Cost and Quality Impact of Intermountain’s Mental Health Integration Program

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EXECUTIVE SUMMARY
Most patients with mental health (MH) conditions, such as depression, receive care for their conditions from a primary care physician (PCP) in their health/medical home. Providing MH care, however, presents many challenges for the PCP, including (1) the difficulty of getting needed consultation from an MH specialist; (2) the time constraints of a busy PCP practice; (3) the complicated nature of recognizing depression, which may be described with only somatic complaints; (4) the barriers to reimbursement and compensation; and (5) associated medical and social comorbidities.

Practice managers, emergency departments, and health plans are stretched to provide care for complex patients with unmet MH needs. At the same time, payment reform linked to accountable care organizations and/or episodic bundle payments, MH parity rules, and increasing MH costs to large employers and payers all highlight the critical need to identify high-quality, efficient, integrated MH care delivery practices.

Over the past ten years, Intermountain Healthcare has developed a team-based approach—known as mental health integration (MHI)—for caring for these patients and their families. The team includes the PCPs and their staff, and they, in turn, are integrated with MH professionals, community resources, care management, and the patient and his or her family. The integration model goes far beyond co-location in its team-based approach; it is operationalized at the clinic, thereby improving both physician and staff satisfaction. Patients treated in MHI clinics also show improved satisfaction, lower costs, and better quality outcomes. The MHI program is financially sustainable in routinized clinics without subsidies. MHI is a successful approach to improving care for patients with MH conditions in primary care health homes.

For more information on the concepts in this article, please contact Ms. Reiss-Brennan at brenda.reiss-brennan@imail.org.
The healthcare crisis in the U.S. healthcare system has exposed fundamental flaws in our ability as a society to promote health and well-being and has resulted in increased costs, inadequate access, medical errors, and marginalized quality. Costly chronic diseases are spreading at epidemic rates through families and communities and are responsible for 75 percent of the $2.4 trillion spent annually in the United States (CDC 2008). Globally, spending on chronic diseases represents a disproportionate share of national expenditures (Schoen et al. 2008). The impact of these escalating costs is seen in recent reports about lowered financial outlooks by large insurers, whose members have increased the use of medical services (Johnson and Fuhrmans 2009).

Despite the availability of evidence-based treatment for the chronic disease of depression, many patients and families do not receive effective treatment in real-world settings (Kessler et al. 2003; Unützer et al. 2002; Whooley and Simon 2000; Pearson et al. 1999). Appropriate care for patients with mental illness and care management for chronic disease can prevent ambulatory sensitive admissions (i.e., avoidable admissions when patients receive appropriate primary care) (Saba, Levit, and Elixhauser 2008; Millman 1993).

The past decade saw a significant increase in the proportion of people with serious mental illness and substance abuse disorders who reported receiving care from primary care physicians (PCPs) and hospital emergency departments (EDs) (Wang et al. 2005; Olfson et al. 2002). Depression, which often occurs with and compromises care of other chronic illnesses, is the most common primary care mental health (MH) diagnosis, yet it often goes undetected and undertreated (Mojtabai 2009; Wells et al. 2000; Rost et al. 1998). Somatized medical complaints are frequently the presenting concern of patients with these undetected conditions. Depression is a chronic medical condition that imposes substantial social and economic burdens on patients, families, and employers (Welch et al. 2009; Soni 2009; Chisholm et al. 2004; Goetzel et al. 2002; Druss, Rosenheck, and Sledge 2002; Lin et al. 2000).

Available and tested evidence-based collaborative approaches and treatment guidelines for depression are effective yet remain difficult to adopt and implement in real-world practice (Gilbody et al. 2006; Lorig et al. 2001). Although PCPs provide most of the care for patients with MH conditions, lack of time and insufficient reimbursement make it difficult for healthcare delivery systems to proactively implement and sustain effective intervention strategies for increasingly common MH disabilities in diverse populations. This lack of available, effective treatment for patients with MH conditions in primary care is a major gap in the quality of care between what patients and their families should receive and the care they actually receive within the healthcare system (Cunningham 2009; Rost et al. 2005; Schoenbaum et al. 2001). Further, reimbursement for MH care is impeded by the historical and prevailing disconnect between primary medical care and behavioral health (Frank, Goldman, and McGuire 2001). Many of the key ele-
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ments of the proven collaborative care models are not currently reimbursable, thus limiting evidence to selected, controlled settings (Liu et al. 2003; Unützer 2002; Simon et al. 2001). In the absence of grant funding, providing quality care in a manner that is not fiscally sustainable is impractical and promotes adverse financial waste to providers and facilities.

