

Addiction Treatment Agencies' Use of Data: A Qualitative Assessment

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Abstract

Addiction treatment agencies typically do not prioritize data collection, management, and analysis, and these agencies may have barriers to integrating data in agency quality improvement. This article describes qualitative findings from an intervention designed to teach 23 addiction treatment agencies how to make data-driven decisions to improve client access to and retention in care. Agencies demonstrated success adopting process improvement and data-driven strategies to make improvements in care. Barriers to adding a process improvement and data-driven focus to care included a lack of a data-based decision making culture, lack of expertise and other resources, treatment system complexity, and resistance. Factors related to the successful adoption of process-focused data include agency leadership valuing data and providing resources, staff training on data collection and use, sharing of change results, and success in making data-driven decisions.

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Journal of Behavioral Health Services & Research, 2006. © 2006 National Council for Community Behavioral Healthcare.

Introduction

McLellan et al.¹ asked a provocative question, “Can the national addiction treatment infrastructure support the public’s demand for quality care?” Despite finding that addiction treatment agencies have extensive reporting requirements to managed care organizations and state agencies, McLellan et al. noted that only 30% of 175 surveyed agencies reported access to well-developed information systems and concluded that treatment agencies are “choking” on data collection requirements. They observed little use of data for clinical decision making or program planning; for most agencies, data collection was just “paperwork.”

Data systems

Efforts to implement information systems for addiction treatment systems highlight challenges in approaching data management development and illustrate the culture related to collection and use of data for process improvement. In Ontario, Canada, for example, stakeholders expressed concerns that a behavioral health management information system would take time and funds from client services and that the system would include inflexible performance indicators ultimately used to close underperforming agencies.² Other obstacles included treatment provider skepticism following a history of failed data collection efforts, wariness regarding misinterpretation of data, confidentiality concerns, and the rapid obsolescence of the software program that treatment centers were encouraged to use. In implementing the information system, challenges in a lack of centralized information services and the lack of uniformity of definitions and data kept Ontario from achieving a coherent, province-wide treatment system. Addiction treatment agencies are likely to encounter similar problems in improving their own systems.

The development of an addiction services management information system in Massachusetts was hindered by stakeholder misconceptions, differing views on the value of data, and a lack of resources to implement the new system.³ Collaborative decision making, an advisory group representing project stakeholders and clear communication between the parties were used to reduce implementation barriers. The Massachusetts system created a formal process for feedback and constructed a user-friendly data collection system with ongoing training. These efforts moved agencies toward a culture that permitted, if not embraced, data use for performance improvement.

Data focus

Although the development of integrated behavioral health systems to use data is challenging, less is known about how agencies learn to use data and make systemic changes to incorporate a new model that includes data. The Institute of Medicine^{4,5} advocates improving quality in part by preparing organizations for change. Diverse stakeholder groups (patients, parents, staff, administrators, and policy makers) often have concerns about the adoption of alternative practices in health services.⁶ These include concerns related to the transfer of power and control, the limits of new practices, and concerns about the change process itself.⁷ For example, fundamental opposition to data collection as demeaning to individuals or counter to the goals of recovery, a belief system that is part of the culture of many agencies, can inhibit staff support of performance improvement projects that require data collection. Agencies must manage infrastructure development and facilitate staff acceptance simultaneously to develop data capability.

Network for the Improvement of Addiction Treatment

The Network for the Improvement of Addiction Treatment (NIATx) is a partnership between the Robert Wood Johnson Foundation’s Paths to Recovery program, the Center for Substance

