (Chronic Heart Failure Patients)

The estimated hazard for chronic heart failure patients in the Congregational Health Network is NS different from times the estimated hazard for the patients out of the network (hazard ratio for readmission, 1.27; 95% confidence interval, 0.75 to 2.14; p=0.38).

CHN patients’ days=347 vs. Non-CHN=206
Figure 2. Kaplan-Meier Survival Curves depicting time to readmission for chronic heart failure patients in the Congregational Health Network (CHN) and out of the network (Non-CHN).
Summary

Regardless of diagnosis or conditions, all patients in the Congregational Health Network had significantly longer time-to-readmission than matched patients out of the network (CHN=426 vs. Non-CHN =306 days) from 2008 through 2011.

CHF patients' time-to-readmissions trended similarly but did not reach significance, with CHN patients demonstrating 347 days vs. Non-CHN at 206 days.

Mortality rates for CHN patients compared to Non-CHN was significantly lower (e.g., CHN patients less likely to die during follow-up visits).
### HCAHPS Comparisons of CHN and non-CHN

July 2010-June 2011 Comparison of CHN Members’ Hospital Consumer Assessment of Health Providers and Services (HCAHPS) scores with non-CHN

<table>
<thead>
<tr>
<th>Overall Rating of Hospital Score (System)</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-CHN</td>
<td>3766</td>
</tr>
<tr>
<td>CHN</td>
<td>138</td>
</tr>
</tbody>
</table>

Score difference is significant at p value =0.01, 2 proportions test
40% of all Charity care is in the blue. So are more than half of CHN congregations.
MLH 2010 CHARITY CARE WRITE OFF
Select Zip codes

IP AND OP VISITS & VARIABLE COST BY BLOCK GROUP FOR ZIPS:

38109
38126
38106
38132
38131
## OVERVIEW OF TOP 10 ED PATIENTS (BY VOLUME)
### IN ZIP 38109 (2010)

<table>
<thead>
<tr>
<th>Patients</th>
<th>2010 Visits (MHS and MUH combined)</th>
<th>Christ Community in Area</th>
<th>Health Loop in Area</th>
<th>CHN Church in Area</th>
<th>Age</th>
<th>2009 Visits*</th>
<th>2010 Visits*</th>
<th>2011 Annualized</th>
<th>Hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient #1</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
<td>60</td>
<td>60</td>
<td>52</td>
<td>MHS</td>
<td></td>
</tr>
<tr>
<td>Patient #2</td>
<td>25</td>
<td>y</td>
<td>y</td>
<td>Bloomfield Baptist</td>
<td>50</td>
<td>21</td>
<td>20</td>
<td>5</td>
<td>MHS</td>
</tr>
<tr>
<td>Patient #3</td>
<td>23</td>
<td>y</td>
<td>y</td>
<td>Mt. Pisgah M.B.C</td>
<td>46</td>
<td>17</td>
<td>23</td>
<td>15</td>
<td>MHS</td>
</tr>
<tr>
<td>Patient #4</td>
<td>22</td>
<td>y</td>
<td>y</td>
<td>Maranatha Faith</td>
<td>59</td>
<td>18</td>
<td>18</td>
<td>8</td>
<td>MHS</td>
</tr>
<tr>
<td>Patient #5</td>
<td>21</td>
<td>y</td>
<td>y</td>
<td>Mt. Vernon Baptist</td>
<td>48</td>
<td>17</td>
<td>19</td>
<td>7</td>
<td>MUH</td>
</tr>
<tr>
<td>Patient #6</td>
<td>16</td>
<td>y</td>
<td>y</td>
<td>Mt. Vernon Baptist</td>
<td>50</td>
<td>10</td>
<td>12</td>
<td>3</td>
<td>MHS</td>
</tr>
<tr>
<td>Patient #7</td>
<td>12</td>
<td>y</td>
<td>y</td>
<td>Bloomfield Baptist</td>
<td>52</td>
<td>1</td>
<td>12</td>
<td>11</td>
<td>MUH</td>
</tr>
<tr>
<td>Patient #8</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td>52</td>
<td>11</td>
<td>11</td>
<td>20</td>
<td>MUH</td>
</tr>
<tr>
<td>Patient #9</td>
<td>10</td>
<td>y</td>
<td>y</td>
<td>Rising Sun</td>
<td>53</td>
<td>0</td>
<td>6</td>
<td>1</td>
<td>MHS</td>
</tr>
<tr>
<td>Patient #10</td>
<td>9</td>
<td>y</td>
<td>y</td>
<td>Mt. Vernon Baptist</td>
<td>41</td>
<td>1</td>
<td>12</td>
<td>4</td>
<td>MHS</td>
</tr>
</tbody>
</table>

