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**Increasing Access to Healthcare Services  
through Service Time Process Improvements**

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## **ABSTRACT**

Increasing access to services, reducing costs, and improving patient satisfaction are challenging issues in healthcare today. System performance can be negatively impacted by high variability in service delivery times and show rates, and compliance requirements also can add significant time and cost to direct and overhead activities. Through a case study, we examine data on initial intake appointments before and after a lean process improvement project that streamlined intake appointments to reduce the average appointment duration, reduce service time variability, and increase the speed and rate of admitting new patients into outpatient treatment. We examine the impact of shorter, more consistent service times on the healthcare delivery system's performance, discuss information system requirements to implement such solutions, and propose strategies for achieving high satisfaction for patients, payers, and providers while standardizing important aspects of service delivery.

## **INTRODUCTION**

Increasing access to services, reducing costs, and improving patient satisfaction are challenging issues in healthcare today. The Institute of Medicine (2001) calls for a healthcare system that more effectively meets patient needs by providing care that is safer, more reliable, timely, responsive to patient needs, integrated, effective, and available. Access to healthcare services is a critical issue in healthcare reform, which is receiving considerable attention as President Barack Obama recently asked Congress to set aside \$634 billion in a reserve fund for health care reform that includes covering the uninsured while cutting out waste (Pear, 2009). Cost-effective healthcare requires coordination and an examination of both clinical and non-clinical options (Woolf, 2009). As demonstrated by longitudinal studies, delaying necessary health care, including prevention, testing, and medical or surgical treatment, is associated with worse outcomes (Fontanarosa, Rennie & DeAngelis, 2007). The business and medical community recognizes the importance of appropriate scheduling and resource allocation to meet healthcare demand (Brewer, 2008; Dolan, 2008) as healthcare providers face financial pressure to maintain high levels of utilization (Managed Care Weekly Digest, 2003) and patients' access to needed health care service is delayed by inadequate capacity (Chesanow, 1996; Murray & Berwick, 2003).

Our study, which addresses these important access issues, was conducted in a mental health service delivery system where demand exceeds supply; therefore, many people in need of services experience long delays in obtaining appointments, which can lead to patient dissatisfaction, higher costs, and possible adverse clinical consequences (Green, Savin, & Murray, 2007). Even worse, often they are denied entirely any access to needed services. This poses a serious problem as the need is great in the United States and internationally. According

to the National Institute of Mental Health (2008), approximately one in four American adults, or almost 58 million people in the United States, suffer from a diagnosable mental illness in a given year. With mental disorders as the leading cause of disability in the United States and Canada for adults aged 18-44 (World Health Organization, 2004), the cost to society is high. World-wide, one- to two-thirds of serious cases receive no treatment each year and longitudinal research shows that even with mild mental disorders, if left untreated, people with these disorders have a higher risk of future serious outcomes, such as attempted suicide, hospitalization, and work disability (Bijl, de Graaf, Hiripi, Kessler, Kohn, Offord, Ustun, Vicente, Vollebergh, Walters, & Wittchen, 2003).

On the other hand, the benefits of timely and appropriate access to services are great. For example, a mental health treatment program that focused on jail diversion for people with mental illness connected participants to mental health treatment and medication, substance abuse treatment services, and housing and social support assistance. In its first 18 months of operation, 2/3 of the participants had not been re-arrested, there was an 80% reduction in jail time, and a savings to taxpayers of approximately \$105,000. The program was funded by grants from a healthcare foundation and the city's crime prevention and control commission. This infusion of funding focused on meeting the specific needs of a small targeted population of 41 participants. Mental health providers believe it was the immediate connection to needed services that made the difference. (Mental Health Center of Denver, 2008)

According to the World Health Organization (WHO), appropriate allocation of treatment resources could reduce the problem of unmet need; however, system barriers constrain reallocation options, especially in decentralized systems of payment such as those in the United States (WHO World Mental Health Survey Consortium, 2004). The use of various funding

sources, particularly public funds, requires high accountability and compliance with practices mandated by payers. Often, there is data required for the payer or funding source that is not seen by healthcare providers as value-added to consumers or to the providers in performing their clinical work competently. In our study, the large amount of information to be gathered and recorded about new consumers being enrolled for services contributed to lengthy intake service times, which averaged over two hours and often exceeded three hours of a clinician's time. In addition to the direct service time to complete intakes, the enrollment process required the involvement of administrative staff to assign consumer identification numbers, fill out administrative enrollment paperwork, and check for the correct completion of required tracking forms.