The purpose of our investigation was to identify the value of improved collaborative processes for integrating MH care as part of routine primary care. Our broader, ten-year, ongoing research agenda is designed to track delivery system outcomes of detection, functional improvement, cost, and satisfaction. This article focuses on how mental health integration (MHI) affects cost and quality for a subset of patients treated for depression in Intermountain Healthcare’s primary care clinics.

BACKGROUND
Intermountain Healthcare is a nonprofit integrated delivery system based in Salt Lake City, Utah, with 22 hospital facilities in Utah and Idaho. Its mission and core business is to provide clinical excellence. As a fully integrated delivery system, Intermountain employs 33,000 employees, 675 of whom are physicians within the medical group. The system is affiliated with more than 2,900 physicians, operates 130 ambulatory practices across the service area, and owns and operates its own health plan (SelectHealth). The practices treat all patients and their families regardless of ability to pay, and the system has a diverse payer mix of commercial, Medicare, Medicaid, and uninsured/self-pay patients who receive care across the rural–urban continuum.

To do this, Intermountain uses a clinical integration approach that organizes care delivery along relatively homogeneous service lines (e.g., primary care, cardiovascular). Within this organizational structure, quality care improvements are implemented by teams of providers and frontline staff who are embedded in the operations of clinical practice (Bohmer 2009).

The MHI program is a direct result of Intermountain’s quality improvement culture and commitment to integration and has been adopted within the primary care clinical program as a social and medical infrastructure for managing the daily complexity of chronic disease.

MHI is an evidence-based, team-oriented care process model (Intermountain Healthcare 2009; Savitz 2009) aimed at improving family-centered care and health outcomes in Intermountain primary care clinics. The MHI intervention is designed to promote three essential primary care practice changes: (1) improve the detection, monitoring, stratification, and management of depression and other mental health and medical conditions; (2) reinforce ongoing relational contact with patients and their families to promote adherence and self-management; and (3) match and adjust treatment and management interventions if there is evidence of increasing complexity and inadequate response.

Over the past decade, MHI has reengineered the processes of care delivery to enhance communication and coordination among service providers and staff who treat MH conditions (including...
Depression and substance abuse) in the context of other chronic illnesses (e.g., diabetes). PCPs and support staff, MH specialists, and care managers receive standardized ongoing MHI training to enhance their confidence, sensitivity, and ability to routinely identify and treat mental illness as part of routine care. The MHI team includes peer advocates, patients, and families as active members. Each team member has a defined complementary role on the team that requires a process of coproduction and mutual aid in reaching positive health outcomes. Coproduction assumes that people who use services have expertise and assets that are essential to creating effective services and good practice (Needham 2009). MHI’s relational team approach helps patients and families obtain needed education and outreach services to manage their complex conditions while engaging them in self-management and peer-support activities to promote recovery and wellness. Interventions that expand the relational family context of chronic disease enhance protective factors that can affect quality outcomes over time (Reiss-Brennan, Oppenheim, and Kirstein 2002; Fisher and Weihs 2000), but there is no substantive evidence on cost and efficiency. An MHI partnership between Intermountain and Utah’s National Alliance on Mental Illness (NAMI) promotes the family- and community-based support and engagement of NAMI mentors as active members of the MHI care management team.

Consumers, providers, hospital and physician administrators, community partners, and research staff worked together to integrate Intermountain into the local community. Preliminary results demonstrated that collaborative primary and MH care leads to improved functional status and satisfaction in patients and improved satisfaction and confidence among physicians in managing MH problems as part of routine care at a neutral cost (Reiss-Brennan 2006). Results of our internal study of service quality provide further evidence of the value of MHI. A comparison of pre-intervention and post-intervention responses to patient and staff satisfaction surveys reveals that there has been marked improvement in clinics where MHI has been routinized. Physician and staff reported improvement in a series of operational areas, such as the ability to detect mental health needs, confidence in working with patients with MH problems, ability to work with difficult patients, resources and support received from Intermountain, and ability to integrate the MH team in primary care settings. Reported patient perceptions of care related to MHI showed a higher percentage of excellence ratings for aspects of care, such as their physician listening to their emotional concerns, and quality of coordinated care.