### Patients’ Main reason for ED visits, Co-morbidities, Mental/Psychiatric, Story, Essential Service needed

<table>
<thead>
<tr>
<th>Patients</th>
<th>Main reason for ED visits</th>
<th>Co-morbidities</th>
<th>Mental/Psychiatric</th>
<th>Story</th>
<th>Essential Service needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient #1</td>
<td>Pain</td>
<td>Yes</td>
<td>Depression</td>
<td>Homeless</td>
<td>The Healing Center</td>
</tr>
<tr>
<td>Patient #2</td>
<td>Pain</td>
<td>Yes</td>
<td>Depression</td>
<td></td>
<td>The Healing Center</td>
</tr>
<tr>
<td>Patient #3</td>
<td>Alcohol intoxication</td>
<td>No</td>
<td>Mental Illness</td>
<td></td>
<td>The Healing Center</td>
</tr>
<tr>
<td>Patient #4</td>
<td>COPD related</td>
<td>Yes</td>
<td>No</td>
<td>Self pay until 2011, Medicare since CCHS on Third</td>
<td></td>
</tr>
<tr>
<td>Patient #5</td>
<td>Suicidal ideations</td>
<td>No</td>
<td>Depression/Bipolar</td>
<td>Homeless/Polysubstance abuse</td>
<td>The Healing Center</td>
</tr>
<tr>
<td>Patient #6</td>
<td>Back pain</td>
<td>Yes</td>
<td>Depression/Bipolar</td>
<td></td>
<td>The Healing Center</td>
</tr>
<tr>
<td>Patient #7</td>
<td>CHF/Chest pain</td>
<td>Yes</td>
<td>No</td>
<td></td>
<td>CCHS on Third</td>
</tr>
<tr>
<td>Patient #8</td>
<td>Chronic Pain</td>
<td>Yes</td>
<td>Mental Illness</td>
<td>Painkiller request</td>
<td>The Healing Center; CCHS</td>
</tr>
<tr>
<td>Patient #9</td>
<td>Sore throat</td>
<td>Yes</td>
<td>No</td>
<td></td>
<td>CCHS on Third</td>
</tr>
<tr>
<td>Patient #10</td>
<td>Dizziness</td>
<td>Yes</td>
<td>No</td>
<td>Stopped taking medication. 2009 BCBS, 2010 self pay, 2011 TennCare</td>
<td>CCHS on Third</td>
</tr>
</tbody>
</table>

*Three-year visit trend shows only the main location for the visits, if visits
The question is no longer: What could one hospital or congregation possibly do?

But what **couldn’t** 452 congregations & 548 liaisons & 13,000 members — with other players — do?
Could Any System Adapt the Memphis Model?

1) To prevent re-admissions better manage Charity Care costs/write-offs, improve HCAHPS scores, navigate to more appropriate care level
2) Move beyond basic requirements for a community health needs assessment that also
3) Provides high levels of care to vulnerable populations while remaining solvent in the wake of healthcare reform

BUT, most importantly....
Builds a community of justice, compassion, trust and wholeness.
The Memphis Model

Questions & Discussion
Teresa.Cutts@mlh.org
901.516.0593