Like many community and public health provider organizations facing decreased state and federal funding, the mental health center has a strategic goal to diversify its funding sources and expand its direct service capacity. Through collaborative partnerships with various agencies, foundations, and community task forces, the center was awarded funding through various grants to serve targeted populations. The focus of data collected for grant-funded programs tends to be on specific program-related outcomes, such as reduction of jail days and arrests reported above for the Court to Community program, to demonstrate the value of the funded services, rather than on other administrative data. Thus, the center applied lean thinking (Womack & Jones, 1996) and its application to healthcare processes (Young, Brailsford, Connell, Davies, Harper, & Klein, 2004; Black, 2008) to add value, streamline operations, and eliminate waste in the intake process. In this paper, we discuss the center's lean improvement program and rapid improvement events and their impact on service times, changes to the admission process, and access service improvements. We examine some unexpected results and develop

recommendations for achieving high satisfaction for patients, payers, and providers while standardizing important aspects of service delivery.

## **LEAN PROCESS IMPROVEMENT IN HEALTHCARE**

Quality management practices such as continuous quality improvement, total quality management, six sigma, and the Malcolm Baldrige National Quality Award, which have been widely used in manufacturing, have been adapted and implemented successfully in healthcare (Gowen, McFadden, Hoobler, & Tallon, 2006). With continued need for cost-effective and high-quality healthcare, there is heightened interest in adopting lean practices like those developed by the Toyota Motor Corporation, which serves as an exemplar of a lean company through its high quality products and its reliable production and logistics processes (Womack & Jones, 2005). The focus on waste reduction in the automobile industry led to the term *lean* to describe systems that consumed fewer resources and delivered superior results (Womack, Jones, & Roos, 1991). Although lean principles were developed and applied initially in manufacturing, they are being used successfully in healthcare, with many documented cases of successful lean projects conducted in hospitals, which started experimenting with lean methods in the 1990s to solve systematic problems to improve patient care by reducing errors and waiting times, reducing costs, enhancing interdepartmental interaction, and improving employee satisfaction (Graban, 2008).

Denver Health, a hospital that provides health services to 25 percent of Denver's population, including the uninsured, started a transformation in 2003 to a culture of “deliberate improvement.” Hospital administrators met with Toyota and systematically applied the lean principles based on Toyota's approach to streamlining its operations and eliminating waste. Fifty staff members were trained in the industrial techniques adapted to health care settings and five

strategic value streams were selected for redesign: access, inpatient flow, outpatient flow, operating room flow, and billing. Then a series of week-long Rapid Improvement Events (RIE) were conducted each month to improve individual processes within each value stream. The "operating room flow" team, for example, significantly increased the number of patients who received antibiotics within one hour before surgery (as recommended by national guidelines) from 80% to 96% percent in July 2006. Another RIE team contributed to the design of a new Medical Intensive Care Unit, making it more patient- and family-centered. (Nuzum, McCarthy, Gauthier, & Beck, 2007) In 2006, the hospital saved about \$2.8 million “without laying off a single person and without cutting one penny of care. We saved money by doing it better,” according to Dr. Patricia Gabow, CEO of Denver Health (Shanley, 2007).

ThedaCare health system, which consists of four hospitals in Wisconsin, began its lean movement when its CEO was seeking a way to improve quality and service while reducing costs. He looked to a nearby factory that made lawnmowers and snow blowers, where seeing impressive results from the factory’s adaptation of the Toyota Production System, such as increased cash flow and better customer service, motivated the launch of ThedaCare’s own lean movement in 2003. Facilitators were designated from various departments to lead rapid improvement events consisting of week-long gatherings of teams to focus on solving specific problems. ThedaCare attributed its savings of \$10 million in 2005 to its lean programs. Successful results include reducing hospital registration time from 44 minutes to just 15, reducing lab turnaround by 75%, and reducing lab square footage by 17%. (Matzek, 2006)

Another hospital, Prairie Lakes Healthcare in South Dakota, improved nursing productivity and the patient admission process through process redesign that increased nursing staff collaboration and reduced wasted patient time. The time to admit a patient was shortened

from an average of 90 minutes to 24 minutes, with 75% of patients admitted in less than 30 minutes. The improved process was designed by staff nurses, who participated in 2002 in a training program offered by the Institute for Healthcare Improvement (IHI) to learn about rapid-cycle change, which improves a process gradually through testing and improvement of new approaches. The change was valuable but did not occur rapidly, as demonstrated by the two years of prototype testing before writing a job description for a new nursing position to improve patient flow (Homolo & Fuller, 2008).

