Evaluation of an Integrated Mental Health/Physical Health Program

The Nebraska Association of Behavioral Health Organizations
“Behavioral Health: Integration, Collaboration, and Advocacy”
September 9-10, 2019 | Cornhusker Marriott | Lincoln, NE

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Public Policy Center
Background of the Evaluation

- 2010 – 2013: Vision of Community Health Endowment (CHE) for Integrated Care Clinic to serve all, regardless of ability to pay

- 2014: CHE invests funds to launch LFS/Health 360 partnership

- May 2015: LFS/Health 360 Clinic open to the public

- June 2015: Robert Wood Johnson Foundation (RWJF) call for proposals

- 2016: RWJ Awards funding to Lutheran Family Services for evaluation of integrated care in low-resource area
Overview

• **Relationship** between Physical Health and Behavioral Health

• **Integration** of Primary and Behavioral Health Care

• **Evaluation Design and Results**

• **Implications** for Program Enhancement
Inter-Relationship

Behavioral Health

Physical Health
Physical health disparities associated with BH disorders

• People with serious mental health disorders die on average 13-30 years earlier than the general population (Hert, et al., 2011)

• Suicide is a small part of this – 17% of mortality due to unnatural causes

• Health conditions are the primary factor for earlier mortality

• Cost of services – persons co-occurring MI and health conditions use disproportionate amount of resources
Physical health conditions associated with BH disorders

- People with serious mental health disorders have from 1.4 to 2.0 greater rates of cardio-metabolic diseases:
  - Higher rates of obesity (youth w/MI ages 11-19 are 3 times as likely to be obese compared to youth without mental illness)
  - Higher rates of diabetes
  - Higher rates of cardiovascular disease

Primary Source: Lancet Psychiatry Commission Report, 2019
Physical health conditions associated with BH disorders

• Greater rates of cardio-metabolic diseases have also been found for substance use, attention deficit, anxiety, and personality disorders

• Lower rates of cardio-metabolic diseases for anorexia nervosa, but 12 times higher rate of osteoporosis

• Persons with bulimia have 3.45 times higher rate of diabetes than people without eating disorders
Physical health conditions associated with BH disorders

• Lack of meta-analyses establishing link between mental illness and chronic obstructive pulmonary disease (CODP)

• But individual database studies showing higher CODP rates for individuals with serious mental illness

• High comorbidity for cardio-metabolic diseases and CODP
Physical health conditions associated with BH disorders

• No clear relationship between mental illness and cancer risk
  • Possible higher risk of lung cancer
  • Few differences for other types of cancer
  • May be related to earlier mortality
Physical health conditions associated with BH disorders

• Link between serious mental illness and Infectious diseases
  • 15.63% higher rate for hepatitis B (up to 60 times higher in US)
  • 7.21% higher rate for hepatitis C (up to 20 times higher in US)
  • 7.59% higher rate for HIV (up to 4 times higher in US)
  • 1.1-7.6% higher rate for syphilis
Contributing Factors to Physical/Behavioral Health Link

• Behaviors associated with the mental illness (e.g., substance use disorders, eating disorders)

• Lifestyle factors associated with behavioral disorders

• Provider/System-level factors

• Societal factors
Contributing Factors to Physical/Behavioral Health Link

• **Lifestyle risk factors** associated with serious mental health disorders
  • Alcohol use disorders
  • Tobacco use
  • Physical inactivity
  • Sedentary behavior
  • Poor diet
  • Poor sleep
  • High-risk sexual behaviors
  • Intravenous drug use
Health Indicators by Outcomes

Frequency Eating Fruit by Outcomes

<table>
<thead>
<tr>
<th>Health Indicator</th>
<th>Yes</th>
<th>No</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol Use</td>
<td>3.04</td>
<td>3.23</td>
<td>P=.018</td>
</tr>
<tr>
<td>Marijuana Use</td>
<td>2.97</td>
<td>3.18</td>
<td>P=.024</td>
</tr>
<tr>
<td>Tobacco Use</td>
<td>2.85</td>
<td>3.19</td>
<td>P=.001</td>
</tr>
<tr>
<td>Feel Hopeless</td>
<td>2.99</td>
<td>3.17</td>
<td></td>
</tr>
</tbody>
</table>

