Georgia State Department of Behavioral Health and Developmental Disabilities Partnership with the Satcher Health Leadership Institute at Morehouse School of Medicine

Return on Investment for Three Behavior Health and Primary Care Integration Impact Areas

Report Submitted to:

Satcher Health Leadership Institute at Morehouse School of Medicine.
720 Westview Drive SW
Atlanta, GA 30310

Funded by

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Report Prepared by

William S. Custer, Ph.D.
Institute of Health Administration
Georgia State University
Executive Summary

Georgia State Department of Behavioral Health and Developmental Disabilities Partnership with the Satcher Health Leadership Institute at Morehouse School of Medicine have developed a strategy of integration of behavioral health and primary care to increase the quality and cost effectiveness of care in Georgia. Three components of this strategy are Psychiatric Fast Track Service in Grady Hospital’s Emergency Care Center; Emergency Psychiatric Care Recidivism Impact Area; and Primary Care-Behavioral Health Integrated Impact Area. This report provides some initial calculations on the Return on Investment (ROI) for the components of this strategy that have been implemented and a template for making that calculation in the future.

Psychiatric Fast Track Service in Grady Hospital’s Emergency Care Center

The introduction of Psychiatric Fast Track Service in the ECC is intended to result in a reduction in use of restraints, reduction in wait times, reduction in inappropriate inpatient admissions. It also improves diagnostic screening and referrals resulting in adherence to appropriate treatment and improved health.

Table 1

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<thead>
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If the direct costs of the initiative are less than the direct amount the ROI is greater than one; if the present value of costs are less the than the present value of the Total Community Benefit then the ROCI is greater than 1.

Emergency Psychiatric Care Recidivism Impact Area

This strategy identifies patients with frequent emergency room visits and develops treatment plans based on the patients needs. If treatment plans are
effective for all 15 individuals thus far identified as recidivists reducing their ECC visits to zero then the direct savings would be $65,250.

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Assuming the middle scenario is the most probable this suggests that the costs of this impact area needs to be under $40,000 annual to achieve a direct return on investment greater than one.

**Primary Care-Behavioral Health Integrated Impact Area**

The primary care-behavioral health integrated impact area provides training and psychiatric consultation to primary care clinics. The rationale for this approach has been supported in a number of research articles and professional editorials. Measuring the return in investment for this impact area will require the collection of information on changes in either the process of care or outcome measures. Process measures could include changes in health care utilization such as emergency room use, hospitalizations, pharmaceutical usage, or adherence to treatment. Outcome measures could include changes severity of illness, remission rates, or other measures of functionality.
Georgia State Department of Behavioral Health and Developmental Disabilities Partnership with the Satcher Health Leadership Institute at Morehouse School of Medicine have developed a strategy of integration of behavioral health and primary care to increase the quality and cost effectiveness of care in Georgia. Integrating mental health services into a primary care setting has been shown to be a cost effective way to address otherwise unmet mental health need. (Collins, et al, 2010)

The integration of primary care and behavioral health applies a patient-centered approach to treatment. There has been an increase in the prevalence of mental health over the last decade. For children there has been a doubling of the rate of behavior health diagnosis has been made in a primary care setting. For adults below the age of 65 the rate of diagnosis in a primary care setting has increased by about a third. (Glied and Frank (2009). Integrating behavior health into primary care settings in intended to increase access to appropriate and efficient care resulting in improved health outcomes and a more efficient use of resources.

One of the goals of this integration strategy is demonstrating the value of those efforts to providers, payers and the community as a whole. To achieve long-term sustainability of this model it must be able to demonstrate the value added to their community, not just in terms of clinical outcomes but also in the social and economic.

Three components of this strategy are Psychiatric Fast Track Service in Grady Hospital’s Emergency Care Center; Emergency Psychiatric Care Recidivism Impact Area; and Primary Care-Behavioral Health Integrated Impact Area. This report provides some initial calculations on the Return on Investment (ROI) for the components of this strategy that have been implemented and a template for making that calculation in the future.
While is almost always the case that the data necessary for a complete ROI calculation are not available on the benefit side of the equation. As a result these calculations may understate the true economic benefit of this strategy. Methods for quantifying the benefits are described below. While the costs are not quantified this report provides an indication of the maximum costs that could be incurred and still achieve a ROI greater than one. A general description of the methods used in these calculation is presented in Appendix 1.

**Psychiatric Fast Track Service in Grady Hospital’s Emergency Care Center**

The integration of psychiatric care at Emergency Care Center-Crisis Intervention Service (ECC-CIS) system of care-Grady Health System is intended to increase access to appropriate and timely care. The introduction of Psychiatric Fast Track Service in the ECC is intended to result in a reduction in use of restraints, reduction in wait times, reduction in inappropriate inpatient admissions. It also improves diagnostic screening and referrals resulting in adherence to appropriate treatment and improved health.