Increasing the speed of change is emphasized at the University of Pittsburgh Medical Center's (UPMC) Center for Quality Improvement and Innovation (CQII), where the Rapid Improvement Event (RIE) has been incorporated recently into the quality improvement approaches. The time from problem identification to implementation of solutions typically takes weeks or months with older rapid-cycle quality improvement approaches and can be reduced to days with the newer RIE approach, which was initially referred to as Kaizen blitz focused on achieving rapid quality and process improvement. The RIE typically involves steps to define the current system state and identify waste, design improvements to eliminate waste, improve process performance and improve the patient experience, and following up to ensure that improvements are successfully implemented and sustained. Three successful applications that show how RIE has been used at UPMC were focused on these areas: emergency intake process to improve patient flow and reduce wait times, an outpatient foot-and-ankle clinic to improve patient flow while reducing the workday and eliminating unnecessary paperwork, and the process of discharging cancer patients from inpatient to ambulatory services (Martin, Greenhouse, Kowinsky, McElbeny, Petras, & Sharbaugh, 2009).

Lean approaches are used at another hospital, St. Luke's in Houston, Texas, to reduce variability, standardize healthcare, and improve quality by meeting national standards of care 100% of the time. According to CEO Dr. David Pate, "It's important to understand the whole system. We map everything that happens to patients. Then we want to identify and eliminate all the bottlenecks and wasteful processes." Dr. Pate emphasizes the importance of understanding the whole system and the waste that can occur in inter-departmental processes. (Cook, 2008)

The lean principle of eliminating waiting is illustrated in the pioneering work at Kaiser Permanente by Dr. Mark Murray in same-day appointment scheduling for doctors; several healthcare facilities that use the approach have seen increased productivity and efficiency along with improved access for patients who need immediate appointments, but it might not work well in all practices (Jacob, 2001). In outpatient clinics, matching doctor capacity to uncertain daily demand presents a challenge that has been the subject of study through alternative techniques and analysis of appointment scheduling approaches such as allocating capacity for open-access (Qu, Rardin, Williams, & Willis, 2007) and walk-ins (LaGanga & Lawrence, 2008b) and the investigation of overbooking to handle patient no-shows (LaGanga & Lawrence, 2007).

Scheduling and delivering outpatient services were addressed by the mental health center we studied, where the manager of the center's access team served as a catalyst for initiating lean process improvement after he participated in a rapid improvement event at Denver Health to improve the process of discharging patients from the inpatient psychiatric unit. He had been invited to work with Denver Health as a representative of an external organization that collaborates in the continuum of care to coordinate and enhance the flow of patients between inpatient and outpatient services. He observed that decisions were made and implemented on the spot by simply changing the timing of key activities to eliminate delays and bottlenecks in

completing a discharge. Impressed by the speed and effectiveness of solving the problem of why it took so long to discharge patients, he returned to the mental health center and collaborated with the quality department to begin facilitating a series of lean events there, which are described in our case study in the next section.

## **LEAN CASE STUDY**

Our case study occurred in a community mental center that has adopted an aggressive program of lean process improvement projects to reduce operating costs and expand service capacity.

The center's first lean rapid improvement event, named "Rapid Improvement Capacity Expansion," (RICE) was conducted in January, 2008 and focused on increasing the yield of completed initial intake appointments by creating more appointment slots, increasing accessibility for new patients, reducing no-shows, and introducing flexible service capacity (LaGanga & Lawrence, 2008a). The new intake scheduling process began in March, 2008. The number of intake appointments scheduled was 22% higher in March, 2008 than in March, 2007. The increase in scheduled appointments combined with a 5.67% decrease in no-show rate resulted in a 30.26% increase in the number of completed intake appointments.

The mental health center's first lean project to expand capacity was successful in many ways. The benefits of lean rapid improvement were facilitated by the enthusiastic involvement of staff members responsible for scheduling and conducting intake appointments and the identification of process changes that could be implemented immediately. This initial success that was focused on access and intake services fueled interest in conducting a subsequent lean improvement project to provide more rapid access to services to targeted consumer populations whose services were funded by special grants and contracts, which required less data collection and tracking than that required by traditional state and federal mental health funding sources.

Thus, the “Fast Track Intake” team convened in August, 2008, to streamline the intake process, which had been taking longer than three hours for some clinicians.