Table 1
Agency characteristics and levels of care

Site	Location	Annual number of clients 2002	Number of staff	OP	IOP	RES	DETOX	MM
Acadia	Bangor, ME	1379	367	×	×	×	×	×
Barnwell County Commission/AXIS	Barnwell, SC	373	22	×				
Brandywine Counseling, Inc.	Wilmington, DE	4048	150	×	×			×
Bridge House	New Orleans, LA	384	60	×	×	×		
Center for Drug Free Living	Orlando, FL	4294	622	×		×	×	
Daybreak of Spokane	Spokane, WA	941	82	×		×		
Entre Familia & MOMs	Boston, MA	153	30	×		×		
Gosnold, Inc.	Falmouth, MA	7526	218	×	×	×		
Jackie Nitschke Center	Green Bay, WI	458	12	×	×	×		
Kentucky River Community Care	Jackson, KY	1623	38	×		×		
Mid-Columbia Center for Living	The Dalles, OR	726	60	×	×			
Northern Rhode Island Community MH Center	Woonsocket, RI	457	N/A	×		×		
Patrician Movement	Austin, TX	1529	65	×	×	×		
Perinatal Treatment Services	Seattle, WA	206	56	×		×		
Pitt County Mental Health	Research Triangle Park, NC	1607	60	×	×	×		×
Prairie Ridge ATS	Mason City, IA	2162	32	×		×		
Prototypes	Culver City, CA	10,000	285	×		×		
Saint Christopher's Inn	Garrison, NY	1752	62	×	×	×		
Sinissippi Centers, Inc. Step 2	Dixon, IL	1638	167	×	×			
TERROS, Inc.	Reno, NV	119	32	×	×			
Vanguard Services Unlimited	Phoenix, AZ	7993	218	×	×	×		
Vocational Instruction Project	Arlington, VA	1102	116			×		
	Bronx, NY	575	255	×	×	×		

OP: outpatient; IOP: intensive outpatient; RES: residential; DETOX: medically supervised detoxification; MM: methadone maintenance. N/A: not available.

Abuse Treatment's Strengthening Treatment Access and Retention (STAR) program, and addiction treatment organizations (see the project Web site for more detail: <http://www.niatx.net>). NIATx members implement process improvements to reduce days to admission and enhance retention in care. Participants learn to use limited resources more efficiently and share strategies and tools for improving access and retention in addiction treatment. NIATx process improvement coaches guide organizations into creating "cultures of improvement", in which patients and staff from all levels help drive treatment changes. The process improvement coaches assist agencies in identifying executive sponsors and agency "change leaders", who lead change processes (with coaching) to improve services and outcomes. Change efforts have four aims: (1) reduce waiting time between first request for service and first treatment session; (2) reduce the number of patients who do not keep an appointment; (3) increase the number of people admitted to treatment; and (4) increase the period that patients stay engaged in treatment.

NIATx improvement efforts are structured around five key principles:⁸ (1) Understand and involve the customer; (2) fix key problems (and help the chief executive officer sleep at night); (3) pick a powerful change leader; (4) get ideas from outside the organization/field; and (5) rapid cycle testing. More detail on NIATx principles is available elsewhere.⁹

Rapid cycle testing uses the PDSA (Plan, Do, Study, Act) change cycle.¹⁰ Rapid cycle improvement strategies identify and test interventions using small samples and pre–post comparison groups; effective changes are incorporated into standard operations. Each step of the PDSA change cycle asks agencies a specific question to help guide the development of a structured change cycle. “Plan” focuses on operationalizing the idea/change to be tested; “do” addresses the specific change or action an agency used to test this idea/change. The “study” phase requires the agency to collect measures and analyze results and lessons learned from the change project. The final step of the PDSA cycle is “act”, which addresses the steps the agency will take as a result of the change cycle: retest, discontinue, or sustain the change idea. For example, staff may identify high residential client dropouts and suspect, based on patient feedback, that the agency’s family visitation policy may be related to retention. To test this idea, the visitation policy is modified for 1 month and data on retention of new clients is collected to determine if retention rates improved. PDSA change cycles emphasize stakeholder perspectives and data driven decisions and can help addiction treatment agencies improve systems of care.

A cross-site evaluation examined the first 15 months of NIATx impacts on days to treatment and retention in care.¹¹ Participating programs reduced days to treatment 37% from nearly 20 days in October 2003 to slightly more than 12 days in December 2004. Retention in care improved 18% from 72% to 85% of the treatment admissions completing at least two units of care. Moreover, the completion rate for three units of care improved significantly from 62% to 73% (a 17% improvement). NIATx, therefore, appears to help alcohol and drug abuse treatment centers facilitate changes in treatment process.

The NIATx intervention to improve access and retention also provided a unique opportunity to assess agencies’ ability to use data to measure the impact of change. The cross-site evaluation required agencies to track client-level data on agency process variables, including each client’s date of first request for service, date of assessment, and dates of services received. NIATx provided forms, instructions, and technical assistance regarding PDSA cycle development and client-level process data, but agencies were free to choose the extent to which their agencies developed a focus on data and the extent to which they adopted a process improvement perspective. Four qualitative research questions examined the use of data for management decisions and changes in infrastructure to accommodate a process improvement perspective:

- (1) How did addiction treatment agencies manage process data before NIATx participation?
- (2) How did agencies change to include a process improvement focus?
- (3) What barriers were encountered developing data expertise and focus? and
- (4) What factors were related to successful adoption of process-focused data?