The available data allows a calculation of the return on investment using changes in wait times, inappropriate admission and use of restraints. A return on community investment calculation can be performed estimates on the effect of appropriate diagnosis and referral on direct health, productivity and social costs.

**Reduced Waiting Time**

Emergency department (ED) congestion in general has been identified by the Institute of Medicine as an important issue affecting the cost and quality of health care. Waiting times for mental health visits to the ED are often longer than those for non-mental health care. While the direct effects on patient health are not well documented, the impact on the providing health system are clear: congestion in the ED results directly in lost revenue. (Bayley, et. al, 2005).

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1 There be additional lost revenue that affect a hospital system wide due to lower reported quality in patient satisfaction scores
The implementation of the integration of psychiatric care at ECC-CIS reduced Psychiatry length of stay by about 45 minutes per patient. At an annual rate that is a decrease of 1,724 hours of wait time, or the equivalent of 238 patients. Bayley et. al. estimated the lost revenue to a hospital of each ED patient who stayed over 3 hours was $204 in 2004. Inflating that amount to 2012 dollars and adjusting for Grady Hospital’s payer mix the annual benefit of the decreased waiting time is $77,330.

Reduced Use of Restraints.

It is estimated that 8.5% of psychiatric patients treated in emergency departments require physical restraint. Although physical restraint may sometimes be necessary to manage aggression and agitation in the emergency department some patients may be unnecessarily restrained. The unnecessary use of restraints in the added personnel and other resources needed. The use of restraints is also associated with longer wait times within the ED increasing congestion. (Weiss, et.al, 2012). Being restrained appears to be associated with decreased likelihood of attending prescribed outpatient follow-up mental health treatment (Currier, et. al., 2011).

The integration of psychiatric care at ECC-CIS reduced both the number of times restraints were used and the length of time patients remained in restraints. On an annual basis that would mean 138 fewer episodes in which a patient is restrained. It is estimated that total costs of using restraints is $314 per episode (Lebel, 2004 )and the use of restraints increases length of stay by 2 hours. (Weiss). Using these metrics the initiative has decreased restraint related costs by $88,164 on an annual basis.

Appropriate referrals

A number of studies have found that mental health issues are frequently misdiagnosed or misidentified. In the Emergency Care Center at Grady that issue often manifests itself in inappropriate referrals to the Crisis Intervention Unit (CIS). Per diem costs are around $600 in the in the CIS.(Claeys, 2012)
Approximately 30% of encounters with the Psychiatric Fast Track Service resulted in a disposition to the home that otherwise would have been referred to CIS. On an annual basis that would be about 361 avoided CIS referrals saving $216,000.

Community Benefits

Providing appropriate and timely care increases the probability of better outcomes. Better health outcomes for behavior health issue can result in lower costs to society due to increased productivity, lower educational cost, savings in the criminal justice system and other costs. Using an estimate that 20% of the Psychiatric Fast Track Service encounters ultimately receive effective treatment for their diagnosis the present value of those savings over 5 years is $3,146,151

Total Benefits of the Psychiatric Fast Track Service

The full benefits of the integration of the behavior health in the Emergency Care Center at Grady Hospital may include a number of outcomes that are not measured in this analysis. However, as detailed in Table 1 the total direct annual benefits that are measured are at least $381,494. If the direct costs of the initiative are less than that total amount the return on investment is greater than one.

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Emergency Psychiatric Care Recidivism Impact Area

This strategy identifies patients with frequent emergency room visits and develops treatment plans based on the patients needs. Preliminary assessment of emergency psychiatric care recidivism within Grady CIS indicated that patients predominantly have psychotic disorders and significantly disabling co-morbid substance abuse use disorders. Majority of patients who had unmet housing and food needs often went to the CIS involuntarily and frequently required restraints during visits due to violence or aggression.

The assessment of emergency room recidivism suggests that a majority of these individuals are uninsured. Reducing ECC visits is thus a direct cost savings. There are also direct savings achieved by reducing emergency department congestion when recidivism is reduced.

Individuals with psychotic disorders create community costs through reduced labor supply, public income support payments, reduced educational attainment, and costs associated with other consequences such as incarceration or homelessness. The community benefit of this impact area depends on the effectiveness of the individualized treatment plans. The evaluation plan for this impact area measures outcomes using measures that capture change in behavior:

- % of patients attending outpatient appointments
- % of homeless patients who obtain housing
- % of patients with addictive d/o who reduce substance use or stop using
- % of recidivists having psychiatric crises that require emergency care

Each of these measures would have quantifiable community benefits.