### **Opportunity for Lean Improvement through Fast Track Intakes**

Before the new Fast Track Intake system was developed, there were two major delays in admitting consumers for services. The first was caused by scarcity of intake appointment slots; so, even though the initial RICE lean event (described above) increased capacity for intake appointments, consumer demand still exceeded supply. Second, a lengthy intake process was completed for all consumers admitted for services. Analysis of 755 adult intake appointments indicates that the average time for a clinician to complete a traditional intake was 2.07 hours, with standard deviation of 0.49 hours and a range from 0.25 to 3.43 hours. In addition, before a new consumer even met with an intake clinician, there were at least two other staff members involved in the process to schedule the initial intake appointment, assign a consumer identification number, and complete initial enrollment and registration forms. Then, when the consumer arrived for the actual intake appointment, the intake clinician completed at least 17 forms for an adult consumer (at least 19 forms for a child or adolescent consumer).

An additional seven-page assessment form, which includes 25 outcome domains to be rated by the clinician, has been required on all admissions and discharges to the Colorado Public Mental Health System since 1978. Initially, it was used to count admissions for monitoring performance contracts between the State of Colorado and the mental health centers, and data is also used for outcome studies. (Colorado Department of Human Services, 2009) Alternative funding through special grants and foundations separate from traditional state contracted dollars provided the opportunity to evaluate the time-consuming forms and processes to determine

which ones could be eliminated because they are not required by the payer and do not add value in the delivery of services to the consumer.

### **Current State, Target State, and Gaps**

Prior to the lean event, the current state of the system required that someone seeking services or trying to refer someone to receive services started by contacting the access center, where roughly two-thirds of those seeking services are not admitted due to insufficient capacity or unavailability of the type of service sought. Those who are admitted wait up to two weeks for the intake appointment; however, the center refers callers to other appropriate organizations but does not keep a wait list and many service seekers are delayed indefinitely as they make repeated attempts to access the limited service slots, or they might never succeed in accessing services. Appointment slots for intakes are allocated ahead of time and filled early in the week after phone screening by a clinician at the access center. Before the consumer shows up for the intake appointment, the access clinician communicates with a member of the information systems department, who initializes the consumer's record in the information system, assigns a unique consumer identification number, and completes a contact and triage form. At the intake appointment, the clinician interviews the consumer, fills out multiple forms with clinical history and current information about the consumer, and completes the assessment required by the state. After the initial intake, the consumer is scheduled for appointments with their assigned ongoing clinician (usually a different person) and a psychiatrist, who completes a psychiatric evaluation, which repeats some of the same questions and information from the initial intake.

The goal or target state for the intake process is that it provide high-quality services to more people who need them, start service delivery promptly, complete the intake work within the amount of time that is reimbursed by payers, provide a positive experience for consumers, and

produce valuable clinical outcomes. Gaps between the current and target state result in treatment delays, external perceptions that the center is not accessible, inadequate reimbursement for the true cost of delivering services, redundant information collection, performing unnecessary work and data collection, and errors in recording and processing data.

## **Solutions**

The solution focused on identifying the circumstances for which the complete set of current forms would not be necessary. The center had already obtained several special grants and contracts that were funded separately from traditional state mental health payment sources so that consumers would not be counted in the state contract nor included in state reporting requirements. Focusing on consumers identified for such programs allowed the RIE team, which consisted mostly of clinical staff, to start from the ground up to identify the information and elements of the intake that were valuable and necessary to providing high-quality services. They identified four items, with the option of collecting more information if warranted by the fourth element, a risk assessment. This was a dramatic reduction of the 17-19 items required for adult and child intakes covered by traditional state funding. The additional state assessment form would not be completed because it would not be reported to the state, so the center could focus on its own outcome measures, which have been rigorously tested and shown to be more sensitive and accurate in capturing change and progress in recovery.

Next, the team considered the path consumers traditionally took to enter the system and determined that the process could be streamlined by having the separate, targeted groups of consumers bypass the access team entirely and work directly with designated clinicians. Such design designates a clinician to handle a specific grant or contract so that the consumer or referral source contacts the clinician directly to set up the intake, which would happen as soon as

the clinician is available. The same clinician would continue to work with the consumer to provide more rapid treatment progress and eliminate redundant information gathering and relationship building.

The team also reviewed the contact and triage form required for all new consumers and streamlined both the form itself, cutting it in half from four pages to two, and the process of completing it to eliminate the need for the clinician to interact with and involve information systems staff. The new form would be rapidly completed by clinicians themselves and eliminate delays in waiting for work to be completed by information systems staff. This form and others would utilize the capabilities of the electronic medical record system to pre-fill information and eliminate redundant data entry among forms. It was determined that the new form and process would meet all existing requirements for traditional state funding and monitoring and therefore could replace the existing process for all new intakes, not only those covered by special grants or contracts.