Methods

Participant characteristics

Agencies that received grants to participate in the NIATx intervention were publicly funded, not-for-profit corporations. NIATx agencies presented a range of agency size, rural/urban location, and complexity. Most served clients through multiple levels of care as well as through community partnerships (see Table 1 for agency characteristics).

Procedures

The evaluation team collected qualitative data via quarterly telephone interviews and focus groups with staff from 23 NIATx agencies [335 interviews and focus groups with 265 unique individuals (69% female)]. Ninety-five quarterly interviews were conducted with change leaders and/or executive sponsors. Annual site visits included interviews and focus groups with the executive sponsor ($n=22$, 64% female), change leaders ($n=31$, 55% female), and other staff ($n=212$, 71% female). Sample sizes are not identical to the number of agencies due to staff turnover and position vacancies. Interviewees received written and verbal information about the evaluation, informing them of their right to withdraw and detailing confidentiality. The Oregon Health and Science University Institutional Review Board for the Protection of Human Subjects approved the study. Interviews included questions about agency change activities, the collection and use of data, and facilitators and barriers to improvement.

Agencies documented PDSA cycles, and specified what process they were attempting to change, what their change activity was, prechange baseline data on a small sample, postchange data on a small sample following the intervention, and their conclusions regarding the change cycle. For the first 18 months of the project, agencies conducted 127 change projects with more than 500 change cycles.

Client-level quantitative data were collected on all admissions to assess impacts on overall agency functioning for the evaluation component. Participating programs received formatted Excel spreadsheets and written instruction to track client progress through the agency. Data were requested for each new client within a single, targeted level of care and included date of first request for service, date of assessment, date of first treatment session, whether the client attended second through fourth subsequent treatment sessions, and basic demographic information. Outpatient and intensive outpatient treatment sessions were defined as one face-to-face individual or group therapy session, and residential sessions were defined as 1 week of service. These data allowed agencies to monitor cumulative impacts over time as they made PDSA changes that affected days to treatment entry and continuation rates. Upon request, agencies were provided with technical assistance regarding completion of client level data spreadsheets. Agencies submitted their spreadsheets monthly or quarterly.

Data analysis

Qualitative interviews and field notes were summarized and one document was created for each interview or focus group. Atlas.ti 5.0 software system was used to facilitate coding, organization, and retrieval of text for qualitative analysis. Themes were developed and refined through an iterative process. Staff examined the data and the generated open codes, which were recompiled to the data and codes. The analysis led to modification of the codes and focused research questions for further analysis. This constant comparative analysis helped further refine the themes. Open codes detailed primary concepts, whereas axial codes related categories to each other.

PDSA data and reports of PDSA data collection in interviews were reviewed to determine the agencies' ability to (1) appropriately identify a problem in the agency, (2) choose a measure that will adequately effect change in the problem, (3) collect pre and post sample data, and (4) correctly interpret the data. Note that this article does not analyze the effectiveness of changes but instead examines the process by which agencies learn to use data in making decisions.

Quantitative client-level data and reports of client-level data in interviews were also examined to determine each agency's (1) thoroughness in reporting data (i.e., for how many months did agencies provide client-level data?), (2) ability to identify and correct errors, and (3) ability to use client-level data to identify trends to improve agency processes.

Evaluation staff took several steps to increase methodological rigor: (1) multiple evaluators participated in data collection and analysis to ensure multiple viewpoints and discussion of

perceptions of data, (2) evaluators sought consensus on coder agreement to ensure more accurate coding, (3) evaluators considered rival explanations while analyzing data to facilitate trimming and validating the theoretical scheme, and (4) evaluation findings were compared with theory to validate the results.¹²

Results

The qualitative analysis examined four research questions.

How did addiction treatment agencies manage process data before NIATx participation?

Initial interviews included an assessment of current data systems and how agencies managed and used data. All agencies participating in NIATx collected data related to local and state reporting requirements. Some agencies had quality improvement or quality assurance offices but generally did not focus on reducing waiting times, continuation, no-shows, and increasing admissions; they instead focused on improving client satisfaction and treatment completion. Participants, however, neither tracked the date of initial patient contact nor analyzed data related to wait times for admission. These data were not seen as important to agency functioning or client success. The NIATx process improvement initiative stressed the importance of these elements, and through the NIATx process, agencies began to focus more on these data.