As a template for calculating direct and community benefits resulting from this impact area the reduction in emergency department visits for recidivists is used as a proxy measure patient functionality. Fifteen patients who have had more than 12 visits to CIS in the past 12 months has been identified. Table 2 presents three scenarios of effectiveness of this impact area. The relative effectiveness is
measured by the average number of ECC visits for the 15 patients after the treatment plan has been implemented.

If treatment plans are effective for all 15 individuals reducing their ECC visits to zero then the direct savings would be $65,250. These direct benefits only measure savings in uncompensated ECC visits and a reduction in ECC congestion. They do not measure other direct savings resulting from lower health care utilization in other units. The community benefit for this effort would be $495,804. If the treatment plans are less effective the direct and community savings are lower.

<table>
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**Primary Care-Behavioral Health Integrated Impact Area**
The primary care-behavioral health integrated impact area provides training and psychiatric consultation to primary care clinics. The rationale for this approach has been supported in a number of research articles and professional editorials. Funk (2008) argues that: “Mental and physical health problems are interwoven. Many people suffer from both physical and mental health problems. Integrated primary care helps to ensure that people are treated in a holistic manner, meeting the mental health needs of people with physical disorders, as well as the physical health needs of people with mental disorders.” Reviewing the literature Butler et. al. (2008) found that while integration of behavioral health and primary care had been successful “there is no discernable effect of integration level, processes of care, or combination, on patient outcomes for mental health services in primary care settings.” Studies investigating the
effect of integration have generally used symptom severity, treatment response, and remission when compared to usual care.

Measuring the return in investment for this impact area will require the collection of information on changes in either the process of care or outcome measures. Process measures could include changes in health care utilization such as emergency room use, hospitalizations, pharmaceutical usage, or adherence to treatment. Outcome measures could include changes severity of illness, remission rates, or other measures of functionality.

Measuring the costs of this impact area should include both the direct costs of training and consultation, but also any indirect costs incurred by increasing the staff time for existing tasks.

**Appendix 1**

**Return on Investment**

In a standard business context ROI is simply the income earned from a capital expenditure. A standard formula for ROI is:

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\text{ROI} = \frac{\text{Present value of Benefits}}{\text{Present value of costs}}
\]

Generally an ROI over 1 indicates that benefits outweigh costs and the project is worth doing. ROI allows comparisons between projects to determine the best way to allocate scarce resources.

In the short run the present value is equal to the dollar value of the cost or benefit. The value of a dollar in the future is less than the value of a dollar in the now, so the present value of benefits or costs discounts those future dollars.

Most of the costs of this initiative are incurred immediately so there is no need to discount them. The benefits of this initiative are increased health, decreased future health care utilization, decrease use of other public services and increased productivity. These benefits manifest themselves over time.

In a health care context ROI has four major components:

- Direct health care costs
• Indirect health care costs

• Patient health benefits

• Social Health Benefits

Together these components are referred to as the Return on Community Investment (ROCI).

This report will describe the methodology and initial estimates for the return on investment of direct care costs specifically and total ROCI including all four components. Return to Community Investment (ROCI) is the benefit that accrues to all of the stakeholders in the community for a given investment. These estimates are generated from standard cost-benefit analysis that has a well established theory based framework for developing return on investment estimates.

Describing the change in direct health care costs can be straightforward, as in the case of the integration of primary and behavior health care, but is often difficult to quantify. The correct measure of changes in costs is to compare actual costs after the initiative has been implemented to those that would occur if the initiative were not implemented. This requires a control group: a set of individuals similar to the target population or program. In this instance the control group is the set of patients provided care before each of the initiatives begin.

Unfortunately for many health care projects the ultimate outcomes may be unobservable, especially in the short run. This can occur because of inadequate data, absence of a control group, or simply because the evaluation occurs before enough time has elapsed.

Return on investment estimates on any level need to be credible. These estimates are generated from standard cost-benefit analysis that has a well-established theory based framework for developing return on investment estimates. In cost benefit analysis all social and private costs are compared to all social and private benefits to determine if a social activity is worth doing. A major challenge in cost-benefit analysis is identifying all of the relevant costs and benefits.
The correct measure of the costs and benefits of any initiative is to compare actual costs and benefits after the initiative has been implemented to those that would have occurred if the initiative were not implemented. This requires a control group: a set of individuals or programs that are similar to the target population or program, but who have not been affected by the initiative. This can be difficult if not impossible to collect. Often researchers use a time series analysis comparing the target population’s outcomes in the period before the program is initiated to the outcomes after its implementation.

Where the ability to quantify outcomes national data and the research literature can be used to link process measures to outcomes in order to quantify benefits. There is a large literature identifying the cost of illness in terms of direct medical costs and community benefit. Relevant studies are referenced below and used to quantify the relationship between process, outcomes and costs.
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