The MHI program has been implemented in 69 of the 130 Intermountain primary care clinics and in four uninsured school-based clinics. An MHI leadership team is established at each regional site to design, implement, and evaluate MHI across all clinic sites. MHI accountability is aligned to the region and each clinic manager, who is responsible for recruiting and hiring the MHI team and designing an MHI operational workflow that supports the clinic’s PCPs and staff. PCP champions, regional...
medical directors, and nurse consultants sustain the cultural changes by engaging their peers in ongoing practice detailing and outcomes review.

Patients seen in the MHI clinics are identified and managed using several tools and resources. At the request of their physician, patients and family members complete a comprehensive MH screening assessment. The physician uses the assessment to screen for MH conditions, evaluate the support system and natural coping style of the patient and family, and ascertain treatment preferences and achievable goals. Physicians are guided by informed clinical judgment in deciding when to continue routine care and when to activate the consultation and coordination of their onsite MHI team. Face-to-face and phone case conferences are routinely made available for the PCP and care manager to consult with the integrated MHI team regarding difficult cases or nonresponding patients.

Intermountain’s MHI model guides a shared clinical decision-making process that helps match the patient and family's health complexity and capacity to adhere to a treatment plan with a coproducing treatment team that may include solo PCP management or PCP management with the assistance of a variety of team members (Reiss-Brennan et al. 2006). Based on the complexity of health concerns and severity of clinical indicators, patients and families are matched to a complementary level of team resource that is needed to reach the mutually agreed-on outcomes. Clinical decision making, the matching process, and team communication are supported by an electronic medical record and a data mart (i.e., registry) that tracks real-time and longitudinal clinical and cost data for patients identified by chronic conditions.

**Research Design**

To understand the impact on quality (i.e., avoided inpatient admissions and ED visits) and cost (to the health plan as measured by allowed charges) outcomes resulting from implementation of MHI, we conducted a quasiexperimental, retrospective cohort study. We assembled data for a cohort of patients seen in treatment (MHI) and usual-care (non-MHI) clinics. Description of the cohort identification, clinic matching, service-line data pooling, and methods are provided in the sections that follow.

**Cohort Identification**

To test the impact of the MHI program on patient utilization and insurance cost of medical services, we identified 18,587 patients in our depression registry who were diagnosed with depression for the first time between 2004 and 2006, were continuously enrolled in SelectHealth for 12 months before identification (pre-diagnosis period) in the registry as initially diagnosed, and were further enrolled 12 months after identification. Patients are identified in Intermountain’s depression registry by insurance claims with either of two billed diagnostic codes of depression (ICD-9 296.2X, 296.3X, 298.0X, 296.82, 296.90, 300.4, 309.0, 309.1, 309.28, 311, and 646.4) or with a billed diagnosis of depression and a filled antidepressant prescription within the same 365-day window. We then further restricted our cohort by requiring that (1) each patient’s age be
greater than 18 but less than 63 years old (SelectHealth does not offer a Medicare Choice plan so we restricted the adult population of patients to exclude, by age, Medicare beneficiaries) at the time of initial identification in the registry; (2) no patient had a diagnosis for an MH condition in the pre-diagnosis period to ensure that these patients only had depression; (3) no patient developed a medical comorbidity of diabetes, asthma, chronic heart failure, coronary artery disease, or cancer in the post-diagnosis period to ensure that medical utilization in the post-diagnosis period was directly related to the treatment of depression and preexisting medical comorbidities; and (4) each patient was covered under the same group insurance level (i.e., large employers) throughout the study period (patients’ switching between group-level coverage might affect their level of utilization of medical services).

Clinic Identification and Matching
Of the 69 clinics where MHI has been implemented across the Intermountain system, the research team worked with nurse consultants overseeing care to identify stage of implementation (planning/potential, adoption, routinized) as described by Rogers (1995). The treatment cohort includes those patients treated in all routinized MHI clinics (n = 5); these are clinics that have fully implemented and sustained MHI key elements—leadership, team-based care, information technology, partnering with community resources, and financing. Routinized clinics have demonstrated budget-neutral impact on net operating income three to four years after implementing MHI. The usual-care cohort included those patients treated in matched (based on patient volume, practice size, provider type, urban setting) IH clinics (n = 8) that have not yet implemented MHI.