At NIATx startup, agencies reported a wide range of data collection methods and data management sophistication. Participating treatment centers used state databases or commercial software (e.g., MS*Health or Claimtrak) for client scheduling, billing, tracking, and attendance. Some, however, used outdated software (e.g., DOS-based), relied on internally developed information systems, or utilized manual systems for collecting client information. Multiple types of data collection and nonintegrated systems were common—billing and client tracking software were usually separate. Data systems were underutilized for quality improvement activities, in part because the information systems were designed for client payment and accounting, not client outcome tracking or quality improvement activities. Quality improvement data were generally limited to client feedback, satisfaction questionnaires, and treatment completion rates.

At the beginning of the project, 4 of 23 funded agencies (17%) reported that they were able to produce client-level process data entirely from existing electronic data systems. Most ($n=19$, 83%) were using multiple methods and data sets to provide the core measures. Several sites indicated they were currently improving their data systems and would be able to provide better data in future months. Many agencies indicated that improving their data system was a goal for intervention. In brief, when NIATx began, participants used unsophisticated information systems and lacked experience and expertise in using data to improve the operations and quality of their treatment services.

How did agencies change to include a process improvement focus?

Agencies made significant adjustments to manage the PDSA cycle and client-level data requirements.

PDSA cycle data Agency staff worked closely with coaches to learn to collect PDSA data. Most PDSA data were collected manually, and agencies struggled to increase their efficiency in tracking PDSA data. One participating treatment center, for example, conducted a PDSA cycle to

streamline their admissions process and tracked client-level data by hand, which affected staff workload. The change leader observed:

It has been difficult for the admissions clerks to have all the extra paperwork to do in terms of documenting admission details and process including the time faxes arrived and were responded to, keeping all the lists with times individuals call, the time calls get answered, and tracking and following up with no-shows.

In their initial change projects, agencies were less focused on improving a single aim and tried to implement changes targeting multiple aims. For example, one agency increased the number of assessment slots and went to all walk-in assessment appointments, changes usually targeting timeliness, but indicated that the changes also sought to improve no-shows and client continuation in treatment. Over time, treatment agencies were asked to target a specific change projects on one aim, at one level of care and one location for a specific population. For example, an agency might have decided to reduce the time from first contact to first treatment session for all non-child-welfare outpatients at their Lincoln Street office. Once this change was introduced, the clarity of the overall change project as agencies became more focused.

Agencies also experienced challenges establishing clear and realistic project aims. For example, an agency might set an aim to improve residential continuation to 100%. Although clear, it probably was not realistic to expect that 100% of clients will successfully continue through 4 weeks of service.

Change projects required collecting a baseline measure that established a starting point before making change. Agencies needed to select a large enough population group to study the effect of the change; this ensured that the agency was able to track the impact of improvements and be able to address whether change effected an improvement. For example, efforts to improve client continuation in agencies admitting two to three clients per week were less likely to be affected by specific change cycles. As a result, some smaller agencies struggled with sample sizes that were too small to provide reliable estimates, and delayed making decisions while they waited for a large enough sample size to be able to make a conclusion.

Agencies also differed in their dissemination of PDSA cycle data. Some kept data within the specified change team, allowing only a limited segment of the program stakeholders to have access to results. Most agencies, however, disseminated results of change exercises more broadly. Some announced results at all-staff meetings or in emails or newsletters to all staff. Others posted results on bulletin boards in common areas. Some agencies provided their boards of directors with regular data updates, sent results to legislators, and used PDSA cycle data when seeking additional funding. In general, agencies that disseminated data more broadly were more likely to develop a capacity to explain the data and increased an agency focus on making data-driven improvements.

Client-level data Agencies also struggled to provide client-level data on time to admission and continuation rates. Tracking process measures over time was radically different from previous agency procedures. Agencies typically had not tracked the time between key client appointments and none had tracked the date clients first requested service. Many began tracking client-level variables manually, which often proved time-consuming and difficult.

Agencies attempted to extract some or all client-level data from their current data systems, with mixed results. Client-level process data was sometimes compiled from multiple systems, or novel ways in which to collect and track data were created. This agency's experience with tracking data for waitlisted and admitted clients was typical.

