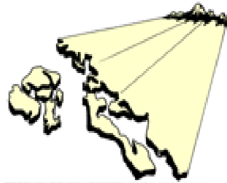

North Sound Mental Health Administration

Information System Review Report

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I. Executive Summary

In the spring of 2008 the North Sound Mental Health Administration (NSMHA) commissioned a review of the current consumer information system and asked for recommendations for improvements, given the October, 2007, changes to a service based payment system with a greater number and variety of providers. The study was aimed at assuring that the North Sound Region "...has a System or Systems that will meet the needs of all users..." New and existing providers had raised the issue of whether there can and should be alternative ways of submitting data to NSMHA. Some providers had also expressed concerns regarding the cost of entering data into the Provider RT DB using Sound Data Services (SDS) for export to the North Sound Raintree Database (DB).

Jet Computer Support was chosen as the company to conduct the review. Ten providers, Sound Data Services, and NSMHA staff participated by completing questionnaires and hosting site visits as well as conference telephone calls and email exchanges. Information was gathered on consumer data flow, comments, praises, and complaints about their experience in using the Raintree software maintained by Sound Data Services. Participants also made suggestions about various aspects of doing business with and communicating between stakeholders.

NSMHA believes that the quality of the data submitted by providers over the last number of years has greatly improved. This sentiment was heard from SDS staff and provider agencies as well, and in comparison with other RSNs in the state, NSMHA data is at the higher end of reliability at the Mental Health Division (MHD). Although NSMHA experienced a number of changes in the provider make-up last year, data continues to flow from providers through NSMHA and on to the MHD with minimal errors. NSMHA, Sound Data, and provider agencies produce accurate data resulting in timely payments to provider agencies for their clinical contributions to the North Sound region. Although concerns have been expressed regarding reports, the reports and reporting functions continue to evolve and there are many highly skilled staff with NSMHA and several providers available to help resolve those concerns.

It is important to remember that thousands of consumers are served and that data on those consumers and the tens of thousands of services are entered each day, week, and month from agencies into the Provider Raintree Database and exported to the NSMHA Consumer Information System (CIS) and finally sent to the MHD. We know that these processes are working, have been working for well over a decade., NSMHA and the region's provider agencies are audited regularly with very positive results by both private and public auditors as well as internal quality managers.

NSMHA, Sound Data, and the contracted mental health service providers in the area contribute a wealth of skills, passion, and information technology expertise to mental health care that supports staff, consumers, families, neighbors, jails, and business owners. Although we have put together a number of recommendations, it is important to utilize the strengths within each organization and to prioritize those tasks and projects that will best support the agencies and staff while continuing to do all of the things that are already working well. Everyone should move forward accepting the premise that challenges are an opportunity to make things better.

Many different recommendations were made in the areas of improving the functioning of the current information systems and organizational changes both between and within Sound Data Services and NSMHA. Our recommendations are included in Attachment B to the NSMHA MIS Review report.

II. Introduction

First, we would like for all participants to understand how much we appreciate their participation in this review. Numerous people at provider agencies took many hours of their time completing the questionnaire while some served as liaisons and organized meetings of interested staff at various sites. Twelve different site visits over four counties were conducted, along with three meetings with SDS management, three with NSMHA including one with the Advisory Board, four phone conference calls in lieu of, or prior, to site visits, one meeting with the Board President of Sound Data, Inc. (SD, Inc.) and one meeting with the CEO of Compass Health. Initial site visits, phone calls and email follow-up conversations were conducted between mid-June and early August 2008. Additional exit interviews were conducted with the Sound Data, Inc. Board of Directors, Sound Data Services staff, and agencies that were present at the last exit interview for all agencies.

A number of clinical, business and management staff spent up to two hours per visit discussing what sometimes sensitive information about their experiences was. Sound Data Services staff spent a number of hours showing us how the software worked, answering phone and email questions about processes, and reviewing draft reports to offer feedback. We found SDS staff to be very forthright about aspects of their business. NSMHA hosted stakeholder meetings, coordinated our activities with the Advisory Board, providers and Sound Data and also were very open and honest about what was and was not working among stakeholders. We believe that because of the honest sharing of information, experiences and perceptions, this review will indeed lead to productive changes in the region.

We believe that some of the frustrations expressed within this report were the residual effects of the October, 2007 contracting changes. Many of those frustrations may have been resolved; however they are still fresh in the users' minds.

Another concern is that the role of county coordinator may not have been as fully explored as they could have been. Our site visits included meetings with three of the five county coordinators and feedback by telephone from a fourth. We understand there have been some staff transitions in these positions. As we began the site visits, we understood the counties as needing access to the provider information system in order to support their jail contracts. Although we were able to get input from each county, and many of their needs are addressed, the expanded role of county coordinator may not be fully developed. We suggest making county coordinators a priority as recommendations are considered, prioritized and implemented.

There was a wide variety of providers that participated in the review. Participating providers ranged from large, established organizations with experienced technical, business process and operations staff to small agencies with very little IT support or technical staff. In some smaller offices, the only user may be one person doing data entry.

There was also a mix of full-service Community Mental Health Agencies (CMHAs) and small specialty providers, or, in some cases, large organizations that only provide a single or few services per a NSMHA contract, such as a county Human Service departments' providing only jail transition services.

The experiences of staff at Sound Data Services, NSMHA and provider agencies also varied widely. There were those who were new to any contractual involvement with NSMHA and consequently, with Raintree and Sound Data Services. Then there were those whose tenure

included working with the previous “Behavioral Data System” (BDS) information system, as well as experience with the SIA system, which reaches back well over 10 years ago.

The degree of experience using computers at work can also affect the acceptance of an information system. Providers noted that younger staff tended to be more facile in using the system, while at the same time more likely to express frustration that their use of Raintree was hampered by a less than “standard” set of interfaces and commands, such as the use of “function keys” on the keyboard rather than <save> and <cancel> buttons on each screen.

As questionnaire responses were received and site visits commenced, we noticed one recurring theme concerning communications. The frustrations of each group of stakeholders with the communication of the other groups are detailed later in this report. We expanded the review to include the communication between all of the players: provider agencies, Sound Data Services, and NSMHA as it pertains to the implementation, modification and use of the “information system”, and how system changes are communicated to all stakeholders.

NSMHA and the agencies that care for the mental health needs in those communities have a wealth of expertise and dedication to support information goals and requirements. Having recently experienced significant changes in the number and types of organizations providing mental health care and the method for reimbursement, NSMHA and Sound Data Services can take this opportunity to document what went well and ways to improve this transition in preparation for future staff, agency, data dictionary, reporting, and invoicing changes. This proactive step to initiate the NSMHA Information Services Review is a great example of examining strengths and challenges within the existing system and evaluating recent experiences. This report can serve as a first step to prioritize and move forward on next steps that will support agencies and the mental health information system.

III. Methodology

For the purposes of the study, the term “information system” was defined as the Raintree Systems Inc. Practice Management system (Raintree), as hosted and maintained by Sound Data Services, as well as the separate Raintree system that NSMHA uses, hosted directly by Raintree Systems, Inc, the separate Microsoft SQL Server data warehouse databases maintained by both SDS and NSMHA for summary reporting, and the technical processes that transfer data from providers to NSMHA, from Raintree databases to data warehouses and from the NSMHA Raintree database to the state Mental Health Division.

The review included a seven page provider questionnaire that was sent to provider organizations and a five-page questionnaire sent to SDS. Responses to questionnaires were anonymous, and were used to organize discussions and prompt conversations with stakeholders during on-site visits to providers and SDS. Comments quoted in this report will remain anonymous, as this factor was essential to acquiring frank and accurate comments for areas of improvement in the current system. The questionnaire included a 16-item mini-survey that asked respondents to rank their experiences on a 5-point scale of satisfaction with various aspects of Raintree, Sound Data Services, etc. Those results will be discussed later in this report.

In the introduction to the questionnaire, providers and SDS staff were asked to give their overall opinions about what they hoped to gain from the review and any concerns they had about the process. The comments tended to reflect the following hopes:

- *More direct communications between NSMHA and providers, rather than being "filtered" through Sound Data.*
- *Improving the efficiency and speed of making error corrections in the Raintree CIS.*
- *A more "user friendly" system that makes it easier to train new staff.*
- *Improved service delivery for better consumer care and caseload support for clinical staff.*
- *Complete and comprehensive instructions and manuals.*
- *Programs taking more "ownership" of the system through key staff ownership of a set of business processes that make up the information system. This was seen as particularly important for "smaller" agencies, in order to reap the benefits of the current system.*

Concerns included comments that:

- *The process would result in a decrease in the quality of the system and of communications among stakeholders.*
- *NSMHA would gain increased control of the information system and that this would result in a loss of flexibility.*
- *The needs of smaller and specialty providers will continue to be superseded by the needs of larger, full service organizations.*

Out of the 14 providers submitting data to NSMHA:

- we visited or had conference calls with 10 of them, which included 12 different site locations
- 3 meetings with Sound Data Services management
- 3 with NSMHA including Advisory Board
- 4 phone conference calls in lieu of or prior to site visit
- 1 meeting with the president of Sound Data, Inc. Board of Directors
- 1 meeting with the CEO of Compass Health
- The remaining 4 agencies either did not respond to requests nor had no material information to provide, which was confirmed by NSMHA management.