Source: 2017 Nebraska YRBS
Health Indicators by Outcomes

Frequency Soda/Pop Use by Outcome

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Yes</th>
<th>No</th>
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</thead>
<tbody>
<tr>
<td>Alcohol Use</td>
<td>2.71</td>
<td>2.32</td>
</tr>
<tr>
<td>Marijuana Use</td>
<td>2.8</td>
<td>2.42</td>
</tr>
<tr>
<td>Tobacco Use</td>
<td>3.13</td>
<td>2.38</td>
</tr>
<tr>
<td>Feel Hopeless</td>
<td>2.7</td>
<td>2.47</td>
</tr>
</tbody>
</table>

P-values: Alcohol Use = .000, Marijuana Use = .000, Tobacco Use = .000, Feel Hopeless = .010
Health Indicators by Outcomes

Frequency Milk Drinking by Outcome

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
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</thead>
<tbody>
<tr>
<td>Alcohol Use</td>
<td>3.22</td>
<td>3.55</td>
</tr>
<tr>
<td>Marijuana Use</td>
<td>3.03</td>
<td>3.48</td>
</tr>
<tr>
<td>Tobacco Use</td>
<td>3.2</td>
<td>3.41</td>
</tr>
<tr>
<td>Feel Hopeless</td>
<td>3.1</td>
<td>3.45</td>
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</table>
Health Indicators by Outcomes

Exercise Frequency by Outcome

<table>
<thead>
<tr>
<th></th>
<th>Alcohol Use</th>
<th>Marijuana Use</th>
<th>Tobacco Use</th>
<th>Feel Hopeless</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>0.54</td>
<td>0.42</td>
<td>0.45</td>
<td>0.45</td>
</tr>
<tr>
<td>No</td>
<td>0.6</td>
<td>0.62</td>
<td>0.59</td>
<td>0.61</td>
</tr>
</tbody>
</table>

P-values: P=.010, P=.000, P=.000, P=.000
Health Indicators by Outcomes

Outcomes by Getting 8+ Hours Sleep

<table>
<thead>
<tr>
<th>Alcohol Use</th>
<th>Marijuana Use</th>
<th>Tobacco Use</th>
<th>Feel Hopeless</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>2.55</td>
<td>1.86</td>
<td>1.44</td>
</tr>
<tr>
<td>Yes</td>
<td>2.03</td>
<td>1.48</td>
<td>1.26</td>
</tr>
</tbody>
</table>
Contributing Factors to Physical/Behavioral Health Link

• **Provider/System-level factors**
  • Access to healthcare/insurance
  • Access to dental care
  • Access to health screening and preventative care
  • Quality healthcare
  • Lack of effective practices for comorbid conditions
Contributing Factors to Physical/Behavioral Health Link

- **Psychotropic Adverse Drug Reactions (ADR)**
  - Cardiometabolic ADRs
  - Neuromotor ADRs
  - Impairment of cognition, memory, concentration
  - Somnolence, sedation, hypersomnia
  - Thyroid disease
  - Renal disease

Primary Source: Lancet Psychiatry Commission Report, 2019
Contributing Factors to Physical/Behavioral Health Link

- **Societal Factors**
  - Low SES/Poverty
  - Unemployment
  - Education
  - Housing
  - Food deserts
  - Crime rates
  - Domestic abuse
  - Adverse Childhood Experiences
Each Adverse Childhood Experience increased odds of marijuana use by 75% for Nebraska students grades 8, 10, & 12.

Family factors reduced marijuana use and were a significant moderator.

Community factors reduced marijuana use and were a significant moderator.

School factors reduced marijuana use but were not a significant moderator.