There is a paper form that is filled out when someone calls. [An administrative staff person] enters the information into an Excel wait list. ... When they have an admit, she goes into the admit binder (paper form) and fills out the spreadsheet using admits first, and all the info for

each admit. Then she cuts and pastes from the wait list to put this info into the NIATx spreadsheet. She alphabetizes it, and then goes back name by name. It takes about one hour or less to do, but she usually does this over two or three days because of interruptions.

In efforts to manage project requirements for data collection, there was often confusion about which method was best for tracking which types of data. Additionally, staff turnover was a concern; when the individual responsible for the client-level data left the agency, there was often a hiatus in data submissions while a new contact was identified and trained. Agencies struggled to keep processes simple, efficient, and accurate.

By the end of the first 18 months of the project, most agencies had established systems to collect client-level process improvement data. Few agencies, however, had incorporated client-level process data directly into their management information systems; most combined paper-and-pencil tallies with data from management information systems to complete the NIATx spreadsheets. Agencies with goals to adopt management information systems as part of the project were, at 18 months, still “working out the bugs” in their new systems, with a result of many staff deciding they “just don’t need” the client-level data.

Although agencies greatly increased their ability to collect data, analysis and interpretation of data remained challenging for most. Some agencies developed the capability to collect high-quality data and relied on external programming assistance to extract, analyze, and interpret the data results. High-performing agencies progressed in their ability to collect, extract, analyze, and interpret data and conducted more complex analyses, such as the effect of interventions on subgroups of clients (e.g., gender or funding source).

Many agencies significantly changed staffing in response to a new data focus. Several changed the focus of a staff member (usually the change leader) to provide authority and time to manage data. Others hired an external consultant or internal staff member to assist with data collection.

What barriers were encountered developing data expertise and focus?

Data-driven decision making was operationalized as (1) the agency collects internally consistent and reliable data, and (2) data inform and enhance decision making within the agency. Agencies’ ability to make data-driven decisions is described, and then barriers to learning these processes are discussed.

Agencies can collect internally consistent and reliable data Regarding PDSA change cycles, an initial challenge for agencies was their ability to concisely express the Plan and Do stages of PDSA, summarize the lessons learned (study) and define the next steps (act) of the change project. Some of the initial change cycles were less focused and offered extensive details about what changes would be implemented, but did not adequately identify the lessons learned (study) or identify a clear next step. Identifying this challenge for agencies, the NIATx program office introduced a Change Project Form with more detailed instructions were provided. The additional instructions suggested that the action from the previous change cycle should feed into the planning stage of the next change cycle. For example, if an action (act) step suggested the agency should create more walk-in appointments, then the specific change (do) for the next project would be to address the staff schedules to accommodate the walk-in appointments. Such an approach not only created more of a logical flow through the change projects and linked change cycles together but also enabled the agencies to more consistently and reliably record their PDSA change cycles and understand the process better.

For the client-level spreadsheet data, agencies struggled most with the ability to provide consistent and accurate client-level data to document the sustainability of changes over time. These difficulties were related primarily to barriers of system complexity and a lack of expertise. For example, some agencies had processes that did not fit well with the structure of the client-

level spreadsheet and needed to determine how to best manage those differences. An assessment of client-level data provided to the evaluation team indicated that 18 of the 23 NIATx participants (78%) provided internally consistent client-level data for at least 10 of 18 months. The remaining five agencies provided data that were either incomplete (two agencies) or of insufficient quality (three agencies). Quality problems in data were typically related to complex client flow through systems, staff turnover, or staff difficulty understanding the data processes. Data quality problems were determined when many variables were missing, when data were frequently inaccurate (e.g., age was a negative number or >100), or when calculations were frequently inaccurate (e.g., >100% of clients completing treatment).

Data are used to inform and enhance decision making All agencies demonstrated an improvement making data-driven decisions about processes. This change leader's explanation of their PDSA cycle process indicated an understanding of how to use data for decision making:

[Agency] change initiatives are data driven. Data are reviewed before a change is chosen to ascertain the need for particular changes. Once a change initiative is selected, before and after data are collected to assess the impact of the change. The change effort is continued, modified, or dropped depending on data findings. In short, data are viewed as being extremely important for the change effort.

Although all agencies generally understood the PDSA process improvement strategy, some agencies, even at the end of the 18 months, struggled to identify an appropriate outcome measure for the change tested, collect an appropriate baseline of data, and determine whether the change was a success. Others went through the process of collecting data, and declared short-term success despite an absence of data demonstrating improvement.