The center uses a sophisticated electronic medical record system, which provides many opportunities to streamline workflow and improve quality through automatically structuring and standardizing work processes, offering menus and programmed logic to guide clinicians in performing the right tasks, storing and accessing relevant information where and when needed, and providing data validation and feedback to clinicians and managers. Therefore, the RIE team's solution development included considerable systems design and analysis of the logic flow of electronic menus and forms.

### **Analysis of Results**

The Fast Track Intake rapid improvement event took place in August, 2008 and the new forms and intake processes were available within 90 days, by the start of November, when one clinician

started the new process to provide services under a special contract with the Department of Corrections to provide mental health services to prison parolees. To date, the data available on this clinician's use of the new process is very small with only 27 intakes recorded in the electronic medical system but the early results are both encouraging and revealing. The clinician and his manager report that he is far more productive, admitting new consumers into services within a day or two for about an 85% reduction in consumer wait time for first appointment, and he is now completing intakes in half the time with the new forms. In the four months the clinician was doing intakes prior to Fast Track, he completed 9 intakes, for an average of 2.25 per month. Since the November startup of Fast Track, he has completed 18 intakes, for an average of 6 per month, almost triple the previous rate. Thus, it appears promising that as new grants and contracts are negotiated that can utilize the new Fast Track Intake process, the center could rapidly expand its capacity to admit new consumers for services.

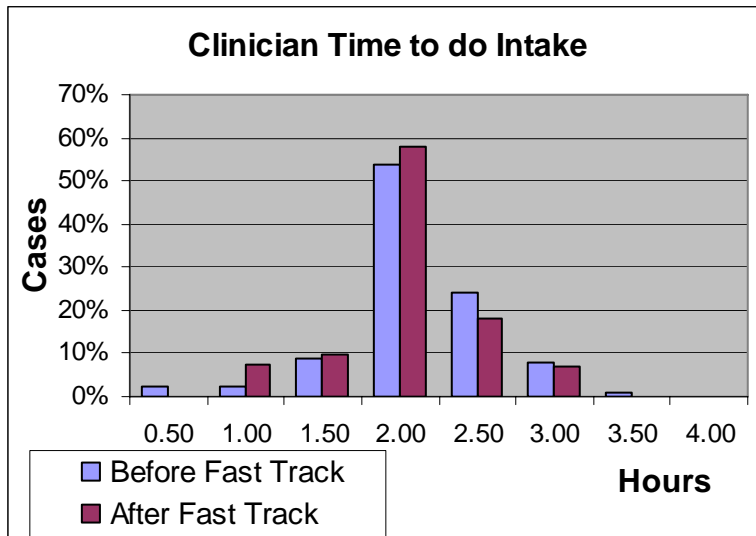
Unfortunately, the clinician has continued to record his service time in the electronic medical record system as a standard three hours as he had been trained to do for the old intake process. His recorded time is longer than the average 2.07 hours recorded across all clinicians and his number of intakes increased heavily after the Fast Track startup, which led to the erroneous impression from an initial analysis, which included all clinicians' intake service times, that service time had increased rather than decreased with the new Fast Track processes. Examination of the clinician's data and how he was recording it led to the removal of his data from further analysis, which was conducted to determine the effects of the new contact and triage form and process that had been redesigned for all new intakes. This analysis of the remaining 728 intakes showed encouraging results. The average service time decreased from 2.06 to 1.98 hours, which although a small effect, is significant ( $p < .05$ ). More encouraging is the change in

the distribution of service time, as Table 1 shows that the percentage of total intakes that were completed within two hours increased from 67.5% to 75%, so the percentage of intakes exceeding two hours decreased from 32.5% to 25%. Figure 1 illustrates how percentage of service times shifted to shorter durations after Fast Track started. After Fast Track, for all ranges of hours, the percentages of intakes taking more than two hours decreased and the percentages of intakes taking less than two hours increased. The decreased range of service times and more centralized distribution suggests that variability may be decreasing to move toward a more standardized, consistent intake process. As clinicians gain more familiarity with the new process, it is likely they will become more efficient and intake service times will continue to decrease and become less variable, leaving room to schedule more intakes and further increase access to services.