Site visits were held at 14 sites during July and August for providers who responded to requests for visits. An exact count of the number of provider staff who participated in the review was not done but it easily exceeds fifty people. Site visits with providers and SDS staff exceeded 30 hours of interviews.

IV. Results: Summary

There was a general perception by providers that Raintree, as a piece of software configured by Sound Data, meets most of their needs. However, users and provider organizations find it either lacking functionality in certain areas or that it is difficult to use. Providers consistently reported being reluctant to ask Sound Data Services for help, for information or extra training for fear of being charged for that assistance. At times, users had decided that Raintree did not do what they needed to do, when in fact the functionality was there. Again, a fear of incurring costs for asking for help limited their expanded knowledge of how the system could be better used.

Providers using Raintree and the services of SDS expressed much the same sentiment as many did with Behavioral Data Systems (BDS) prior to the Raintree purchase and implementation. They indicated that the software is adequate, there are some frustrations with using it, there is less than desirable responsiveness by SDS staff to change requests, providers are unhappy with how they are charged for the use and for support of the system and if something better came along, they would jump at it.

More problematic are the communication issues between providers, SDS, and NSMHA. A lack of trust and confidence between parties about several aspects of the system are also hampering future development of the information system in the region. There is also significant confusion about Sound Data Inc., the corporation that holds the Raintree licenses and contracts with "Sound Data Services", the department within Compass Health that pays for Raintree consultation and annual support and maintains/develops the Provider RT DB. These will be explained later in this report.

V. Results: Detailed

A. The North Sound Consumer Information System (CIS), Organization Relationships and Terminology

In working with providers and preparing this report, one of the challenges that came up many times was the confusion about how to describe various aspects of the North Sound CIS and all of the organizations involved. In an attempt to reduce confusion, this section will provide an overview of this history and define terminology used in this report.

The North Sound Consumer Information System (CIS) has evolved over time since Regional Support Networks (RSN) were established by the state legislature. These changes are further described in the next few sections. In an attempt to be clear with terminology, the following sections describe agencies contracted to provide mental health services, related organizations, and terms will be used throughout this report.

1. Organizations Providing MH Services via Contract with NSMHA

a) Counties providing Jail Services and Care Management

- Island County
- San Juan County (data entered through agreement with Island County)
- Skagit County
- Snohomish County
- Whatcom County (data entered through an agreement with Whatcom Counseling)

b) Mental Health Service Providers

Provider (* indicates SD, Inc. Board)	IC	SJC	SkC	SnC	WC	# Clients	# Hours	% Clients	% Hours
	[---------Counties--------]					[--Jan-June 2008 avg per month--]			
bridgeways				1		67	692	1%	4%
Catholic Community Services, NW			1	1	1	591	1,595	8%	9%
Compass Health	4	3	2	9		3,436	9,415	46%	53%
Interfaith (added 10/07)					1	92	129	1%	1%
Lake Whatcom Treatment Center					1	301	1,076	4%	6%
LKI (added 5/08)				1		14	27	0%	0%
Sea Mar			1	1	1	320	757	4%	4%
Sunrise Services (added 10/07)			1	1		291	952	4%	5%
Volunteers of America (VOA)	1	1	1	1	1	1,474	801	20%	5%
Whatcom Counseling & Psychiatric Clinic					1	827	2,336	11%	13%
Specialty Services:						**Unduplicated/mo**		**Avg Daily Census**	
Residential				3	2	110		105	
Adult Respite			1	1	1	67		14	
Secure Detox			1			34			
Voluntary/Involuntary Hospitals			2	2	1	210		62	
E&T			1		1	83		31	

2. Organizations and Terms Related to the NS-CIS

Advances in Technology, Inc. (AIT) — Previously known as "Olympic Resources", AIT is the for-profit subsidiary of Compass Health, Inc. created to provide hardware, software (excluding Raintree software maintained by Sound Data Services), communications, and other network services/support for Compass Health and other AIT customers that include but are not limited to other MH agencies within or outside of the North Sound region. The director of AIT is Dean Wight.

Associated Provider Network, Inc. (APN) — A non-profit 501-C3 corporation created in 1992 by several mental health treatment providers in the North Sound region to contract with NSMHA with the mental health treatment providers serving on the Board of Directors. APN, Inc. ended in late 2007 as NSMHA changed practices to contract directly with each agency starting in October, 2007. At that time, two new service providers were added to the mix of contracted agencies.

Term	Definition
Behavioral Data Systems, Inc. (BDS)	A for-profit corporation owned by Craig and Bobbi Bellusci that purchased the rights to software developed by SIA and further developed the software to support the needs of mental health agencies and Regional Support Network offices that had formerly used SIA software. When BDS stopped providing services, agencies in the North Sound region purchased Raintree Systems, Inc. software.
Community Mental Health Services (CMHS)	This non-profit corporation merged with Compass Health in 1993 but was involved with the original search for and purchase of the first MH software system to support the North Sound Region.
Inter-Governmental Network (IGN)	The IGN is a fiber optic frame relay network created and maintained by Washington State Department of Information Services (DIS). The IGN began as the "Information Network for Public Health Organizations" (INPHO) in 1996, completed in 1997 through a federal grant to create an inexpensive, secure, and reliable way for health departments in Washington State to communicate. This network has expanded over the years to include all Washington counties and some cities in conjunction with the following state agencies: Department of Health (DOH); Administrative Office of the Courts (AOC); Washington State Patrol (WSP); Department of Social and Health Services (DSHS).
North Sound Consumer Information System (NS-CIS)	This term is used to encompass all of the information systems in the North Sound region that contribute to the information needs of NSMHA and each NSMHA contracted mental health service provider. The NS-CIS includes any data required to provide public mental health services, including MHD, RSN, and individual agency data requirements.
North Sound Mental Health Administration, Inc. (NSMHA)	The Regional Support Network (RSN) located in Mount Vernon and contracted by the state Mental Health Division (MHD) to provide services to treat mental illness and meet the mental health needs in the North Sound (NS) region, made up of the following five counties in Washington State: Island, San Juan, Skagit, Snohomish, and Whatcom.
NSMHA Raintree Database (DB)	The Raintree database purchased by NSMHA and administered by Raintree Systems, Inc. for the purpose of storing and tracking NSMHA data requirements and generating and transmitting batches of MHD required data.
PCI Software	???
Provider Raintree Database (RT DB)	The Raintree database administered by Sound Data Services and used by mental health treatment providers that contract with NSMHA
Rainbow Resources	Previous name of one of the original members of Sound Data, Inc., Rainbow Resources changed their name to "bridgeways".

Raintree Systems, Inc. (RT)	A corporation located in Temecula, CA that has developed, sells, and supports Raintree software.
Strategic Information Associates, Inc. (SIA)	A corporation in Oregon that developed software to support mental health organizations and provided the first CIS for the North Sound region.
Sound Data, Inc. (SD, Inc.)	A private, non-profit, 501-C3 corporation licensed by Washington State since April, 1993 that currently owns the licenses for Raintree Systems software and is run by a Board of Directors consisting of a representative from each member MH agency. At this time, SD, Inc. maintains a Bailment Agreement with Compass Health, Inc. to manage, maintain, support, and contract with Raintree Systems, Inc. for consultation and development as needed as well as Raintree annual support (includes patches and upgrades). The state business license is held by Dean Wight.
Sound Data Services (SDS)	A department of Compass Health developed to manage, maintain, and support the Provider Raintree Database. The Chief Information Officer (CIO) for SDS is Andreas Macke (.25 FTE for Sound Data and .75 FTE for CIO of Compass Health) and the Director of Application Services is Marsha Murray.
Washington State Mental Health Division (MHD)	A division of Washington State Department of Social and Health Services (DSHS) that contracts for and monitors mental health services to the residences of Washington State. The MHD administers both federal and state funding and maintains contracts with the United States Title XIX administration for Medicaid recipients.

B. System Overview

An overview of data transmission and storage can help to understand the complexities in any information system. Figure 1 (see attached) is a conceptual drawing that shows the volume of and locations where mental health data in the NS region is stored and transferred on its transit starting with provider's data entry forms all the way to Olympia, where the Mental Health Division's (MHD) database resides.

In short, data on over 14,000 consumers and over 161,000 service hours is collected by providers covering 41 sites over five counties, is then transmitted to the NSMHA Raintree installation in California from the Provider Raintree system via both HIPAA national standard transactions (837P and 837I) and custom NSMHA transactions. The five counties that make up the North Sound region comprise almost 1.2 million people, or about 17% of the state population. There are approximately 155,000 people with Medicaid benefits living in the region which is about 14% of all Medicaid eligible people statewide. In the last fiscal year, NSMHA served approximately 12,000 Medicaid eligible consumers.

Sound Data Services uses PHP scripting language to generate the required NSMHA electronic data interchange (EDI) transactions that are submitted to Raintree are automatically imported

into the NSMHA DB. Raintree staff in Portland monitor the imported provider batches and generate MHD batches, transmitting the required data to the MHD CIS.