Barriers to adding a process focus included lack of a data-based decision making culture, lack of expertise and other resources, treatment system complexity, and resistance to the idea of the development of a data-based decision making culture.

Expertise and resources Without exception, agencies faced serious financial challenges, and funding for client services took priority over process improvement concerns. Every agency indicated they wanted more staff time and funding to devote to data issues. Agencies often did not have information technology staff or contact with those who could advise on data systems issues. Most agencies had administrative staff who over time developed expertise in reporting required submissions to local and state authorities. Few agencies at the beginning of the project had staff whose primary focus was on data management, although some developed this capability through training or hiring staff during the course of the project.

Further, staff turnover limited gains made in staff expertise on data and process improvement. Most agencies struggled to find and retain qualified staff. Leaders experienced frustration when training needed to be repeated frequently because of staff turnover, and the loss of an agency champion for data often set back the agency's entire focus on data. As one agency change leader said, "We're trying to make long-term change with short-term staff."

Treatment system complexity Agencies provided services within extremely complex systems, often receiving clients from multiple referral sources, providing a variety of services, and referring clients to various types of aftercare following services. Clients and programs have multiple (and changing) funding and licensure guidelines, and agencies often were challenged to manage the minimum of data for reporting requirements. When considering ideal data systems, agencies wanted (1) a data manager who would be responsible for all data issues; (2) linked admissions, billing, therapy, medical, and process improvement data; (3) a user-friendly system for administrative and clinical staff; and (4) data reports that were useful to the agency. Providing

an intuitive and accessible system for managing data was important for reducing staff workload and burn-out. It was also related to the ability of management to create staff-buy-in for innovative improvements.

Resistance “Resistant” is frequently used to describe clients who do not cooperate with treatment. Similarly, staff “resistance” to data collection often was associated with an agency culture that did not value data-based decision making. Many agencies experienced considerable resistance from staff at all levels to increasing a focus on data. Some staff indicated that any effort toward data tracking detracted from their primary mission of clinical care. Other leaders and staff indicated they were afraid of what more rigorous data tracking might reveal, or whether poor results could jeopardize their funding. Some expressed concerns that the uniqueness of their agency and its clients would be lost if forced to assimilate into a standardized data format. This example from a staff member describes what happened when she disagreed with the change leader’s decision to count client no-shows:

It’s a great idea, but the reality is that there was not any buy-in from us. We were told to do it as best we could ... and so [the change leader] is going to get a lot of skewed data this month because I do it when I can, or I don’t do it at all.

A middle manager at a different agency sympathized with staff concerns about developing a data focus.

Staff are much more interpersonal here, rather than data savvy. Most people work in this agency because they want to work with people, not because they want to work with numbers. ... The management information system is new, and is quite cumbersome, so many staff have difficulty with it, and are a bit afraid of it ... There has been an adaptation: people try to get by without data as best they can.

Sometimes, the lack of support for data development came from the top of the organization: One executive director stated her organization spent too much time manipulating data on the computer, when she felt simple paper charting would do just as well. Staff buy-in to both concept and practice of data collection was a critical component in increasing understanding of data-driven decision making and the effective use data.

What factors were related to successful adoption of process-focused data?

Several factors were related to agencies’ success at adopting a focus to data and decision making. Not all successful agencies had each of these characteristics, but the more successful agencies tended to have more of them.

Agency leadership valued data and provided resources Agency leadership designated data and data-based decision making as a priority for the agency. This was accomplished in a number of ways. In agencies with stronger data management capabilities, agency leaders established data-based decision making and the development of a strong data-based management team as a goal for the agency and they committed resources to developing a strong infrastructure. Leaders in agencies with less strong data management capabilities stressed the importance of data, invited program staff or other experts to speak with their staff about data, and designated specific data managers who had responsibility and authority on data issues.

Staff received training on data collection and use Agencies that were more successful at adopting a process focus provided some kind of training for staff regarding data issues. Training reinforced the leadership’s focus on data and served to overcome staff resistance. In addition, training helped overcome “math anxiety” present in many staff who tended to avoid data, preferring to focus only on direct client care. Learning why the data were being collected, how the data were used, and

how the data directly related to improving client care resulted in more buy-in from staff. This agency contracted with an external source to obtain training.