**Table 1:** Frequency distributions and descriptive statistics of intake service time.

Service Time (hours)	Intakes from 2/1/08 - 10/31/08			Intakes from 11/1/08 - 1/31/09		
	Frequency	Percentage	Cumulative	Frequency	Percentage	Cumulative
0.50	11	2.12%	2.12%	0	0.00%	0.00%
1.00	13	2.50%	4.62%	15	7.21%	7.21%
1.50	47	9.04%	13.65%	20	9.62%	16.83%
2.00	280	53.85%	67.50%	121	58.17%	75.00%
2.50	125	24.04%	91.54%	38	18.27%	93.27%
3.00	40	7.69%	99.23%	14	6.73%	100.00%
3.50	4	0.77%	100.00%	0	0.00%	100.00%
4.00	0	0.00%	100.00%	0	0.00%	100.00%
	520	100.00%		208	100.00%	
	<b>Descriptive Statistics</b>			<b>Descriptive Statistics</b>		
	Average	2.06		Average	1.98	
	Std Dev	0.48		Std Dev	0.46	
	CoeffVar	0.23		CoeffVar	0.23	
	Max	3.43		Max	3.00	
	Min	0.48		Min	0.46	

**Figure 1:** Clinician time to do intake.

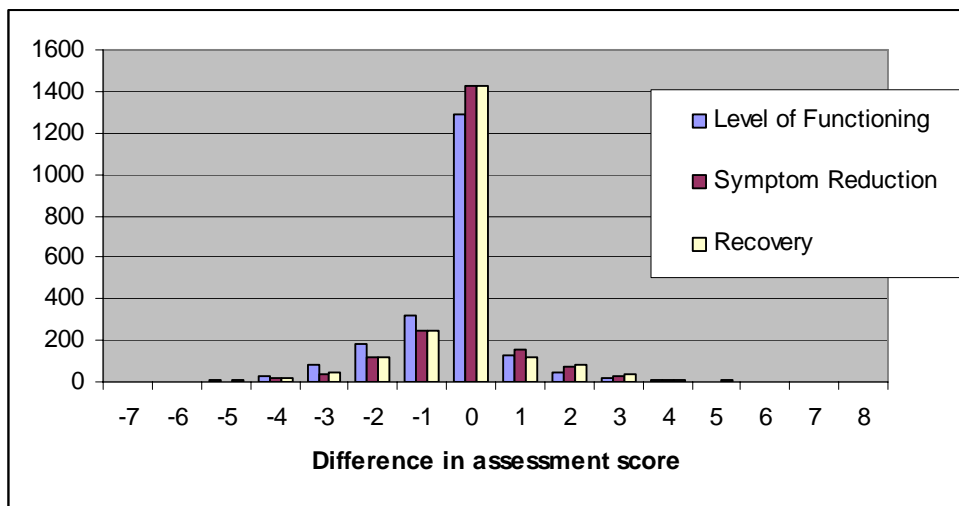


Now that the new streamlined contact and triage process is available to all intake clinicians and they can complete their own enrollments without interaction with information systems staff, there are other efficiencies occurring that are not captured in the electronic medical record system, which records only clinical activities and service time and does not reflect the time spent by information systems staff. There was much work done by information systems staff that could be considered part of the “hidden factory” (Arthur, 2007; Harry & Schroeder, 2000) that adds cost in performing non-value-added activities -- such as checking and correcting errors in the work of clinicians -- but may not be visible in direct measures of productivity. So, although it is not observable in electronic service data, the efforts of information systems staff are being used more profitably in the initial enrollment of consumers to ensure their services are correctly billed to appropriate payer sources rather than correcting errors on the back end of the unnecessarily burdensome old intake process. For the special grants and contracts that don’t require the completion of the additional state assessment forms, there are additional non-visible efficiencies gained, in addition to the opportunity to increase quality by focusing on more appropriate outcome measures.