Unlike the database set-up for some other information systems used by multiple providers in RSNs, almost all NSMHA providers enter their data into a single Raintree database. There is currently one exception to this model for an agency that uses their own information system to maintain and export service/encounter data to send to the NSMHA RT DB. That agency does enter consumer data into the Provider Raintree single database in order to meet the NSMHA and MHD requirements for “native” transactions. The Provider RT DB uses “row-based” security methods that allow each provider access only to those “rows” of data that belong to them. SDS staff run regular unduplication processes to make sure that each consumer only has one master record. Their efforts in this are apparently working well, as their duplication rate at the MHD is quite low compared to some other RSNs.

The one exception noted above had planned use their own separate information system to submit both consumer data and encounter/services. However that agency ended up having to do dual data entry for basic consumer demographic data and could only use their own information system to send encounter/service data via the HIPAA 837P electronic transaction to Raintree for automated import into the NSMHA RT DB. This arrangement creates a gap in information available to Volunteers of America (VOA) for access and to crisis and E&T staff since encounters/services are not entered or imported into the Provider RT DB that is used for all other agencies. The encounters/services for that one agency are only available in the NSMHA RT DB. The current data model used by NSMHA and provider agencies could find more gaps in data available to access and crisis services if other agencies choose to use their own separate information system, rather than using the Provider RT DB. There was some indication that another agency is interested in or working on using their own system to send data directly to NSMHA.

The Raintree software provides for a number of security settings that allow multiple levels of access based on a user's login id. That is, designated “security staff” at each provider can determine which staff can have what degree of access to add, change and delete data for their agency. Each agency security staff submits requests to Sound Data Services for any changes to existing access levels or addition of new staff. As input from providers was gathered for this report, there was the perception that Sound Data Services makes the final decision to accept, change, or reject those security level changes. SDS management indicated that SDS staff will call provider security staff to clarify what appear to be incorrectly marked security forms, but the final decision is that of the provider security officer and SDS will make all requested changes. It is reassuring to clarify that security staff at each agency do have the final word on staff access levels, however it is important to not discount the feelings and perception of customers that the phone calls from SDS for clarification may come across as prescriptive rather than collaborative.

Specialty providers such as Volunteers of America (VOA) are given a custom set of screens and access levels in order to see enough summary information on any given consumer to coordinate care with provider crisis teams and intake specialists.

The actual Raintree database and software is hosted on a server housed at an AT&T Data Center in Lynnwood, WA. Each workstation at each provider site logs into the Raintree system hosted at that data center, so reliable and adequate (bandwidth & speed) network connectivity at both provider offices and at the Lynnwood data center is essential.

Data entered on workstations at provider offices is encrypted during transmission to the Raintree database in Lynnwood using an Internet Service Provider (ISP) and Virtual Private

Network (VPN) secure tunneling. One agency uses frame relay instead of VPN. The VPN connection is created for each office using point to point hardware VPN encryption devices between the provider's network and the data center or using client[1] software on each individual computer. In addition, users access the DB via Raintree client[2] software installed on each personal computer or workstation[3]. This user "client" software provides an additional layer of encryption as it encrypts each data packet before sending it to the Raintree server which decrypts each data packet as it electronically processes the incoming stream of information. Essentially, data entered into Raintree is encrypted twice, first by the "client" software used on each personal workstation, and second by the VPN encrypted tunnel. NSMHA, Compass Health/SDS, and some other agencies utilize the Washington State Department of Information (DIS) Intergovernmental Network (County IGN) for Internet access.

Providers note an overall improvement in network connectivity and reliability over the past few years. Although some sites report periods of slowness, there were very few reports of dropped connections. The network connectivity may not be as robust as what will be required if a full Electronic Medical Record (EMR) is implemented, since this greatly increases the number of users logged on at any given time and increases the amount of data being requested from and sent to the database. A full network capacity assessment should be done prior to implementation. There are several independent networking companies that can perform such an assessment and there are industry tools to support a review of network capacity.

Both NSMHA and SDS have recently worked with Raintree Systems to convert the current databases from the older Btrieve database platform to MySQL. SDS will also be running the Provider Raintree system on a virtual server. The database platform conversion is seen as a prerequisite to EMR implementation since it is expected to improve database functions before continuing with EMR implementation. Completion of the changes to the Provider Raintree system is expected by December, 2008. An added benefit to these changes is a significant decrease in the time required for the nightly back-up[4]. Although access (VOA) and crisis staff are currently affected by the nightly back-up, SDS has provided alternative access to the training DB when the live DB is unavailable during the nightly or other back-up. The training DB reportedly refreshed just a few hours before the live DB back-up and provides an alternative for client look-up during back-ups. This will not likely be needed when the back-ups are so much faster starting in December.

Sound Data Services reports the following advantages as they move from the current, hierarchical Btrieve database to the MYSQL relational database architecture:

- Scalability of database size – we're maxing out the current infrastructure with the sheer size of the database, despite rather massive archiving of old service data; MySQL will be able to effectively handle vastly larger amounts of data than the hierarchical storage engine currently used). As system speed comes to a crawl when file sizes get too large (as disk I/O becomes the critical path for the application), this is a vital measure to ensure system integrity and performance (we've basically outgrown the old platform).

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[1] "Client" in this instance refers to the staff person using the software, not to mental health clients the agency is providing services to.
[2] Ibid.
[3] This software may instead be installed on a central agency server in a Citrix type environment where agency staff may be using "dumb terminals" or very limited workstations at each desk that rely on a centralized server for all software functions.
[4] The current back-up begins at 2:00 a.m. every night and takes approximately 1.5 hours. E&T and VOA staff are especially affected.

BTW, this is the main reason that up to this point, implementing EMR functionality on any meaningful scale was not feasible, as it would have pushed us beyond the file size levels the current platform could have handled.

- Reduced down-time for backups – no longer need to take the system offline for backups every night (during that nightly two-hour window, users are currently provided a way to look up almost-up-to-date data to continue their work, a workable but suboptimal state of affairs).
- Ability to do more frequent backups (which would reduce the amount of data loss in a disaster recovery situation)
- Data warehouse reporting on fresher data (as the new architecture will allow for more real-time refreshing – most data warehouse data will be close to real-time; some "value-added" aggregate data will be recalculated every few hours).
- Generally improved business continuity/disaster recovery environment.
- Increased performance (both due to doing away with the restrictions alluded to above and because we can optimize the infrastructure to run separate application and database servers; additionally, we can engage in meaningful database tuning using readily accessible tools not available for tuning hierarchical db's) – which will ultimately enable EMR projects.
- Greater transparency of the data model, which will allow for reduced maintenance effort (it's a lot easier to troubleshoot relational data than hierarchical data).

1. Sound Data, Inc. and the Provider Raintree MIS[5]

In 1993, a group of NSMHA providers formed Sound Data, Inc. to share costs and to locate and purchase a new information system using MHD funding available to recently formed Regional Support Networks (RSN). The RSN structure was created by the Washington State legislature to manage mental health services and funding at a local level to support the needs of each community. In 2003, Sound Data, Inc. purchased Raintree Systems software as a replacement provider information system when the existing software vendor, BDS, prepared to go out of business.

Raintree software is now used to maintain the Provider RT DB and utilizes role based security to provide solid medical billing that is easy to configure to meet MHD and NSMHA data requirements. Sound Data Services staff can implement most, if not all, required data dictionary changes without consultation or special programming from Raintree staff. This is a significant advantage over some other similar types of software that require the software vendor to program changes to the RSN and/or MHD export processes. Since Raintree software provides tools for making changes to the RSN/MHD exports, required changes cost significantly less and are able to be tested and completed much more quickly. RSNs and providers using other software have reported paying $15,000 or more for data dictionary changes and programming can take several months so that time delays can put organizations out of compliance with the MHD requirements for timely data submission. Since changes can be easily programmed using Raintree software, the Provider RT DB is in a much better position for implementing changes in data requirements.

[5] Please also see the attached Figure 2: Evolution of the North Sound CIS and Related Organizations

Sound Data, Inc. was set-up as a separate 501-C3 non-profit corporation with representatives from each of the charter members making up the Board of Directors. The original five members split the Sound Data, Inc. budget and Sound Data Services has continued that model for splitting costs. Sound Data, Inc. maintains a bailment agreement with Compass Health to run the Provider RT DB and to work with Raintree Systems for annual support and consultation. The original five members included the following:

- Compass Health (merged with Community MH Services, which would have been a 6th original member)
- Lake Whatcom Residential and Treatment Center
- Rainbow Resources (now bridgways)
- Volunteers of America (VOA)
- Whatcom Counseling and Psychiatric Clinic

In addition, Catholic Community Services NW (CCS-NW) participated in the original purchase of software licenses but did not become a member of Sound Data, Inc. Since CCS-NW helped to capitalize the original project, they are treated as a Tier 1[6] agency for billing purposes by Sound Data Services.

