The Memphis Model: CHN as Community Investment

Health Services Learning Group
Loma Linda Regional Meeting
June 28, 2012
Teresa Cutts, Ph.D.
Director of Research for Innovation
cutts02@gmail.com, 901.516.0593
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

• WHAT WE HAVE:
  • IRHAPian logic and theory; ASSETS: church, faith, spiritual capacities or RHAs; BLUES; poor and marginalized and INTELLIGENT people; Humble leaders that care and allow for emergent leadership
2005: CEO Gary Shorb brings Rev. Dr. Gunderson Who sees Memphis with Fresh Eyes for Assets
Congregational Health Network

What we Know: How to build, nurture, protect and sustain webs of trust

MLH partners with congregations & community organizations to improve access and health status for all.

Dir. Faith & Community Partnerships, Rev. Bobby Baker
Person-Centered Journey of Health
Memphis Model: **What we DO...**

Honor blended intelligence, by partnering and co-creating with community/congregations to transform our world and share that with other leaders. **DISTINCTIONS:**

- 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: **Distinctions in What we Do**

- 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**
Gross Working Hypothesis

**CHN as INTERVENTION: (not research per se)**

- All patients in MLH system receive standard clinical practice (inpatient care)
- CHN members who are patients receive standard clinical practice (inpatient care) PLUS community caregiving delivered by unpaid, volunteer staff (CHN liaisons)
- Preliminary data was a cross-sectional snapshot at 25 months into the work of CHN
- Concurrent build out and development of CHN, while tracking, determining evaluation/methodology, for ascertaining impact
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.
SUBSET N=50   Pre-Post Within Subject Cohort Comparison

<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><strong>Admits/patient</strong></td>
<td><strong>3.2</strong></td>
<td><strong>2.0</strong></td>
</tr>
<tr>
<td>Total readmits</td>
<td>37</td>
<td>17</td>
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<tr>
<td><strong>Readmits/patient</strong></td>
<td><strong>0.74</strong></td>
<td><strong>0.34</strong></td>
</tr>
<tr>
<td>Total patient days</td>
<td>1,268</td>
<td>772</td>
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<tr>
<td>Days/admit</td>
<td>8.0</td>
<td>7.6</td>
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<tr>
<td><strong>Days/patient</strong></td>
<td><strong>25.4</strong></td>
<td><strong>15.4</strong></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><strong>Average charge/patient</strong></td>
<td><strong>$127,922</strong></td>
<td><strong>$74,819</strong></td>
</tr>
<tr>
<td>ER admissions</td>
<td>84.9%</td>
<td>80.2%</td>
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Archived Data for CHN and the General Population

- Pulled all MLH patient discharges from October 2005 to December 31, 2011 for archived database

- Compare annually the CHN to total population

- Develop Predictive Modeling methodology for time to readmission
Congregational Health Network (CHN) Growth
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%
Of the CHN members admitted between 2008 and 2011, 87% were African-American and 13% were Caucasian.
Race/Ethnicity, CHN vs General Population (2011)

- General Population
- CHN
The majority of CHN members admitted from 2008-2011 were female (66%).
Gender, CHN vs General Population (2011)

- General Population
- CHN
CHN members admitted to the hospital were significantly older than the general population.
Medicare Enrollment in CHN and General Population (2008-2011)

- General Population
  - Medicare
  - Not Medicare

- CHN
  - Medicare
  - Not Medicare
Medicare Enrollment in CHN and General Population (2011)

- General Population
- CHN

[Pie charts showing Medicare and Not Medicare enrollment]

Be treated well. | Methodist Healthcare Faith & Health
Significantly lower mortality rates, on average, for CHN vs the general population. [Odds ratio=.78,p=0.04]
PAYOR MIX 2011

In 2011, the majority (70.3%) of the payor mix for the general population consisted of the following:

• Medicare A&B (31%)
• Cigna/Flexcare (11.1%)
• Tenncare/Bluecare (9.4%)
• United Healthcare (6.4%)
• BCBS/Other States (4.2%)
• Total Uninsured (6.8 %)

In 2011, over 70% of the CHN payor mix consisted of the following:

Medicare A&B (39.6%)
Cigna/Flexcare (13.1%)
Tenncare/Bluecare (7%)
United Healthcare (5.3%)
Total Uninsured (8.3 %)
% Uninsured, 2008-2011

- CHN
- General Population

2008: CHN 3%, General Population 6%
2009: CHN 7%, General Population 6%
2010: CHN 7%, General Population 7%
2011: CHN 8%, General Population 6%
CHN members are more likely than the general population to be discharged from the hospital to home health services \([F(1,9)=65.113; \ p<.001]\)
The same hold true for recommendations to post-discharge rehabilitation [F(1,9)=11.423; p=.008].
CHN members are more likely than the general population to be discharged to hospice services \([F(1,9)=121.721; p<.001]\).
Longitudinal Database: Predictive Modeling


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.
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.
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).
Propensity Score Matching

Patients were matched on their first visit after Jan 1\textsuperscript{st}, 2008.

**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
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 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 (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 were significantly lower (e.g., CHN patients less likely to die during timeframe). Odds ratio= 0.78, p=0.04). 97 CHN patients died (1.42%) and 249 non-CHN patients died (3.64%) during the 2008-2011 time period for analysis.
NEXT STEPS for the Memphis Model...

• More intentional and strategic Population Health Management (PHM)
• Target education toward enrolling those eligible for TennCare
• Focus in on areas of education and training that can enhance the already established uptake of more appropriate level of care post-discharge
• Build out the Ambulatory Care aspect of the CHN members’ journey of health (e.g., MACH1), starting with hospital discharge leg of journey
• Partner with third party payors for focused PHM
• Enhance and reward our volunteer workforce by stipending their work (e.g., funds for mileage, pay for malpractice, training, supplies, etc.)
• Build more foundational skills in our liaison workforce with CHA training of all liaisons (already 225 trained)
NEXT STEPS for the Memphis Model...

• Participatory community efforts to maximize blended intelligence: share findings, resources, celebration and credit for positive events, mutual problem solving for negative events in a model that promotes transparency and shared co-creation and ownership and nurtures trust.

• Continue digging into the archived data; explore “dose response” model comparing outcomes of members from highly engaged congregations to minimally engaged. Focus on participatory hotspotting in target zips.

• Qualitative research conducted to define “core competencies” of navigators, liaisons, as well as clergy. Document members’ journey of health stories.

• LASTLY, sharpen our focus and learn from all of your intelligence, as we develop better ways to measure impact and ROI that is comprehensive and integrated....
The Memphis Model: Building a community of justice, compassion, trust and wholeness…while demonstrating potential ROI...
The Memphis Model

Questions & Discussion
Teresa.Cutts@mlh.org
901.516.0593