## The Role of Outcomes in Accountability and Service Quality

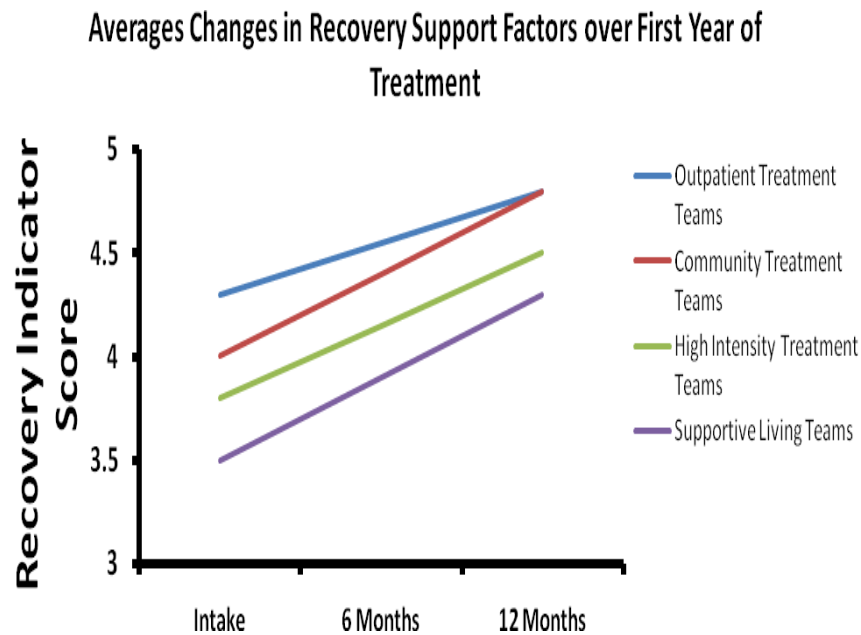
The state has required for many years the use and submission of its assessment forms and data for consumers served by state mental health funds, despite concerns among the mental health centers throughout the state that the assessment does not sufficiently capture the actual improvements in functioning experienced by consumers as the result of the services and treatment they receive. Several centers have been examining data from this assessment instrument to determine how to improve the usefulness of this measure. Unfortunately, the assessment, which typically is updated once a year by clinicians because it is required but is otherwise not reviewed or used, does not reflect actual changes and outcomes from service delivery in most cases, as shown in Figure 2, which graphs the distribution of changes between two annual assessment scores for 2,118 cases in three key assessment domains selected from the total of 25 domains. Lower numbers indicate more positive outcomes, so cases to the left of zero appear to have improved outcomes, the few to the right appear to have gotten worse, and most cases, which are at zero, appear to have had no change according to their change in assessment score from one year to the next, contrary to other data and information used by the centers.

**Figure 2:** Difference in state assessment scores from 2007 to 2008 updates.



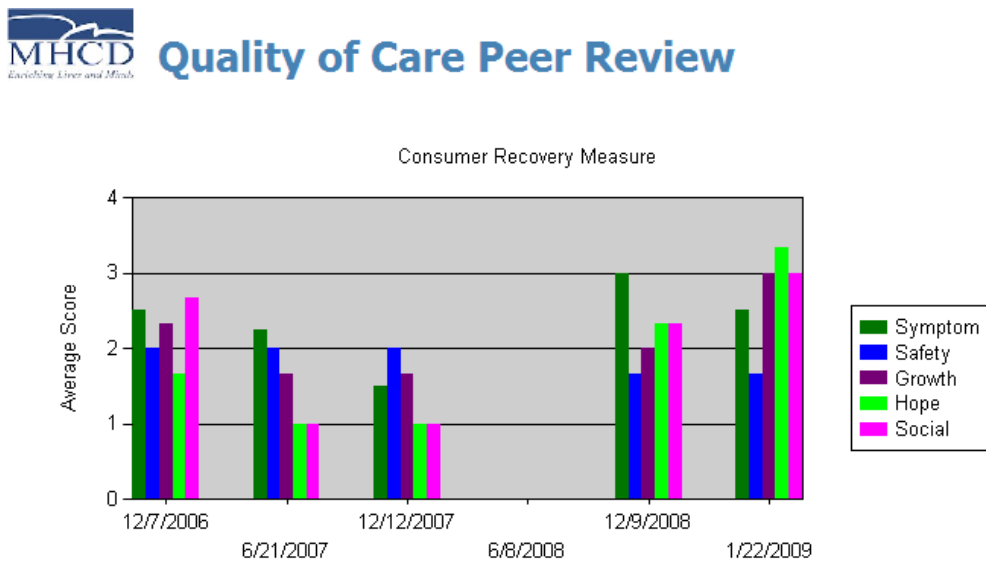
Increasing accountability expected of providers by state and federal funding sources along with commitment to promoting recovery and improving quality has driven providers to develop and utilize outcome measurement and reporting methods that more clearly demonstrate consumer progress and the value of service delivery. One system is the suite of recovery instruments developed by the Mental Health Center of Denver (Clark & Olmos, 2007). The instruments have been rigorously validated, piloted, and enhanced over the last several years using several thousand actual data points collected from clinicians and consumers. Figure 3 shows how such data can be used to demonstrate the positive course of consumer recovery in the first year of treatment, averaged across consumers on treatment teams providing varying levels of service intensity. Higher scores indicate more recovery and although the slopes indicate varying rates of recovery progress, the consumers on each type of team experience positive results on average. The value of the instrument has been accepted by funders and it has been specifically written into grants and contracts as an accepted methodology for outcomes measurement to demonstrate treatment effectiveness. For example, a contract for mental health services to reduce consumers' involvement in the criminal justice system refers repeatedly to the use of these recovery instruments to demonstrate program effectiveness (SB 07-097 Community Mental Health Criminal Justice Initiative Program, 2007). Because the services are funded by state mental health dollars, the state assessment was still required, too, but that instrument is not designed to reflect the specific needs of the population receiving services and therefore is not relied upon to depict progress and change.