Each year, Sound Data Services, a department of Compass Health, prepares a budget that is reviewed and approved by the Sound Data, Inc. Board of Directors. The annual budget[7] is split between all members of Sound Data, Inc. plus CCS-NW based on the following formula:

$$\frac{\text{[SDS Budget]}}{\text{[12]}} \times \frac{\text{[Monthly day time minutes each agency is logged into the system]}}{\text{[Monthly day time total all agencies logged into the system}^{8}\text{]}}$$

SDS indicated there is little monthly variation in monthly charges to each agency.

If SDS costs exceed the budget, Compass Health pays the difference. The last annual Sound Data budget is approximately $925,000 and includes:

Professional Fees	$163,000	$120,000 Raintree Support
Staff Salaries	442,000	6 staff, 1 director, and .25 CIO
Staff taxes & benefits	69,000	
Training	20,000	
Travel	9,000	
Office Expenses	35,000	Supplies, Occupancy, Misc.
Equipment	7,000	
Communications	15,000	
Compass Health Shared Expenses	104,500	Includes AT&T Data Center
Depreciation	21,000	

Raintree charges are approximately $120,000/year for annual support and have held relatively constant over the last several years other than the increase in user licenses. The retail purchase price for additional Raintree licenses is approximately $4,000/license, although Sound

[6] Described later in this document.
[7] The last annual budget is summarized later in this section.
[8] Sound Data Services staff time logged into the system is excluded from the calculation.

Data, Inc. receives a discounted rate for new licenses. The annual support charges include patches and upgrades to the system, except when a new, distinct module is released. Only 25% of the CIO expenses are charged to the Sound Data budget, with the rest charged directly to Compass Health as the CIO for Compass Health.

In 2005 and 2006, Sound Data worked with agencies to take advantage of a significant reduction in pricing on additional Raintree licenses. It was anticipated that these licenses would be needed for future growth as well as the longer range goal of implementing the EMR. Raintree defines two different types of licenses. They are: concurrent licenses and named user licenses.

> **Concurrent licenses**: are available to any user as long as the total number of users logged into the system at any given time does not exceed the total available (paid for) Raintree licenses. Most of the Sound Data, Inc. licenses are configured as concurrent licenses; however they will convert to named user as more EMR type functions are set-up.
>
> **Named user licenses**: are only available for a specific user and are associated with that user's login. Named user licenses are required for using the EMR functions.

Prior to the 2005 and 2006 bulk purchases, Sound Data, Inc. held 200 concurrent licenses. There are now 500 total licenses with 150 designated as concurrent and 350 designated as named user.

Since the formation of SD, Inc., other organizations participate in the Provider RT DB. These organizations include:

- Counties (providing jail services):
  - Island County
  - San Juan County (data entered through agreement with Island County)
  - Skagit County
  - Snohomish County
  - Whatcom County (data entered through an agreement with Whatcom Counseling)
- Interfaith (added 10/07, uses own agency IS to send encounters/service and only uses Provider RT DB for required native client transactions)
- LKI (added 5/08)
- Sea Mar
- Sunrise Services (added 10/07)

Jail contracts requiring county access to the Provider RT DB were added within the last few years. In the beginning, counties were charged a small initial fee to set-up and access the Provider RT DB. For the first two years, Skagit and Island counties were not charged by Sound Data Services for their access into the Provider RT DB to enter jail data. The Sound Data, Inc. Board of Directors asked SDS to begin invoicing the counties for their use of the system in October, 2007 as a result of new funding allocations from NSMHA. Initial work on contracts may have resulted in misunderstandings due to confusion about the amount of interaction with each agency and the CIS. Setting appropriate rates took some time to adjust since the SDS "floor rate" would have been too much for the smallest contracts. These problems seem to be resolved, but created complaints in the beginning during the confusion. Revenue from new

customers does not currently reduce the monthly payments for the original five members, but presumably will during the next budget cycle.

Provider CIS Databases Include:

Database	Location	Purpose	Updates
1. Raintree Live MIS server 500 Total Raintree licenses 150 concurrent Raintree licenses 350 "named user" licenses	Lynnwood, WA	• Provider agency consumer information system to collect and export staff, consumer, and encounter data to NSMHA • Insurance and other 3rd party billing system • Populates Sound Data MS SQL data warehouse • Reports • Note: Includes deleted data	Daily direct data entry by providers NSMHA service authorizations imported from NSMHA Raintree. Back-up at 4:00 a.m. nightly
2. Raintree Training MIS server	Lynnwood, WA	• Training	2:00 a.m. Nightly
3. Raintree Test MIS server	Lynnwood, WA	• Testing	As needed
4. Raintree Report DB server	Lynnwood, WA	• Reports	Nightly
5. MS SQL Server data warehouse server	Lynnwood, WA	• ad hoc Reports • Limited access: only to report writers group	Daily 100% Refresh from Raintree Live MIS

Besides the Provider databases listed above, users may access the following functions via the VPN:

- Z-Mail secure e-mail accounts
- Documentation
- Training Materials
- Mantis Help Tickets

2. Sound Data Services, Advances in Technology, and Compass Health

Sound Data Services is a department of Compass Health and Advances in Technology is a for-profit subsidiary of Compass Health. Given the unusual relationship that Sound Data Services and Advances in Technology have with Compass Health, one would expect to find further complications in staffing and reporting relationships, and that is in fact what was found. Those will be described later in this report.

3. NSMHA's separate Raintree system

NSMHA purchased their own installation of Raintree Systems' Practice Management system and pay the vendor to host their application and store their data at the vendor's Temecula, California data center. This type of outsourcing is not unusual today. While Sound Data uses the services of AT&T to store their data and host the Raintree software out of AT&T's Lynnwood data center, NSMHA pays Raintree Systems for hosting their MIS. Payments to Raintree include professional services to manage, support and upgrade their system, data and

application hosting on the Raintree network, and creating/transmitting native and 837 batches to the MHD. NSMHA uses their Raintree installation to perform electronic data interchange (EDI) translation of Sound Data batches into the NSMHA database and outbound data to MHD via the EDI translator built into Raintree as well as to populate a separate MySQL database that is used to send data to NSMHA's data warehouse. Finally, custom Raintree screens were developed so that NSMHA staff could review provider authorization requests.

While the five-year average annual cost to NSMHA by Raintree Systems is around $68,000 for annual support and hosting the system, we note that the last full year's charges were around $168,000 and that the charges have been increasing at about 8% per year for the past three years. The other cost to NSMHA is an estimated half of an FTE of NSMHA staff to confirm data transmissions amongst various systems and work with Raintree Systems staff on system changes when needed. Last year’s costs probably include some or all of the charge for the Btrieve conversion to MySQL.

NSMHA databases include:

Database	Location	Purpose	Updates
1. Raintree Live MIS (5 concurrent licenses for QA Authorization staff, accounting, and IT staff)	Raintree/California	• Staff, Consumer, Encounter Data imported from providers • Data exported to MHD weekly by Raintree staff • NSMHA Service Authorizations entered and exported to Provider Raintree in Lynnwood, WA • Populates MySQL Data Warehouse • Note: Includes deleted data	• Daily Batches from Provider Raintree server • Monthly 837P encounter batches from Interfaith • Weekly consumer data and 837P encounter batches generated by Portland Raintree staff and submitted to MHD
2. Raintree Test MIS	Raintree/California	• Testing and training	As needed
3. MySQL Data Warehouse	Raintree/California	• Populate NSMHA Mt Vernon databases	Daily 100% Replace from Raintree Live MIS
4. MS SQL DB	NSMHA/Mt Vernon	• Generate Invoices • TXIX Eligibility files (backed up monthly and maintained for last 19 mos) • Note: No deleted records	Daily 100% Replace from Raintree MySQL
5. MS Access Report DB	NSMHA/Mt Vernon	• Reports Dennis runs	Linked to MS SQL data warehouse
6. MS Access CIS DB	NSMHA/Mt Vernon	• NSMHA Intranet (reports) • QA Reports	Replaced 2:00 a.m. daily
7. MS Access MMIS DB	NSMHA/Mt Vernon	• TXIX • Populates NSMHA Intranet (TXIX)	Monthly updates from the latest MHD TXIX file, always maintaining the last 19 months of eligibility files.

Along with the NSMHA database hosted by Raintree Systems is at least one other database they host in their California location, and several databases at the NSMHA office including: a MS SQL Server data warehouse and several MS Access databases that link to the MS SQL Server data warehouse to provide reporting for NSMHA staff and the NSMHA Intranet site. We note that with more physical locations, variations of database vendors and data transfers

between systems the risk of exposure of Protected Health Information (PHI) to unintended places or persons increases. Multiple databases may introduce confusion about which database was used and when it was last updated or refreshed. Technology today should support capacity to use the main DB for most data reporting needs.

Prior to the October 2007 changes in the number and types of providers now contracting with NSMHA, NSMHA had mostly contracted with a single provider, Associated Provider Network, Inc., for most services. There was understandably some confusion about how to proceed since NSMHA did not have any recent experience bringing on new agencies into the region and the Sound Data MIS.