For each 12-month period in the study, patients were mapped to either MHI or non-MHI clinics where they received most of their office visits based on health system claims data. Because some patients had gaps in clinic assignment, a simple completeness algorithm was used to map these patients to clinics for another 12-month period after the gaps. If the assigned clinic was of the same type (either MHI or usual care) for the period preceding and following a gap, this type of clinic was assigned for the missing period. No other gaps were filled. The cohort and clinic restriction left 1,229 patients in the cohort (797 in the MHI treatment group, 432 in the usual-care group). The proportional size difference between the two groups is largely the result of differences in payer mix (MHI clinics have 38 percent SelectHealth patients, and usual-care clinics have 23 percent).

Utilization and Service-Line Determination [Subhead B]
Using health plan claims data, each patient’s medical and pharmacy service utilization claims were combined into the following 16 services lines by using the general ledger claims-processing categories:

- Inpatient services: medical, psychiatric, obstetrical, and surgical
- Outpatient services: ED, urgent care,
primary care, specialty care, and psychiatric counseling
• Ancillary services: pharmacy for antidepressants, pharmacy for other drugs, laboratory services, and outpatient radiology and testing
• Outpatient other
• Chemotherapy and radiotherapy
• Other miscellaneous

Allowable charge and encounter data are reported for the 12-month pre-diagnosis period and the 12-month post-diagnosis period for each service line after adjusting to 2005 dollars using standard Consumer Price Index medical adjustments (Bureau of Labor Statistics 2009). To adjust for outliers, patients with total yearly claims in excess of three standard deviations from the mean (~$250,000) were eliminated, as were patients with inpatient intensive care unit claims. Encounters represent utilization for most general ledger categories or the number of prescriptions for pharmacy service. After removing outliers, the final cohort contained a total of 1,225 patients—796 patients in the treatment group and 429 in the usual-care group. Tables 1 and 2 provide details on the characteristics of the patient cohorts.

Table 1 shows that the two groups are closely comparable in terms of average age, sex, and urban residence. Table 2 shows that, in general, cohort characteristics are closely matched in terms of type and number of comorbidities, although there was a slightly higher proportion of patients with diabetes and patients with depression plus one comorbidity in the usual-care group.

METHODS
Descriptive statistics were analyzed to explore differences in average per patient allowable charges for six service lines—medical and psychiatric from the inpatient services category; ED, primary care, and psychiatric/counseling from the outpatient services category; and pharmacy for antidepressants from the ancillary services category—that are relevant to the MHI intervention. First, we analyzed these differences for all patients regardless of the complexity of their diagnosis. We then performed a second analysis to compare these differences across patients stratified by

<table>
<thead>
<tr>
<th>Patient Characteristic</th>
<th>Treatment</th>
<th>Usual Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>796</td>
<td>429</td>
</tr>
<tr>
<td>Average age</td>
<td>39</td>
<td>42</td>
</tr>
<tr>
<td>Sex (percent female)</td>
<td>66</td>
<td>67</td>
</tr>
<tr>
<td>Percent urban residence</td>
<td>98</td>
<td>98</td>
</tr>
</tbody>
</table>
their complexity. The patient complexity categories are depression only, depression plus one medical comorbidity, and depression plus two or more medical comorbidities (i.e., diabetes, asthma, congestive heart failure/coronary artery disease, cancer).

Based on these results, utilization for the selected service lines was further investigated via odds ratios (ORs) generated using stepwise logistic regression to test for differences among the treatment and usual-care cohorts. Specifically, we assessed the extent to which being treated in an MHI clinic influenced healthcare utilization. Adjusted ORs were generated to test specific variables that were believed to possibly affect this relationship; tested variables included age group (i.e., 19–30, 31–40, 41–50, and >50 years), sex, urban versus rural residence, proximity to an urgent care clinic, patient complexity, and utilization of medical service in the pre-diagnosis period. The stepwise regression model uses an entry and exit algorithm with respective p values of <.200 and <.250 (Hosmer and Lemeshow 1989) to test for effect modification. Confounding was determined by comparing the unadjusted and adjusted ORs; confounding was determined to be present when there was a ±10 percent difference in the compared ratios (Mickey and Greenland 1989; Maldonado and Greenland 1993).