**Figure 3:** Recovery Marker Inventory completed by clinicians on consumers.



Another recovery instrument, shown in Figure 4, elicits and records consumers' perceptions about their own progress. The resulting graphical depiction of the perceptions and changes expressed by consumers themselves is useful in providing feedback and encouragement as the consumers make progress in their recovery and it also can identify potential setbacks early on to help consumers get back on course. The graphical information provides valuable feedback to clinicians and consumers and is incorporated into quality improvement processes such as clinical peer review to give reviewing clinicians a more meaningful and comprehensive view of a consumer's progress and changes than what could be quickly interpreted only from reading the clinical documentation.

**Figure 4:** Recovery Measure by Consumer, incorporated into Peer Review.



The center uses a strengths-based approach to continuously improve service quality by learning what produces good results and spreading those practices appropriately. Involvement of both clinical staff and consumers in collecting, receiving, and utilizing feedback about consumer recovery provides learning and motivation to promote further progress.

### **LESSONS LEARNED AND CONCLUSIONS**

Like many hospitals, the outpatient mental health center we studied has successfully achieved measurable operational improvements in service access and productivity from conducting lean Rapid Improvement Events (RIE). The first event, on Rapid Improvement Capacity Expansion, created 30% more capacity for new consumers to enter the system for traditional services, and the more recent event on Fast Track Intake is connecting designated consumer groups to clinicians almost immediately and shortening intake service times to create more capacity and reduce indirect administrative work. Lean event participants have been energized by the rapid identification and implementation of solutions and afterward other staff quickly embraced

changes that streamlined their work and reduced administrative overhead tasks that did not add direct value for consumers.

The center's electronic medical record system is a valuable asset in implementing change and recording the effects of changes in organizational work processes and also in consumer progress and treatment outcomes. However, we discovered that much of the valuable productivity improvements resulting from the Fast Track Intake event were not reflected in the electronic service data because of inconsistent recording among clinicians (particularly by the clinician whose work we expected to demonstrate the most immediate benefits of the change) and the indirect processes that were impacted but whose effects were not initially visible. An accurate assessment of the effects of the lean event required many interpersonal dialogues and discussions with staff and managers to better comprehend the amount and nature of the changes beyond what the electronic data depicted. This exploration highlighted the need to standardize clinical recording practices to increase the value of the service data in assessing and expanding capacity.

The electronic medical record system poses another challenge in lean rapid improvement events because of the amount of time and resources required to program and implement electronic changes after the lean event. This has contributed to the perception among some members of the organization that lean improvement is not rapid. In fact, after the Fast Track Intake event, the electronic changes were up and running and new processes were launched within 90 days, which is relatively rapid for the organization. However, the frequency of RIEs (almost monthly) in the organization and the heavy reliance on the electronic medical record system to facilitate clinicians' work flow was creating a backlog of projects for the center's programmers. Grant funding, which has proven to be a valuable and clinically effective source

of funding and service capacity expansion, was the focus of a later RIE to improve management and tracking processes in which were identified the need for feedback, reporting, and communication among financial staff and grant program managers. Many of the solutions developed by that RIE team required programming and will require several months for completion.

More precise project planning and scheduling are being implemented to address issues and perceptions around timeliness. One approach, which Martin *et al.* (2009) found to be effective, is to organize planned changes into groups categorized as immediate, less than 30 days, less than 60 days, and less than 90 days. The center is also working to more clearly designate responsibilities for overall leadership and specific task completion for the follow-up changes. Project management training and software are proving helpful in these efforts. Programming staff are implementing a tracking and planning system to keep their projects visible and moving rapidly and are consolidating projects to eliminate redundancy and operate more leanly themselves.

Ultimately, lean improvement projects focus on delivering value to customers at reduced cost. The customers of the mental health care system are the consumers themselves, payers and funding sources, and the community, which benefits from the improved and productive functioning of its members and requires assurance that public funds are being used well to deliver valuable results. Appropriate outcome measures that are accessible, understandable, and accurately convey consumers' improved functioning and progress in recovery are essential to satisfying these customers and continuously improving quality. Some costs of complying with state-required data collection and tracking might be unavoidable, but the center has successfully reduced the burden while continuing to advance the development and electronic integration of

value-added recovery instruments and electronic systems that facilitate lean and productive clinical work that enhances consumer access and results. These approaches can be leveraged for continued success at this center and are transferrable to other settings in outpatient and inpatient healthcare and other organizations.

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