4. Provider IS staffing

The IS Review questionnaire asked providers to indicate how many staff, FTEs, years employed at the agency, experience in their career field and experience with the Raintree software, for eight job functions. Those job functions were; data input, error corrections, report writing (coding and design), data and system analysis, formulating data for decision making, clinical use of data, hardware and network management and network/system/database security. We grouped those functions into four skill areas: a) Data input and correction, b) Data formulation and analysis c) Report writing and d) hardware, network and system management.

As was noted earlier, provider written responses to the questionnaire were spotty. We had results from seven out of 15 providers (10 agencies + 5 county offices) in this section. It would be useful to further clarify with smaller agencies as follow-up on this report progresses.

We considered the skill area to be at risk for the whole region if there were three or less providers that indicated they had no staff performing those functions. The one exception is area d) hardware, network and system management, since a number of providers have either outsourced those functions to external companies they contract with or a county IT group takes responsibility for those functions. We will therefore focus on the first three areas, although it is also important to consider how to support smaller agencies and to consider outsourcing as a viable alternative for several of these categories.

a) Data Input and Correction:

Staffing in data input and corrections was most robust. As would be expected, all seven providers and as confirmed by additional agencies during interviews, all had staff to perform this function, with the average # of FTEs at 3.2 and 2.86, for input and error corrections, respectively. The average years employed at all agencies was 13 years, with an average of 20 years' experience in this career field and an average of three years' experience working with the Raintree software. The system as a whole, then, has a very experienced and long-tenured data entry staff, which lends more credence to their comments about screen designs, application workflow issues, and speed of application functions. As described in Appendix A- CIS Issues Identified, some agencies indicated there are gaps in understanding how to use the system efficiently and written training materials could be improved.

b) Data Formulation and Analysis:

Four out of seven agencies have staff that are assigned to this function, with an average of two per agency and an average tenure of 6.4 years and an average of 2.9 years experience working with the Raintree system. It was mostly smaller agencies that did not have any staff dedicated to these activities. Often this function is part of a quality assurance process or position, where data completeness, accuracy and timeliness can be monitored and improved, so that

"downstream" reports off that data are as accurate and up to date as possible. The survey results may have been a function of how the items on the questionnaire were worded. Further exploration of how each agency's leadership conceptualizes the use of data and how data affects their practice and business processes would help set goals in this area. It would be useful to further explore how data-driven decision methods could support improvement in the whole system of delivering clinical services to the community.

c) Report Writing (Coding and Design):

Four out of seven agencies indicated having someone on staff that creates and modifies SQL reports in the data warehouse, an average of 1.75 staff are assigned to each agency for this function. The average tenure of employment was five years with an average of two and a half years' experience working with Raintree software. Our experience is that full report writing skills are not always necessary for every provider; however agency leaders express the need and desire for reports to help with management decisions. It is important to have accurate and timely reports and to understand how to use them. Sound Data Services supports the reporting needs of NSMHA contracted agencies in many ways, most notably with the Report Writer User Group.

The challenge is how to support smaller agencies, and each agency's administration, clinical staff, and managers to get the information they need to do the best job. It is beneficial to have staff time dedicated to data quality, integrity and timeliness of entry and corrections. Providers also benefit from working closely with colleagues and the Report Writers User Group as well as NSMHA and Sound Data Services to come up with a standard set of data quality and integrity reports to monitor their own data. A standard set of reports system-wide can be replicated, analyzed and acted on by each provider would help the whole system to better understand their performance.

C. System Strengths and Praises

Many praises were voiced about the Provider Raintree CIS and improvements that have been made over the years. There are positive comments throughout this report, but we have also included several of the positive comments below.

We would like to start with comments about the cooperative arrangement that Sound Data, Inc. used to purchase licenses and set-up the Provider RT DB. This cost-sharing model allows agencies to experience significant cost savings for software licenses, software annual support, and programming for data dictionary changes.

The alternative model would have been for each agency to write a separate contract with Raintree and to maintain separate servers and databases. Total annual support paid to Raintree would be significantly higher if each agency had fewer licenses since the per-license charge goes down as the number of total licenses goes up. In addition, making data dictionary changes requires significantly less programming to change one database than it would to make changes to separate databases for each separate agency. Under a combined system, development costs can be reduced since each agency does not need to replicate improvements and how to implement them. The challenges for Sound Data, Inc. are:

- managing the total budget to run the system
- determining how to fairly split costs between different sized agencies providing different volumes of clients and services, and

- determining what improvements and costs should be split by all agencies and which should be paid by only one or a few agencies.

Another distinct advantage of the current system is having a single database for VOA and Integrated Crisis Response staff to quickly identify existing consumer data. As changes are made to the system, it is important to maintain the ability for VOA and Integrated Crisis Response staff to have a single place to locate important data/documents for every consumer.

A consistent comment from providers was that the current installation of Raintree software works a great deal better than it did when it was first installed. Providers also made note that several years ago, Sound Data Services sent providers a letter explaining issues they were having, admitting responsibility for some problems and making promises to improve the system. After the letter came out, providers noted real system improvements. During site visits, several providers complimented SDS on its' honesty and willingness at that point to make needed changes. It was mentioned that the honesty in the SDS letter won admiration and respect from providers.

Sound Data Services was also praised for the custom programming they did for a county Human Service department, which allows county staff to upload a file on inmates recently booked into jail from their county jail information system, which then allows them to run a matching routine from within Raintree, to find matches, and coordinate care using that match list. Other jail programs were offered the opportunity to participate in the project, but indicated the small volume of clients made existing processes adequate. There is a standard tool that agencies can use to import an Excel list of people to match against the Raintree Consumer ID.

Providers appreciated the newly added "tab" feature on the main screen, to aid in navigating to various modules and appreciated color coding, which also aids them in navigation.

While few providers understood the purpose behind Sound Data's upgrading of the underlying database from a "Btrieve indexed" database to a full relational database, based on the MySQL database engine (owned and provided by Sun Microsystems), they generally understood that this would be an investment that will pay off in greater functionality of the system. This kind of effort is not easy to do as it is an upgrade to the heart of the system, so the fact that Sound Data appears to be on schedule with this project to be completed by December 1st is laudable.

Several providers offered that they "loved" the 180-day review process in Raintree because it's easy to track and send reports to clinicians using this function. Providers also compared the current system to the previous one provided by BDS and noted that system changes seem to be easier to make and the unduplication process to merge client records to a master record are much easier with Raintree.

Providers also had praise for NSMHA for starting to include more Sound Data and provider data integrity and IS staff, to help develop new reports, and when doing planning work for changes that will affect information collection, storage, and transmission.

Finally, in general, their experience getting VPN connectivity and VPN client software installed and working went well. System down time is kept to a minimum and besides the nightly back-up when the training DB is still available, outages are rare and the system is up most of the time. Sound Data Services staff work hard to minimize time the system is down for patches and upgrades.

NSMHA believes that the quality of the data that has been submitted by providers over the last number of years has greatly improved. Previously, there were many questions that would be raised by various stakeholders because the quality of the data being submitted was suspect. Providers have made great efforts to ensure that the data that is being submitted is accurate and timely. Most of the questions that had been raised previously are no longer raised.

D. Information Systems Review Survey (partial results)

Survey results are mentioned throughout this report. This is the list of questions with results that lend themselves to including in this document. These 16 items were included in the provider questionnaire. Each agency was asked to rate the items on a scale of 1 to 5, with 1 being "greatly dissatisfied" and 5 being "greatly satisfied", and were give the instructions to rate each item based on their agency or site's experience in the past year. The results and their averages are shown below. We note that half of the average scores are below average. Six agencies completed this section of the questionnaire so this does not reflect feedback from all agencies or offices. However, we do feel that it fairly well represents the breadth of providers in NSMHA. Respondents included agencies large and small, county Human Service departments, and well-established subcontractors with NSMHA as well as those newly contracting since last fall. The surveys however did provide a framework for site visits.

	Scale of 1 to 5	Average	Rating
a	The computer connection speed between our site and Sound Data	3.83	**Above Avg**
b	The reliability of the computer communication method from our site to Sound Data (e.g., T1, Cable DSL to Internet, Frame Relay, etc)	3.83	**Above Avg**
c	The accuracy of RSN payments for the number of consumers we serve, compared to our expected payment	2.67	Below Avg
d	The progress that Sound Data has made in moving the whole system to a full electronic medical/health record	2.25	Below Avg
e	The progress that Raintree Systems has made in making their software a full electronic medical/health record	3.00	Below Avg
f	If your organization is a part-owner of Sound Data, your partnership arrangement in general	3.5	**Above Avg**
g	The amount your site or agency pays Sound Data for their services	2.67	Below Avg
h	Access to reports	3.50	**Above Avg**
I	Accuracy of reports	3.50	**Above Avg**
j	Data Dictionary changes including timeliness of Raintree readiness for collecting and transmitting new/changed data and notification/ understanding of the revised requirements	3.20	**Above Avg**
k	Training and understanding of Raintree functions and capabilities	3.33	**Above Avg**
l	Ease of use of Raintree functions	3.50	**Above Avg**
m	The EMR project overall	2.25	Below Avg
n	Clinical staff reaction to the EMR project	2.00	Below Avg
o	I.S. Staff reaction to the EMR project	3.00	Below Avg
p	The usability of the RSN data dictionary	2.40	Below Avg

E. CIS Issues Identified

There were four themes that came up regarding suggestions by users for enhancements to Raintree functions as well as users' frustrations with the system, 1) the functionality was cumbersome to use, 2) the desired functionality was not available, 3) the functionality was available but the users did not know it was, and finally, what we termed 4) enhancement requests or added functionality that was noted by more than one user as being something that would be helpful in doing their jobs. We have documented these four themes in Appendix A and note that many of the issues are training issues or items that will be resolved after the Btrieve upgrade to MySQL that will provide added functionality.