A major part of [our] learning process has been educating the agency on how data can be used, gathering the necessary data and helping agency staff get comfortable with using data. ... [We hired a university evaluator] to help the agency in deficient areas like SPSS, [and] to assist in training, coaching, and implementing evaluation tools.

Sharing of change results Leaders who regularly shared the results of data collection and analysis with staff emphasized the value of data and reinforced training. Agencies managed sharing differently, by sharing results only within the change team, posting results on a project-related bulletin board, sending emails to some or all staff, and discussing the latest results at monthly meetings attended by all staff. Sharing change results also increased enthusiasm for the project and for a focus on problem solving, described by this staff.

Everyone knows at the end of the month about why people are leaving [against medical advice]—it's posted in the lunchroom. It's interesting to see the data, and sometimes they sit down and say, "It seems like we've been having a lot of this lately. Does anyone know what's happening?" ... That's helpful. Sometimes it's subjective, from memory, but they are having the conversations.

Success making data-driven decisions In addition to sharing results of data, when staff were able to identify a successful PDSA cycle, agencies were more likely to adopt a process focus and to collect and track data. This agency collected data in PDSA cycles to address minor problems, including a problem with intakes from clients transferred to the agency.

The agency ... did a quick PDSA, got feedback from the clients, made changes in the intake process, got feedback from the clients again, and continued this feedback loop until the data indicated the process was working. ... The agency continues to monitor with clients.

Agencies that demonstrated success within the parameters of the intervention were often enthusiastic about expanding their change efforts and data collection, and diffusing the PDSA change process to other parts of the agency.

Discussion

Agencies participating in NIATx were charged with making process improvements in reducing wait times, increasing admissions, increasing continuation, and decreasing no-shows by use of process improvement interventions emphasizing customer focus. This report focused on how agencies may have changed their approaches to data management while participating in NIATx. These findings indicate that NIATx agencies were able to implement short-term process-oriented data collection methods to make improvements in their systems, but found implementing long-term data management and diffusion of data focus more challenging. Strengths of agencies include flexibility in changing processes, and a strong interest in improving services and in obtaining increased funding for services. Barriers to implementing process-focused data systems include a lack of expertise and resources, system complexity, and resistance.

Given the current emphasis on improving the quality of care of addiction treatment services,⁵ agencies may benefit from tracking quality of care data accurately and may wish to use data to make decisions that will improve their care quality. The NIATx agencies, in concentrating on the four core measures (timeliness, admissions, continuation, and no-shows) have only begun the initial aspects of implementing a plan for identifying problem areas and making improvements in a quest for improved quality of service. The process improvement intervention implemented by NIATx suggests that agencies may be able to make substantial improvements to their processes

without the use of a sophisticated data information system. Agencies certainly can improve services without addressing the larger issue of outcome measurement standards, and the conduct of PDSA cycles is only one of several factors influencing process improvement success. Indeed, despite admirable efforts,^{13,14} the field does not yet have uniform outcome measurement systems that can be readily and easily adapted in the treatment venue.

In addition, it appears that drug treatment agencies may lack the technological infrastructure suggested for uniform outcome measurement. The Institute of Medicine called for the development and implementation of computer-based patient records for hospital-based services in 1991,¹⁵ but 15 years later, there are still challenges related to physician acceptance and implementation of these practices, even in agencies with sufficient technological infrastructure and implementation support.^{16,17} The Institute of Medicine has recently renewed its call for measurement capacity, now recommending that behavioral health treatment agencies measure processes and outcomes to improve quality of care.⁵ Federal, state, and local governments may wish to dedicate a larger share of resources toward these data-related infrastructure issues, so that the data can be used to lower overall costs and improve effectiveness within and across treatment agencies.

The NIATx intervention, unique in its application of process improvement to addiction treatment agencies, focused on understanding the customer and making short-term changes using the PDSA format. Agencies developed strong skills in these areas. Tracking changes made over time via the client-level data was necessarily a secondary goal. Agencies had more difficulty with the client-level data collection in part because it was a more complex and cumbersome process, and some agencies indicated the extra burden of data collection to obtain long-term monitoring of their changes was not valuable. For agencies that wish to disseminate results of quality improvement efforts, however, tailoring data collection efforts to meet agency needs and helping agencies see the value of data reporting their findings is crucial.