McCoy et al., manuscript in preparation.
Frameworks

• SAMSHA Center for Integrated Health Solutions (2013)

Standard Framework for Levels of Integrated Healthcare

- **Three main categories**
  - Coordinated Care, concentrates on communication
  - Co-located Care, focuses on physical proximity
  - Integrated Care, emphasizes practice change
### The Facility

<table>
<thead>
<tr>
<th>Health 360</th>
<th>Lutheran Family Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Comprehensive Family Medicine</td>
<td>• Individual, Group &amp; Family Therapy</td>
</tr>
<tr>
<td>• Behavioral Health Consultation</td>
<td>• Addiction &amp; Substance Use Therapy</td>
</tr>
<tr>
<td>• Lab Testing</td>
<td>• Medication Management</td>
</tr>
<tr>
<td>• Dental</td>
<td>• Community Support</td>
</tr>
<tr>
<td>• Pharmacy</td>
<td>• Children Services</td>
</tr>
<tr>
<td>• Federally Qualified Health Center (FQHC)</td>
<td>• Refugee Services</td>
</tr>
<tr>
<td></td>
<td>• Legal Aid Services</td>
</tr>
</tbody>
</table>

### Shared

- Lobby, front desk
- Entry/exit to clinical areas
- Workrooms, break areas
Populations Served

- 2018: 3,663 individuals rec’d behavioral health services from LFS
  2,067 individuals rec’d primary care services from H360
  5,730

- Nearly 90% of clients report living at or below poverty

- Nearly 100% of behavioral health clients are on Medicaid or qualify for state behavioral health services

- All clients are diagnosed with mental health disorders

- Between 30% and 50% of clients are diagnosed with Severe Mental Illness (SMI) or Severe and Persistent Mental Illness (SPMI)

- 77% White, 14% African American, 4% Another race, 5% Hispanic/Latino
Evaluation Overview

• Funding: Robert Wood Johnson Foundation

• Project Timeline: July 2016 – December 2018

• Participants: 340 LFS/H360 clients recruited, 241 retained

• Study Period: One year (Intake, 6 mos, 12 mos)

• Data Collected: Physical health biometrics, mental well-being, service utilization, quality of life and social network
### Study Design

- 3 sessions over the course of one year (Intake, 6 mos, 12 mos)

<table>
<thead>
<tr>
<th>SESSION</th>
<th>DATA COLLECTION INSTRUMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Sessions</td>
<td>- Surveys</td>
</tr>
<tr>
<td></td>
<td>- Service Use (number and types of appointments attended)</td>
</tr>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt; and 3&lt;sup&gt;rd&lt;/sup&gt; Sessions</td>
<td>- Medical Measurements (height, weight, blood pressure, total cholesterol, A1C%)</td>
</tr>
</tbody>
</table>

$10, $20 & $35 gift card to client choice of Wal-mart or Hy-Vee
## Instruments

### Client Survey

<table>
<thead>
<tr>
<th>Employment</th>
<th>Housing</th>
<th>Income</th>
<th>Stress</th>
<th>Substance Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression/Anxiety</td>
<td>Diet/Exercise</td>
<td>Social Connectedness</td>
<td>Problem Functioning</td>
<td>Perceptions of Integration</td>
</tr>
</tbody>
</table>

### SF-12 Short Form Health Survey

<table>
<thead>
<tr>
<th>Overall Perception of Health</th>
<th>Physical Limitations/Pain</th>
<th>Emotional Problems</th>
</tr>
</thead>
</table>

### Social Network Analysis

- Reducing Alcohol Consumption
- Reducing Tobacco Use
- Reducing Drug/Substance Use
- Exercising at least 3 times per week
- Maintaining a Healthy Diet

- Listed up to 5 People/Organizations
- Described how they either helped meet or avoid the selected goal
## Other Data

### Demographics

<table>
<thead>
<tr>
<th>Gender</th>
<th>Age</th>
<th>Race/Ethnicity</th>
<th>Mental Health Diagnosis</th>
</tr>
</thead>
</table>

### Services Used at LFS/H360 and Other Providers

<table>
<thead>
<tr>
<th>Individual Therapy</th>
<th>Group/Substance Use Therapy</th>
<th>Family/Couples Therapy</th>
<th>Med Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Support</td>
<td>Primary Care</td>
<td>ER</td>
<td>Dentist</td>
</tr>
</tbody>
</table>