F. Training

Sound Data Services uses a train-the-trainer model. Although this model works well with larger agencies, SDS is rethinking this model for smaller agencies that may only have one staff person performing specific duties. Generally, new users receive two separate training blocks of four hours at the SDS offices in Mount Vernon for $200 for a four hour block. Follow-up “shadow” sessions are available by phone at no additional charge. “Shadow” sessions are a feature of Raintree software that allows two users to log into the same session so that one user can see what the other user is doing on-screen.

The range of provider’s experiences with training staff to use Raintree software varied widely, however positive training experiences were mostly found with providers that had developed a robust internal training program and had developed their own manuals and materials. Of course, one reason for better results is when forms and instructions were tailored to business processes and training on specific procedures. Two large providers go further and provide first line staff support for the application, develop their own ad hoc and routine reports which dedicated IT/data quality staff run and distribute. Smaller providers without these resources generally reported poorer experiences with training provided by Sound Data Services.

The expectation is that a set of initial training sessions, covered in the startup costs to the provider, should suffice to give the provider staff enough skills to use the application. Providers are then expected to either train others at their sites as new staff come on or replace staff that are leaving, but this model breaks down for smaller agencies when often only one position exists to do the data entry and when that person leaves, they take the skills with them and do not train their replacements. The SDS policy is to provide further training at a cost to the provider may make good business sense but it is fomenting some resentment with providers, who feel that they are locked into using the software because of NSMHA contract requirements yet have to pay for training each time they have staff turnover.

Comments about the actual training sessions, held at the SDS Mt. Vernon office, indicated that sessions were not highly regarded by staff which have attended. Common statements included that they expected to be trained based on business functions, for example, “this is how to schedule a client”, or “this is how to enter intake info” but reported that instead, they got trained on “the use of screens”.

Documentation got mixed reviews. Some found it clear and useful, others found it unhelpful. However, during some site visits, when users were asked to find instructions in the training manuals, they at times discovered functionality they did not know existed. It appeared that they had not looked at the material in some time, if ever.

G. Reports and reporting

Providers are aware of and make varied use of reports available within the Raintree software and those provided by NSMHA. These will be addressed separately in this section.

Reports are only as good as the data behind them, and confidence in data quality varied widely by provider. While the quality, accuracy, completeness, and timeliness of all data entered by providers is largely at their control, there was a pervasive perception that they do not have the reports they need to manage their own data entry and quality assurance.

1. Raintree / Sound Data Services Reports

Again experiences varied widely, with staff of large providers most happy with reports provided to them for financial, clinical, data integrity, and tracking functions, since internal staff, most in tune with reporting needs of the agency, could best analyze, code, test, and distribute the right reports to the right people at the right time. In fact, Raintree has the ability for providers (several of which have taken advantage of it) to use other software to issue SQL (structured query language) queries in the Provider data warehouse, then take those results and present them in Excel spreadsheets, Access databases, Crystal Reports or other reporting tools. Providers that have the capacity to hire or train staff in this specialty area are most happy with the reporting tools. Some county Human Service providers also had the advantage of county IT staff with some reporting skills that have contributed a good deal of functionality to staff, outside of the application itself.

Every agency with access to the Provider RT DB is offered access to the data warehouse which has a plethora of views and both existing reports and the ability to create custom queries for other reporting. SDS has offered beginner training in the past and are working on minimum requirements to take the class. Generally the class is offered every couple of years.

Once the new MySQL database is converted from the current Btrieve, SDS staff plan to create another 50 or so reports from the occasional requests for information to meet a specific reporting need.

Typical of most software suites that use a back-end database and a front-end user application, a set of "canned" reports is provided that hopes to cover typical user needs. SDS staff have over 150 reports available to users from within the Raintree application.

Almost everyone who had anything to do with producing reports was enthusiastic about the Report Writers User Group that Sound Data Services hosts via monthly meetings. Many people noted the high level of reporting skills that SDS staff brings to this group and whom are available via phone or email to help a user troubleshoot a report or query problem.

There seems to be a challenge of disseminating information or reports within each agency. Even though there are people trained at an agency to run reports, they may not be helping other staff that could use reports to be more efficient. Data entry and administrative staff don't always know which reports are available that could help them to do their jobs better.

Smaller providers seemed to be frustrated that the reports available don't meet all their needs and yet they are reluctant to request more from SDS because they feel that the cost will be too high for them.

2. NSMHA Reports

The reports available to providers from NSMHA and the experience of requesting reports was generally not well regarded for several reasons.

Several providers described the "missing data" reports they get from NSMHA, which they use to review and correct their data. Attempts by providers to discuss this with NSMHA IT staff generally seem to result in deferrals to Sound Data Services for any discussion and disputes. However, SDS expressed frustration in the process by which NSMHA produces reports. Reports on particular trends in clinical service provision and treatment outcomes are best done with a clear understanding and agreement with all parties about the quality, accuracy, completeness and timeliness of the data and an agreement about how the query behind the report will select data for the report. Reportedly from providers and SDS staff, this has not been their experience with NSMHA. They commented that NSMHA does not adequately communicate the assumptions behind reports and they note a lack of coordination with Sound Data Services on the data quality, before producing and distributing the report. The perception by NSMHA is that since there is no contractual relationship with Sound Data Services, it is difficult to work directly with them.

Once a report is sent out, incorrect data and conclusions are difficult to retract but several examples were given of where reports were recently distributed which indicated poor services by providers, but upon further investigation, NSMHA staff assumptions about the data had lead to incorrect query coding and therefore an incorrect report. These types of examples can significantly damage trust in the accuracy of the CIS and should always be avoided. Problems can be avoided by communicating goals and reviewing queries and results with those that can help analyze and troubleshoot issues before publishing to the larger group. The goal is to pull accurate reports so that if data is a problem, it can be improved. Unfortunately, misleading rumors about inaccurate CIS caused by incorrect reports (report pulled wrong or incorrect assumptions) is much harder to recover from. The goal is for program directors to take ownership to maintain accurate data, rather than becoming disillusioned when they see "incorrect conclusions" and give-up on the goal of accurate data.

In one interesting example of a NSMHA report, a provider described a report on missing data that they regularly get from NSMHA, and for which they were attempting to collect the missing data and enter it into Raintree, even though they rarely collect this particular data during crisis services. When it was pointed out that the particular field would accept the value "unknown", they stated, with some anxiety, that they understood that they are required to go back into paper records and attempt to collect and enter all the missing data to meet a perceived NSMHA requirement.

Conversely, providers and Sound Data Services expressed frustration that NSMHA IT staff has tended to ask them for reports on data that they feel they have already submitted to NSMHA. An example of this was found in section C.5 of some but not all provider "Medicaid covered mental health services" contracts. Providers appear to be required to report monthly to NSMHA on 14 specific data elements, 6 of which are contained in the data transmitted to NSMHA and which could be reported by NSMHA in internal management reports. Other contracts reference this requirement in a contract attachment. They further commented that NSMHA requests for reports are often not very clear and there is little coordination on data elements used and common definitions behind report requests.

Provider staff said they can request reports from NSMHA but that they feel they do not get a regular set of reports that help them monitor their programs. Further, some reported that they are not sure how to request reports from NSMHA while others noted that when they do ask, that they often get what has already been done from previously developed reports though in some cases, if they talk with NSMHA IT staff, they sometimes can get customized reporting to answer their questions.

Providers described a common comment from NSMHA that may represent an overly restrictive view of consumer data. When report requests have been made of NSMHA, providers have in several cases been told that they cannot see other provider's data. In one case, the provider subcontracts out certain treatment, but is in the difficult position of being unable to monitor via a report, what services are being provided for the money they are paying the subcontractor. Under HIPAA privacy regulations around treatment, payment, and operations, and in fact in a number of other RSNs, we note that providers routinely can see the services provided by other agencies in order to coordinate care and evaluate effectiveness. The same restriction by NSMHA from seeing Medicaid eligibility data sent to RSNs from MHD has providers frustrated in not having access to a source of information that they feel would improve their ability to provide care.

H. Confidence, Satisfaction, Trust, and Communication

A great deal of frustration was expressed by providers about Sound Data Services, by SDS about NSMHA and by providers about NSMHA. This section will address these dyads individually in order to help illuminate the issues. Interestingly, at the start of this project, all parties hinted at communication problems with the others and all three stakeholder groups expressed a hope that this review could help by providing the impetus and guidelines to develop processes to improve how “changes get done”. Hopefully the material in this section will be taken in the context of what can then be changed, and not as a catalog of blame.