**RESULTS**

Table 3 presents the comparative summary of per-patient allowed charges for the 12 months before and after diagnosis with depression for the six service lines relevant to treatment of depression. Patients treated in an MHI clinic

<table>
<thead>
<tr>
<th>Chronic Condition</th>
<th>Treatment Cohort</th>
<th>Usual-Care Cohort</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Percent</td>
</tr>
<tr>
<td>Congestive heart failure and Cardiovascular disease</td>
<td>12</td>
<td>1.5</td>
</tr>
<tr>
<td>Diabetes</td>
<td>63</td>
<td>7.9</td>
</tr>
<tr>
<td>Asthma</td>
<td>51</td>
<td>6.4</td>
</tr>
<tr>
<td>Cancer</td>
<td>21</td>
<td>2.6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Medical Complexity Categories</th>
<th>Treatment Cohort</th>
<th>Usual-Care Cohort</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Percent</td>
</tr>
<tr>
<td>Depression only</td>
<td>667</td>
<td>83.8</td>
</tr>
<tr>
<td>Depression + 1 comorbidity</td>
<td>111</td>
<td>13.9</td>
</tr>
<tr>
<td>Depression + ≥2 comorbidities</td>
<td>18</td>
<td>2.3</td>
</tr>
</tbody>
</table>
## TABLE 3  Average, Per-Patient Allowed Charges for the 12-month Pre-Diagnosis Versus Post-Diagnosis Period (2005 Dollars)

<table>
<thead>
<tr>
<th>Service Lines</th>
<th>MHI Treatment Cohort</th>
<th>Usual-Care Cohort</th>
<th>MHI Treatment – Usual Care</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>Post</td>
<td>Difference</td>
</tr>
<tr>
<td><strong>Inpatient Admissions</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical</td>
<td>$301</td>
<td>$474</td>
<td>$173 (57%)</td>
</tr>
<tr>
<td>Psychiatric</td>
<td>$8*</td>
<td>$44</td>
<td>$36 (450%)</td>
</tr>
<tr>
<td><strong>Outpatient Visits</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emergency department</td>
<td>$158</td>
<td>$196</td>
<td>$38 (24%)</td>
</tr>
<tr>
<td>Primary care</td>
<td>$196</td>
<td>$273</td>
<td>$77 (39%)</td>
</tr>
<tr>
<td>Psychiatry/counseling</td>
<td>$15*</td>
<td>$129</td>
<td>$114 (760%)</td>
</tr>
<tr>
<td><strong>Ancillary Services</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antidepressant prescriptions</td>
<td>$203*</td>
<td>$405</td>
<td>$202 (100%)</td>
</tr>
<tr>
<td><strong>Totals for the Six Service Lines Related to Depression Diagnosis</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical inpatient, visits, and prescription</td>
<td>$226</td>
<td>$578</td>
<td>$352 (156%)</td>
</tr>
<tr>
<td>Medical inpatient, emergency department, and visits</td>
<td>$655</td>
<td>$943</td>
<td>$288 (44%)</td>
</tr>
<tr>
<td>All medical and psychiatric</td>
<td>$881</td>
<td>$1,521</td>
<td>$640 (73%)</td>
</tr>
</tbody>
</table>

### Totals for All Service Lines

**All medical and psychiatric**

- MHI: mental health integration
- * The 12-month pre-diagnosis period includes some services for the treatment of depression given that patients are identified in the Intermountain depression registry as the result of a combination of treatment modalities, such as two diagnosis of depression that can span a few months in time.
- ** Inpatient services: medical and psychiatric; outpatient services: emergency department, primary care, and psychiatric/counseling; and ancillary services: pharmacy for antidepressants
- *** Inpatient services: medical, psychiatric, obstetrical, and surgical; Outpatient services: emergency department, urgent care, primary care, specialty care, and psychiatric/counseling; ancillary services: pharmacy for antidepressants, pharmacy for other drugs, lab, and outpatient radiology and testing; outpatient other; chemotherapy and radiotherapy; and other miscellaneous
had a lower rate of growth in average per patient allowed charges for all service lines except outpatient psychiatry/counseling and filled prescriptions for antidepressants. In addition, across all six service lines the average per-patient allowed charges in the 12-month period after initial diagnosis of depression increased by only 73 percent for MHI clinics, while they doubled (increasing by 100 percent) for the usual-care clinics.

Table 4 shows the patient cohort stratified by patient complexity. Patients with one comorbidity treated in an MHI clinic had only an 8 percent increase in average per-patient allowed charges in the 12-month period after initial diagnosis of depression, whereas patients treated in a usual-care clinic had a 90 percent increase in average per-patient allowed charges.