The sustainability of the project following the close of the grant process is a second concern for study. This article only reports on the first 18 months of this project. Will agencies that struggled to make cultural changes needed to implement data-based process improvement be able to continue to develop and successfully use the data-based decision making process? Perhaps the more important question regards diffusion: Will other agencies, not a part of the NIATx process, be able to replicate the NIATx agencies' success? Most of the agencies involved in the NIATx process improvement grants had some challenges accurately reporting data to monitor process improvement over time. Agencies participating in NIATx were able to successfully navigate the highly competitive federal and foundation grant process; if agencies with this high level of expertise had difficulty adopting the data reporting process, how does this bode for the rest of the field? It is clear that even with personalized coaching, this improvement can be a challenging process.

One key in developing the culture needed to sustain and replicate data-based performance improvement methodologies is the constant communication and training regarding data. Agencies that trained their staff members about data use had better adoption of data-focused processes. Those that communicated routinely to staff about data had more success in diffusing data-driven decision making than those agencies that did not communicate. Communication and training regarding data use and usefulness to inform decisions appears critical. Efforts to increase training for addiction counselors in process improvement and data management, however, are not yet underway, and curricula to provide instruction to current counselors and agency managers are not yet available.

Implications for Behavioral Health

These findings indicate that a relatively short-term process improvement intervention (18 months) focused on quality improvement in addiction treatment agencies can also develop awareness that process improvement techniques increase system efficiency and, ultimately, improve client care. Consistent with McLellan et al.'s assessment,¹ however, these findings also indicate many addiction

treatment agencies are underprepared for increasing data-based and evidence-based demands. In addition to lacking the technological infrastructure, many agencies have cultures that present challenges to making improvements in agencies' ability to improve their data capabilities.

Behavioral health service providers who plan quality improvement initiatives and researchers who wish to work with these providers may wish to carefully consider issues of expertise, agency culture, and staff buy-in when implementing evaluation efforts. An accurate assessment of agency expertise in data management could help researchers target appropriate training, and determining cultural attitudes about data and receptivity to moving in a data-focused direction could contribute to staff buy-in for data efforts. Demonstrating the value of data to staff in real-world applications may help increase their buy-in to actively participate in data collection activities.

There are also implications for training addiction counselors and managers in substance abuse treatment programs, as these individuals may have insufficient training in data analysis and interpretation. Many addiction counselors, for example, take the National Counselor Examination for licensure and certification. Scores on the exam section titled Research and Evaluation have an average passing rate of 57%; this is the lowest rate among the 13 areas examined.¹⁸ As indicated by this low performance in research and evaluation skills, and as confirmed by these findings, addiction counselors are not trained in skills vital for contributing to a quality-improvement-focused addiction treatment agency. Managers need skills in research and evaluation as well as skills for soliciting buy-in from potentially reluctant staff.

Staff resistance is a substantial concern in any organizational change project.² One of the critical elements of any performance improvement methodology is the utilization of change process management.¹⁹ NIATx coaching staff provided needed aspects of change management for the agencies they worked with. For the field as a whole, staff trained in process management, including change management, may be critical if addiction treatment agencies are going to be able to increase or improve the quality of the services they provide.

This study may also foretell the need for knowledge management professionals as a standard member of behavioral health care staff in the future. Knowledge management professionals will be needed to train staff in the use of data and to assist management teams in the interpretation of data to prove to the paying public that addiction treatment services are effective in changing lives.

Acknowledgments

The Network for the Improvement of Addiction Treatment (NIATx) was supported through grants from the Robert Wood Johnson Foundation and the Substance Abuse and Mental Health Services Administration, Center for Substance Abuse Treatment. Evaluation activities were supported through awards from the Robert Wood Johnson Foundation (46876 and 50165), the Center for Substance Abuse Treatment (through a subcontract from Northrop Grumman Corporation, PIC-STAR-SC-03-044), and the National Institute on Drug Abuse (R01 DA018282). National Program Office activities were supported through awards from the Robert Wood Johnson Foundation (48464), the Center for Substance Abuse Treatment (through a subcontract from Northrop Grumman Corporation, PIC-STAR-SC-04-035).

Portions of this article were presented at Addictions Health Services Research conference, Santa Monica, CA, October, 2005. Mr. Hayes was Director of Quality Assurance at Smississippi Centers, Inc., in Dixon, IL, during authorship. The support and contributions of Elaine Cassidy, Luke Bergmann, Jose Valdez, Hsueh-Yi Lu, and Andy Quanbeck are appreciated. We are especially grateful for the participation and support from the 39 member agencies of NIATx.

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