1. Providers and Sound Data Services

a) The Provider Perspective

Some of the most emotional discussions with almost every provider occurred when discussing their relationship with and the quality of communication with Sound Data Services. One of the most consistent themes that arose during provider discussions was a good deal of frustration in the level of customer service provided by SDS and a range of perceptions along an axis of frustration as described from “obstructionist” to suspicion concerning the business arrangement between Sound Data Services and Compass Health. SDS customers were concerned about the ability of SDS to represent the needs of all agencies and not focus mostly on the needs of Compass Health. Clinical and nonclinical staff both made similar comments about this. Speaking to the latter concern first, many providers see Compass Health as a direct competitor for NSMHA contracts and dollars so there is a suspicion that Sound Data Services- and therefore Compass Health - can see all the data entered by other providers and can use that data to their advantage in contract negotiations. In discussions with SDS staff about the issue of SDS being able to access any provider's data, those concerns were minimized and security safeguards were mentioned as being in place that would prevent this type of access. However it is our opinion, based on our experience, that anyone with “system administrator” privileges in a database can access any data desired, so we cannot obviate provider concerns over this issue. SDS staff also reminded us that it would be unethical and a flagrant violation of HIPAA

standards and that they certainly do **not** make any cross-agency data available to Compass staff.

Another offshoot of Compass Health is Advances in Technology (AIT), designated as a for-profit IT company. On a number of occasions, providers were surprised to find that they were required to enlist AIT's help to connect to Raintree even when they had their own IT staff or outsourced their network management to another company. For example, some providers outsource their network and Internet service provider (ISP) to other companies. This is the case for providers in several counties in the region. At all those sites, staff described how AIT had initially required them to use AIT as their ISP, which would require them to pay for separate high-speed connections to the Internet. It was not until provider staff strongly negotiated with AIT did they relent and eventually allow other companies to connect to their system to access Raintree.

These perceptions of impropriety are at this point, just perceptions. Yet we found them pervasive and note that they are greatly influencing provider confidence in other aspects of the company.

Several themes arose regarding the area of customer service; suspicion that Compass Health enjoys far greater service than other providers do, that providers are being charged too much for use of the system, and that they have very little contractual leverage to improve the services they do get from SDS.

There is also the belief among non-Compass providers interviewed, that they are both getting less service than Compass does and that system change or enhancement requests only get acted upon by SDS if “Compass wants it.” Again, these are perceptions that could not be verified but they are also prevalent, strongly held, and therefore operate as facts in many people's minds. It is, of course, appropriate for Compass Health to receive more SDS time since they are the largest provider and paying the highest percentage of the SDS budget.

On the other hand, Compass Health at times seems to bear the brunt of “alpha” and “beta” testing of software changes. That is, they are called upon to spend a good deal of time as the initial testers for new functionality and in some cases, to do “load testing”, requiring a number of them to log on simultaneously and run various intensive processes in Raintree in order to simulate multiple users.

Charges for the use of Raintree software is done on a tier system and providers are required to sign a “data services agreement” with Compass Health which is part contract and part service level agreement. In fact, the data services agreement is predicated on the continued existence of an “Information Technology and Support Agreement” between Sound Data, Inc. and Compass Health. We found Compass Health contract terms to be worded to benefit Sound Data more so than to benefit providers. For example, in our reading of the data services agreement, the only option providers have to terminate their contract is to give Compass Health notice within 90 days of the expiration of their current contract. However, Compass Health may terminate at any time, if they give the provider 90 days notice. SDS staff indicated that terminating the contract could only be done within the narrow provision of Compass experiencing a loss of funding. This option for termination if agencies experience a loss of funding could be added to the next contracts.

There are three types of Sound Data Services customers:

Tier 1 providers represent the Sound Data, Inc. Board of Directors plus CCS-NW and are those agencies that contributed to the original purchase of the Raintree system and associated hardware and network assets to run it. They pay a different rate than others, but all Tier 1 providers pay 1/12 of the SDS budget as approved by SD, Inc. based on their percentage of total minutes of daytime use by all users except SDS staff login time for each invoice month. SDS indicated that charges to each agency do not vary significantly, although there are some seasonal variations. Charges range from a low right around the Tier 2 "floor rate" to a high of over $50,000/month.

Tier 2 customers are those that pay a flat rate per month determined annually for each agency based on historic and planned usage. There is a "floor rate" of $1,205/month that is the lowest amount Tier 2 customers pay. This service level is the "full-support model" and includes most agencies that were not part of the original Sound Data, Inc. plus Catholic Community Services.

Tier 3 customers are only two counties that provide jail services and pay $250/month for minimal access to the system, plus an hourly charge for any training, programming, report writing, or custom database work. These customers are on a reduced maintenance regimen, since they don't use the transactional parts of the system and only use the system for consumer look-up for the jail programs. Under the old NSMHA/APN contract, these counties were getting free service since any payment they would have had to make would have essentially been a carve-out to the APN capitation budget.

Many providers outside of Compass Health hold the opinion that they are being overcharged for the services and functionality they are getting. Adding to their frustration is that they are charged based on minutes of use. This method has resulted in some unintended consequences. Several providers have created duplicate systems in such software as Microsoft Access, and do dual entry of consumer demographics so that they can look up basic information about consumers without logging in to Raintree. The act of logging in and out of the system many times during each day was, for some providers, a hindrance in getting other work done. Some providers who do duplicate entry also did it so that they could use that data to produce the reports they wanted, and some expressed reluctance to ask SDS for more reports because of the costs involved. These and other providers also did dual entry due to an observation that the "training" database is not always available and that the data is at times more than 48 hours old. The training database is reported to be an exact copy of the production system, made every night. However providers note that the backup of the production system takes many hours and that the training database does not always contain up-to-date information. Therefore they felt that it was necessary to have an Access database to provide a duplicate system of their own.

These issues could be an acceptable "cost of doing business" except that the data services agreement provides no real assurances to providers about what level of data access they can expect. A service level agreement standard to the IT industry typically includes a promise of a certain amount of system "uptime" and an agreement of credit or repayment to a customer if that amount is not provided during a billing cycle. Sound Data Services and Compass Health would do well to consider such an agreement with their customers, as it would be another step towards increasing their satisfaction and confidence in services.

Providers also reported that they do not know what they will be charged when requesting system changes, enhancement, or reports from Sound Data Services. In fact, the data services agreement notes that reports, training and support calls regarding functionality are all activities that providers will be charged extra for, though no rates are quoted. We wondered whether for some providers the perception of a high cost for system changes, report requests, and training was due in part to a lack of experience with what are customary industry charges for such services. However, the customer service aspect of this issue may be more important, given the current climate of suspicion.

Almost every provider stated a strong reluctance to contact SDS, either by email or by phone, to ask questions about use of the software, because of a perception that they would be "...charged by the minute for everything we ask." Part of the confusion could be due to the SDS budget being split based on the percentage that an agency is "logged into" the system. Providers are not being billed for everything they ask, but they are billed for every minute they are logged into the system.

Obviously SDS gets a great number of emails and phone calls from providers but from the provider's standpoint, they do it reluctantly and fearing that their contacts will cost their agency money. Some staff offered that when hired, they were told to "never call Sound Data, they'll charge us for it". Whether this is in fact true is less important than how the perception is unduly influencing how skillfully providers are using the software and ultimately could affect how accurate and timely their data is. SDS indicated that they never charge for telephone calls and always tell agencies when their request will require an additional payment. In fact, SDS requires a purchase order from an agency before they will move forward on a request that will result in additional charges. SDS encourages customers to contact them whenever they have a question. Often SDS can answer questions quickly and customers can be pointed in the right direction to run an existing report or to make sure they are using the system efficiently.

The misperception about SDS billing process is an example of miscommunication that needs to be corrected. Our recommendations suggest looking into alternate ways to share the costs of running the Provider RT DB.

Providers described the process that Sound Data Services has asked them to use to enter a request for help or system change. Providers seem quite aware of how to access and enter "work tickets" into the "Mantis" help desk software used by Sound Data Services. But provider experience in making requests of SDS, whether by this method or by calling or emailing was often frustrating. They generally described direct contact with SDS staff as positive and friendly, but their largest disappointment is in what happens next. A trend was noted in the general experience of making a change request and then getting very little feedback on 1) how long the request would take to be done, 2) whether it could be done at all, 3) what the change would cost, 4) what progress was being made on the request and finally, in many cases, providers reported receiving no message from SDS staff that a change they requested was in fact done, ready to use in the live system. SDS staff say they check the Mantis requests frequently and will resolve easy requests as quickly as possible.

The other frustrating process was when providers need to deal with general network connectivity to the Raintree system. A number of providers gave examples of having long, and in one case, almost a year, frustrating interchanges with both AIT, Sound Data Services, and their own IT network staff, or staff of other companies that provided outsourced network support. A consistent pattern was seen in provider site visits of either AIT or SDS blaming other parties for the lack of progress or of a problem with slow or no connectivity. However, providers noted

that the situation rose to a head several years ago and that SDS made promises to improve this, and perhaps some improvements have been made. Of the six providers who rated their experiences with the speed and reliability of the connection between their users and Raintree software on the questionnaire, the averaged score was “somewhat satisfied.”