Table 5 displays the OR results with confidence intervals for the adjusted ORs. Cause-and-effect interaction (effect modification) was determined to be present for medical inpatient admission, ED visits, outpatient psychiatry/counseling, and filled antidepressant prescription refills, as noted in the Results section (see Table 3). In addition, we examined the rate of growth for all service lines (including the six specific to the diagnosis of depression) and found lower growth in costs for patients with depression treated in MHI (19 percent or $725) versus non-MHI clinics (30 percent or $1,392). This is consistent with the intended impact of the MHI intervention, whereby those patients with timely diagnosis and collaborative primary care require less intensive, higher-order treatment (i.e., inpatient admission/use of the ED).

Next, we stratified (the most simple form of risk adjustment) by patient complexity to further examine the strength of this finding. Table 4 shows, for the six service lines relevant to the depression diagnosis, difference in the change of allowed charges for the 12-month pre-diagnosis and post-diagnosis periods between the treatment and usual-care cohorts stratified by patient complexity. For all levels of complexity and overall, treating patients with depression in MHI clinics in the year after their diagnosis is cheaper than treating such patients in non-MHI clinics. Specifically, the rate of growth of their expenses, as described previously, was $405 less than for patients in the usual-care group. Thus, adjusting for patient complexity affirms the finding and the post-diagnosis period average allowable charges per patient shows a lower rate of growth in cost for the treatment cohort at 73 percent (or $640) versus 100 percent (or $1,045) for the usual-care cohort with the exception of the service lines of psychiatry/counseling and antidepressant prescription refills, as noted in the Results section (see Table 3). In addition, we examined the rate of growth for all service lines (including the six specific to the diagnosis of depression) and found lower growth in costs for patients with depression treated in MHI (19 percent or $725) versus non-MHI clinics (30 percent or $1,392). This is consistent with the intended impact of the MHI intervention, whereby those patients with timely diagnosis and collaborative primary care require less intensive, higher-order treatment (i.e., inpatient admission/use of the ED).

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**DISCUSSION**

Examination of the differences between the 12-month pre-diagnosis period and the post-diagnosis period average allowable charges per patient shows a lower rate of growth in cost for the treatment cohort at 73 percent (or $640) versus 100 percent (or $1,045) for the usual-care cohort with the exception of the service lines of psychiatry/counseling and antidepressant prescription refills, as noted in the Results section (see Table 3). In addition, we examined the rate of growth for all service lines (including the six specific to the diagnosis of depression) and found lower growth in costs for patients with depression treated in MHI (19 percent or $725) versus non-MHI clinics (30 percent or $1,392). This is consistent with the intended impact of the MHI intervention, whereby those patients with timely diagnosis and collaborative primary care require less intensive, higher-order treatment (i.e., inpatient admission/use of the ED).
### Table 4
Difference in Average Rate of Growth Per-Patient Allowed Charges, 12-month Pre-Depression Versus Post-Depression Diagnosis by Complexity Status for the Six Service Lines Related to the Diagnosis of Depression* (2005 Dollars)

<table>
<thead>
<tr>
<th>Service Line</th>
<th>MHI Treatment Cohort</th>
<th>Usual-Care Cohort</th>
<th>MHI Treatment − Usual Care</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>Post</td>
<td>Difference</td>
</tr>
<tr>
<td>Depression only</td>
<td>$694</td>
<td>$1,371</td>
<td>$677 (98%)</td>
</tr>
<tr>
<td>Depression + 1</td>
<td>$1,944</td>
<td>$2,101</td>
<td>$157 (8%)</td>
</tr>
<tr>
<td>Depression + ≥2</td>
<td>$1,253</td>
<td>$3,386</td>
<td>$2,133 (170%)</td>
</tr>
<tr>
<td>All patients</td>
<td>$881</td>
<td>$1,521</td>
<td>$640 (73%)</td>
</tr>
</tbody>
</table>

MHI: mental health integration

*Inpatient services: medical and psychiatric; outpatient services: emergency department, primary care, and psychiatric/counseling; and ancillary services: pharmacy for antidepressants.
that it costs less (absolute cost and in terms of rate of growth in charges) to treat patients with depression in MHI clinics. In addition, we examined the rate of growth for overall patient medical expenses (for all 16 services lines combined) and found it was $667 less for patients treated in MHI clinics than for patients treated in the usual-care clinics. This would imply that if the cohort of patients in the non-MHI clinics had been treated in the MHI clinics, they would have incurred $286,143 ($667 × 429 patients) less in overall allowed charges in the 12 months after a diagnosis of depression.