### Provider Surveys

Perceived levels of providing integrated care to client
Participant Groups

• **Treatment Group**: Clients at Lutheran Family *and* H360

• **Comparison Group**: Clients at Lutheran Family Only

# of Clients in each group

<table>
<thead>
<tr>
<th>Session</th>
<th>Treatment Group</th>
<th>Comparison Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Intake</td>
<td>152</td>
<td>188</td>
</tr>
<tr>
<td>2 6 mos</td>
<td>124</td>
<td>133</td>
</tr>
<tr>
<td>3 12 mos</td>
<td>117</td>
<td>124</td>
</tr>
</tbody>
</table>
Evaluation Results

• Results were mixed
  • Greater access to care for treatment group
  • Higher levels of satisfaction for integrated program
  • Higher ratings of perceived BH/Primary care integration
  • Satisfaction of providers & administrators
  • No statistically significant differences in health outcomes
Consistent with Integrated Care Literature

• 2018 Systematic Study Review (Baxter, et al., 2018)
  • 167 studies on effects of integrated care indicated evidence of:
    • Perceptions of high-quality care
    • Increased patient satisfaction
    • Improved access to care

• Mixed Results on Health Outcomes (Firth et al., 2019)
  • Intensive specialized health programs for target populations show some positive health outcomes for persons w/MI
  • Broader studies on integrated care across populations w/MI have often found no significant health benefits
### Increased Access to Healthcare

Do you have a Primary Medical Care Provider?

<table>
<thead>
<tr>
<th>Session</th>
<th>Treatment Group</th>
<th>Comparison Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>66%</td>
<td>49%</td>
</tr>
<tr>
<td>2</td>
<td>70%</td>
<td>59%</td>
</tr>
<tr>
<td>3</td>
<td>72%</td>
<td>56%</td>
</tr>
</tbody>
</table>
### Increased Satisfaction & Perceived Integration

<table>
<thead>
<tr>
<th></th>
<th>LFS Provider Satisfaction</th>
<th>H360 Provider Satisfaction</th>
<th>Another Medical Provider Satisfaction</th>
<th>Other Mental Health Provider Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>91%</td>
<td>89%</td>
<td>73%</td>
<td>68%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>LFS Integration Perceived</th>
<th>H360 Integration Perceived</th>
<th>Another Medical Integration Perceived</th>
<th>Other Mental Health Integration Perceived</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>75%</td>
<td>62%</td>
<td>54%</td>
<td>53%</td>
</tr>
</tbody>
</table>
Focus Group Results

• **Positive Themes**
  
  • One-stop shop for consumers (BH, primary care, pharmacy, other)
  • Helps with transportation
  • Reduction of stigma
  • Providers more attuned to holistic health
  • Increases provider referrals both ways
  • Increase in consumers getting services as result of referral
  • Consumers more aware of whole health
  • Community support of integrated care/partnerships
  • Organizational commitment
Focus Group Results

• **Challenges/Learnings**

  • Challenging population
    • No show rate/patient volume
    • High uninsured rate
    • Complex behavioral health, physical health, personal/family needs
  • Bringing two cultures together – evolving model and practices
  • Lack of shared electronic medical records
  • Finding providers, that align with integrated philosophy & team approach
  • Extra time for integrated care
  • Payment rate structures don’t facilitate integrated care
  • Lack of BH resources in Nebraska to meet need
Significant Improvement in A1-C but no Significant Difference Between Groups

The recommended HbA$_{1c}$ level is below 6.5%, with a normal range between 4% - 5.6%
No significant change in cholesterol between groups or over time.
No significant differences in BMI between groups, over time, and rate of change between groups.
Number and Percentage of U.S. Population with Diagnosed Diabetes, 1958-2015

Percentage with Diabetes

Number with Diabetes

Year

Figure 5. Trends in obesity prevalence among adults aged 20 and over (age adjusted) and youth aged 2–19 years: United States, 1999–2000 through 2015–2016