The OR analysis (Table 5) allows us to say, with confidence, that patients with depression treated in MHI clinics are 54 percent (using adjusted OR) less likely to have ED visits than patients with depression who are treated in non-MHI clinics. A weaker relationship was observed for primary care and inpatient psychiatry, whereby patients with depression who are treated in MHI clinics are approximately 44 and 49 percent less likely to use these more expensive services, respectively, than patients with depression who are treated in non-MHI clinics. The clear impact on lower use of ED services also suggests greater access to needed care for patients with depression who are treated in MHI versus non-MHI clinics. This lower level of utilization for such an expensive service (and suggested greater access to integrated primary care) results in reduced cost to the insurer as reflected by allowable charges.

MHI transforms the structure and function of primary care so that its medical group practices can improve quality at affordable or lower costs while satisfying the needs of patients, families, and providers. Key integration factors have important implications for administrators and policymakers to consider.

**Table 5**

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Crude Odds Ratio</th>
<th>Adjusted Odds Ratio</th>
<th>Lower Control Limit</th>
<th>Upper Control Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inpatient Services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical</td>
<td>0.922</td>
<td>1.032</td>
<td>0.667</td>
<td>1.597</td>
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<td>Pharmacy for antidepressants</td>
<td>1.222</td>
<td>1.033</td>
<td>0.671</td>
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in their health reform efforts. First, Intermountain rewards the benefits of evidence-based medicine by providing the leadership necessary to sustain implementation efforts. Second, Intermountain provides the resources needed for care coordination and team-based interventions. Finally, Intermountain has invested in the information system necessary to support team communication, clinician feedback, and data capture together with the analytic resource required to produce research findings and clinician feedback used to support practice, evidence-based management, and community benefit.

Although the healthcare delivery system finances costs associated with MHI implementation, and hospital revenues are reduced because of enhanced primary care, by minimizing the need for these higher-order services, costs to insurers are reduced. Demonstrating these savings to insurers may lead to cross-subsidization and is of particular interest to insurers given impending MH parity requirements.

**Limitations**

In an attempt to explain the effect of differences in patient utilization between MHI clinics and usual-care clinics, we conducted a study that has several potential limitations.

Our cohort, at an average age of 40 years, was younger than the general population and was restricted to adult patients with large employer insurance coverage from SelectHealth; this population has greater access to healthcare and greater income stability than the general population. Furthermore, a SelectHealth-insured population represents only about 50 percent of the commercially insured patients treated within MHI and non-MHI clinics and only about 30 percent of total patients treated at these clinics. Therefore, our cohort was partially representative of the commercial insured population and not representative of the noncommercially insured.

In addition to limitations because of patient selection, it is important to note the procedure by which patients were first mapped to an Intermountain primary care clinic based on most billed visits per 12-month period at this clinic. This assumes that Intermountain primary care clinics are where patients receive most of their care instead of specialty care clinics or non-Intermountain clinics. Furthermore, ensuring a clear separation of MHI from non-MHI clinics was complicated by the fact that clinics in the usual-care cohort have been somewhat exposed to Intermountain’s chronic disease and MHI tools (even though they have not implemented the intervention). Furthermore, we have implemented MHI within the existing clinical program infrastructure in place at Intermountain clinics; the extent to which similar results can be achieved at nonintegrated clinics outside the Intermountain system is not clear.

In calculating the potential savings observed for the MHI clinics, we did not include the start-up cost for implementing clinical integration, information systems, and the MHI program at the clinics. However, internal studies have shown that the MHI programs at routinized clinics have maintained a neutral net operating income for three to four years after mental health specialists and
care managers are resourced to the clinic and region.

The potential explanations cited in the Discussion section for the difference in utilization and average per-patient allowed charges for the MHI clinics is only observational and not causal, because determining causality falls outside the scope of this study. Finally, we used allowed insurer charges as the measure of cost, and this does not represent the cost of care to the health system or to the patients who are responsible for deductibles and copayments.