- Adults
  - 1999–2000: 30.5%
  - 2001–2002: 30.5%
  - 2003–2004: 32.2%
  - 2005–2006: 34.3%
  - 2007–2008: 33.7%
  - 2009–2010: 35.7%
  - 2011–2012: 34.9%
  - 2013–2014: 37.7%
  - 2015–2016: 39.6%

- Youth
  - 1999–2000: 13.9%
  - 2001–2002: 15.4%
  - 2003–2004: 17.1%
  - 2005–2006: 15.4%
  - 2007–2008: 16.8%
  - 2009–2010: 16.9%
  - 2011–2012: 16.9%
  - 2013–2014: 17.2%
  - 2015–2016: 18.5%
Potential Enhancements

• Practice Enhancements

• Structural/System Enhancements
Practice Enhancements

• **Multidisciplinary Lifestyle Interventions for Persons w/MI**

  • Multidisciplinary dietary support – more effective if specialists involved (e.g., dieticians) and at early stages of treatment (Teasdale, et al., 2017)

  • Multidisciplinary exercise support – supervised aerobic and strength conditioning can improve physical and mental health (Young, et al., 2018)

  • Pharmacological (Roberts et al., 2016) and behavioral interventions (Gilbody, et al., 2019) for smoking cessation for persons w/MI
Practice Enhancements

• Multidisciplinary Lifestyle Interventions for Persons w/MI – Adaption of Diabetes Prevention Program (DPP)

• Measurable & specific goals

• Multidisciplinary approach including case managers/specialists in nutrition, exercise, behavior change

• Frequent contact & ongoing intervention

• Individualization through toolbox of strategies

• Prevention approach
Practice Enhancements

• Routine screening for mental health conditions
• Routine screening for physical health conditions
• Digital technologies (few studies for people w/MI)
• Addressing psychotropic adverse drug reactions
Structural/System Enhancements

• **Training programs** – common foundation in mental health and physical health for all health care professional

• **Organizational factors** – shared electronic health records, standards/protocols for integrated care, cultural shift to multidisciplinary teams
Structural/System Enhancements

• Financing mechanisms/policies that support integrated care
• Research on effective integrated models
• Access & coverage – federal & state policy
• Models for rural areas (e.g., telehealth)
Rural Areas Have Fewer Health Care Providers

Providers by the numbers (per 10,000 people):

**Total Physicians**
- 13 in rural vs. 33 in urban

**Primary Care Providers**
- 5 in rural vs. 8 in urban

**Obstetricians**
- Over 1/2 of rural counties have no hospital-based obstetrics services
- 6% of the nation’s OB-GYNs work in rural areas

Many rural communities have lost their hospitals:
- 113 rural hospital closures

NIHCM Foundation
21.1% 10 year increase in US rate
Nebraskan's with Primary Medical Provider

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-24</td>
<td>60.1%</td>
</tr>
<tr>
<td>25-34</td>
<td>60.4%</td>
</tr>
<tr>
<td>35-44</td>
<td>72.5%</td>
</tr>
<tr>
<td>45-54</td>
<td>78.6%</td>
</tr>
<tr>
<td>55-64</td>
<td>84.7%</td>
</tr>
<tr>
<td>65+</td>
<td>87.6%</td>
</tr>
</tbody>
</table>

Source: CDC BRFSS
Nebraska Health Care Coverage by Age

<table>
<thead>
<tr>
<th>Age Range</th>
<th>Percent</th>
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</thead>
<tbody>
<tr>
<td>18-24</td>
<td>79.3%</td>
</tr>
<tr>
<td>25-34</td>
<td>80.8%</td>
</tr>
<tr>
<td>35-44</td>
<td>86.4%</td>
</tr>
<tr>
<td>45-54</td>
<td>87.8%</td>
</tr>
<tr>
<td>55-64</td>
<td>93.1%</td>
</tr>
<tr>
<td>65+</td>
<td>98.4%</td>
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</table>

Source: CDC BRFSS
Questions?