CONCLUSIONS

The MHI delivery model for providing MH as an integrated part of primary care has demonstrated high-quality care at an affordable cost for payers. Patients who receive care for depression in primary care clinics with routine MHI teams and care processes were 54 percent less likely to use higher-order ED services. Routinized MHI clinics provided greater access to an integrated health/medical home team where care for depression was coordinated to improve quality and resulted in reduced overall cost for payers. This is a significant and timely contribution to the health-reform debate on reducing rising costs by redesigning medical care to achieve more efficient quality care for patients with chronic illness through collaborative team approaches. However, this redesign creates significantly more implications for managers to consider than traditional disease management interventions do. It requires operational leadership and follow-through to link the clinical team-based improvements to efficient delivery mechanisms.

Although this study demonstrates savings to purchasers, note that decreased utilization of ED and inpatient care services leads to lost revenue for hospitals because of the perversities in our reimbursement system. This raises critical questions for hospital administrators about how to best achieve similar results in hospitals or delivery systems that do not have the institutional and financing support Intermountain provides to its primary care clinics and medical group. For example, purchasers could use these findings to justify subsidization or payment reforms that incentivize quality and efficiency improvements documented from MHI implementation. Furthermore, the potential for accountable care organizations and episodic bundle payments with healthcare reform may overcome possible hospital-based reimbursement challenges when implementing MHI. Future research that builds on these findings expands our patient cohorts to include an all-payer analysis. We also plan to examine issues of family burden and medical expense, comorbidity, and the contributory role of local family and community resources, such as NAMI and church groups, in supporting prevention and sustained recovery.

Acknowledgments

We would like to acknowledge the leadership and vision of Linda Leckman, MD, vice president and chief executive officer for the Intermountain Medical Group, and Brent James, MD, MStat, chief quality officer and executive director of the Institute for Health Care Delivery Research at Intermountain. MHI implementation would not be
possible without the tireless contributions of Ilene Tippets, RN; lead nurse consultants; medical directors; and their frontline staff.

NOTES
1. These tools are available from the authors.
2. A detailed description of the general ledger categories is available from the authors.

REFERENCES


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cost and quality impact of intermountain’s mental health integration program


P R A C T I T I O N E R A P P L I C A T I O N

Trent E. Gordon, FACHE, manager, Business Development and Planning, Good Shepherd Hospital, Grayslake, Illinois

It is estimated that U.S. workers suffer more than $41 billion in lost productivity every year due to depression, $31 billion more than their counterparts who do not suffer from depression (Stewart et al. 2003). Primary care physicians (PCPs) are traditionally the first line of diagnosis and treatment for these patients, who do not always have readily manifested symptoms, and yet PCPs are not trained mental health experts. PCPs sometimes feel overwhelmed by this class of patients who present in their clinics and do not always have strong referral patterns to local mental health experts. The authors are to be commended for taking a system and team approach to supporting PCPs and their patients. Moreover, Intermountain has found a way to make this clinically integrated methodology financially sustainable.

More and more PCPs are asked to diagnose and manage chronically ill patients. As the population continues to age, the effect of depression on society will grow. The World Health Organization projects that by 2020, depression will account for more lost disability-adjusted life years than any other disease, with the exception of ischemic heart disease (Haden and Campanini 2001). Rather than automatically initializing a referral for specialist care, Intermountain surrounds its PCPs with an approach that is easily replicable in offices across a disparate geographic area. Not only does this approach provide high-quality care, but it also allows the patients to be treated in a familiar environment close to home and reduces the reliance on emergency departments to stabilize patients. Although the topic was not researched in this study, one wonders whether providing care through a familiar healthcare provider without necessitating a specialist referral or emergency department visit also decreases the stigma that unfortunately, and unjustly, plagues those suffering from mental health disorders in this country.

Healthcare systems that leverage such broad internal expertise to solve problems will be out in front of peer systems as all of us try to tackle the medical home
model. Many of us are still not sure what “medical home” means or how it will be operationalized within our own health systems. This article presents one such model and should give the reader pause as we consider ramifications for other chronic diseases, such as congestive heart failure, diabetes, anxiety, and chronic back pain. Perhaps Intermountain has already considered applying its current program to these conditions.

The efforts described in this article concentrate on PCP offices, but I would encourage the authors and practitioners to expand their screening efforts to pregnant women and those who recently delivered, as depression is one of the most common (if not the most common) complications of pregnancy and the postpartum period (Gavin et al. 2005). Furthermore, obstetric providers have demonstrated a willingness, when supported by a similarly structured program, to screen for depression (Kim et al. 2009). As healthcare administrators, we must look to examples such as the authors present to provide these patients the best care possible in a cost-efficient manner.

REFERENCES