Providers also expressed a general frustration that in discussions with both Sound Data Services and AIT, their own assessments of network connectivity problems, assessment of network speed, and router/firewall issues were not taken by AIT or SDS as accurate in many cases until AIT or SDS staff verified the measurements. The general perception by stakeholders of providers was one of not being trusted as a skilled party in the search for solutions.

Finally, in some cases SDS staff seemed to be asserting their decision-making authority in areas outside the purview of providing an information system. In cases where providers have contracted with payers other than NSMHA, those contracts often contain agreements that indicate certain CPT or HCPC codes to use. There has been some confusion by a provider about how to enter specific services in order to send the proper CPT/HCPC to some payers and they are concerned that they are required to enter some things “incorrectly”. This creates an opportunity for the provider and SDS to clarify the coding requirements to come up with a solution that everyone is comfortable with.

b) The Sound Data Services Perspective

There are, as it is often said, two sides to every story. In multiple discussions with SDS staff, they expressed some frustrations in being called upon to, in many cases; provide services beyond what they consider their core business, providing access to and business functionality for a health care information system. However, they are at times called upon to develop or provide business forms to capture data and provide guidance on business processes and workflow. They feel that this is outside their purview and have wondered whether this should be the role of NSMHA. We note that NSMHA mandates some forms while SDS provides some generic forms for data entry data capture. This, too, may be an area where clear communication about what services they provide would help SDS customer relationships. It may also be an area for expanded business operations under clear new guidelines and fees

In discussing with Sound Data Services how they manage system change, enhancement, and report requests, they noted some frustration in situations where one provider makes the request, and time must be taken to find out from other providers if they, too, want that functionality, since in many cases a system change can affect all providers. If only one provider wants the change, then a series of negotiations must take place to determine a fair amount to charge that provider for the customization. In some cases the provider has agreed to pay for the change but small providers report an inability to do this, despite having some needs for changes based on the services they are asked to provide. Several other RSNs in Washington use an information system that is either shared by all providers or shared by all providers and also the RSN. In these cases, RSNs have worked out a simple charge method where providers pay a flat rate per login that covers the costs of basic modifications, some reports, and basic training. We recommend that a different charge model be developed and negotiated with providers. This would greatly improve the user experience and customer relations with SDS.

In discussions with SDS management, they indicated their preference for agencies to **choose** SDS based on support services and cost benefits, and not to be **required** to use the Provider

RT DB. This would require NSMHA to offer complete standards for submitting and receiving (authorizations) data from NSMHA.

2. Sound Data and NSMHA

Sound Data Services is often in the role of being the lead in responding to data collection, storage and transfer changes that NSMHA requires of providers. There was a good deal of frustration expressed in how these requirements are communicated. Providers also made note of a lot of tension between NSMHA staff and SDS staff during many discussions around changes in data collection and transmission and note a general difficulty in the ability to resolve issues. One provider noted that "...things with NSMHA and Sound Data Services take a long time and decisions and to-do lists are hard to pin down".

SDS staff noted with some frustration that there were some unexpected problems with the conversion of the NSMHA RT DB to the MySQL, This has reported had a direct impact on data integrity, particularly regarding authorizations as well as duplication of client data. NSMHA indicated that the MySQL upgrade was completed in mid June, that many of the problems have been resolved, and that payments were not affected since the NSMHA database had all of the authorizations.

SDS also sees the real-time and complete data availability as essential for access and crisis services in the NS region, regardless of what systems providers eventually use for data entry. During the addition of new agencies, SDS felt they were left to pick up the pieces when NSMHA did not adequately communicate and support new agencies to cost effectively submit all of the required data.

Sound Data Services expressed a hope that one of the outcomes of this review would be that NSMHA would come to have a better understanding of all the costs and issues an agency has to go through to collect and send data to them.

3. Providers and NSMHA

One provider noted that the change to a service reimbursement system has helped to improve ownership by providers and therefore has improved data quality, since at least encounter data is more closely tied to payments for those services. While it is somewhat outside the scope of an information system review, consistent provider complaints about their lack of ability to use the system to reconcile services provided with what they were paid for by NSMHA encourages comment here.

- To make the discussion easier to understand, during site visits, we used the simple example of an agency that provides 100 services in a given month. For simplicity sake, we said to assume that the rate for all services is $100 per service. We then put this question to almost all providers during site visits: if they got a payment from NSMHA for $9,000, would they be able to tell which services they didn't get paid for, why, and would they be able to post the payments to the correct consumer accounts? All providers who were asked this question said they were at least unable to reconcile why they did not get the missing $1,000 in payments. They report an invoicing process from NSMHA that does not provide the detail they need to understand what their expected to actual cash flow will be from month to month. They all mentioned getting the "pro forma" predictive report (written and provided by SDS) and said that it helps but lacks enough detail to make it useful. Furthermore, they report that NSMHA's payment rate is based on provider type, not on the CPT/HCPC code so they get the same rate for all services

provided, except where staff credentials are different. This does not match with their costs to provide those services. Some providers added that they had a lack of confidence that all the services they provide and that get entered into Raintree are actually transmitted to NSMHA by SDS and that they are getting paid for all the services provided.

The contract requirement for reporting services to NSMHA is the 10th of the month following services, although NSMHA waits 20 days to lock in the services that will be paid to allow each agency to correct any service or authorization errors[9]. Services must also be covered by a current NSMHS authorization in order to be paid by NSMHA. Authorizations are only approved if a review has been entered within the last 180 days.

Providers are also unclear how the TXIX eligibility file from the MHD is used by NSMHA. They know the TXIX eligibility file is used to generate the monthly payment to providers, but do not have access to the TXIX eligibility file for batch eligibility confirmation and are uncertain how it is handled if the client has a physical coupon showing Medicaid eligibility for a given month but that does not show as being eligible in the MHD TXIX eligibility file. NSMHA indicated they use two methods to determine the funding for each consumer. When NSMHA receives the state MHD TXIX eligibility files four months after the invoice month (April for January services), NSMHA checks all consumers receiving services. For any consumers that do **not** appear as covered in the MHD TXIX eligibility file, NSMHA staff hand check each consumer using the WAMed website for further TXIX matching. NSMHA waits until four months after the invoice month due to the significant fluctuation in covered lives represented in the MHD TXIX eligibility files and potential for retroactive coupons.

Agencies indicated that it is challenging to manage staffing and revenue with payments for a given month being adjusted several months after the fact. By the end of May, 2008 one agency indicated they had only received two months of adjustments for actual services provided. Since providers are able to run Provider RT DB reports, they are able to determine if they submitted enough services, but may need assistance with the calculations and rates NSMHA uses by staff provider type/credentials to determine payments.

There is also some concern about how to manage normal fluctuations in services at different times of the year. NSMHA has suggested that agencies present recommendations about how to handle monthly payments to support these normal service trends but had not yet received any proposals from agencies.

Providers expressed a general frustration at not being able to get useful reports on services provided in the region, despite attendance at various NSMHA meetings where outcomes and data driven initiatives are discussed. We make note of the “dashboard” report but site visit participants noted that they do not find it useful or an accurate portrayal of their program's performance.

While outside the parameters of this review, providers gave a further example of the difficulty in communicating with NSMHA in attempting to make the payment reconciliation process easier for them. As we understand the process described, we repeat it here. In the Raintree system, episodes of care and authorization records are not linked together, so a consumer who gets

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[9] Example: January services are due by the 10th of February and are included for payment if they are error free within the next 20 days. Eligibility is checked for all error free January services after the MHD eligibility file is received in April.

readmitted after ending services during the one year authorization period approved by NSMHA will have their 180-day review items still tied to that authorization date, and the system will flag clinicians to do tasks that really would not be required until 180 days after the new re-admit date. Further, if the consumer requests readmission and the provider does a full assessment of need, they may in fact find that the consumer no longer meets access to care standards, and so the provider denies treatment. However NSMHA will often overturn the denial, insisting that the provider re-admit the consumer for treatment, only later to be criticized by NSMHA for admitting a consumer that did not meet access to care standards. This example is included only to highlight that providers are reporting a general difficulty in working out with NSMHA what they see as unreasonable business processes.

4. New NSMHA Providers

Provider experiences with both SDS and NSMHA varied based on what types of services they provide (specialty contracts compared to full CMHA contracts), how large they are and most recently, whether they are new to contracting with NSMHA for public funds to provide services in the region. It is this last category of providers that seemed to express the most frustration with not only SDS but also with NSMHA. We include comments about both relationships here to emphasize provider sentiment that they wished NSMHA had provided more guidance about their own requirements as well as how to work with SDS on data collection and transmission. We also feel that communication is at the heart of changes that, if made, would help preserve and foster the diversity of providers and therefore consumer choice, which NSMHA has attracted over this past contract cycle. We note that there is no “requirement” that SDS and SD, Inc. allow new agencies to use the Provider RT DB and that any new agencies are potential competition for a finite pool of funding. Although SDS and SD, Inc. chose to support new agencies, doing so potentially goes against the model of competition in the business world. The support of new agencies by SDS and SD, Inc. indicate the support of the greater good to meet the MH needs in the communities served by SDS and SD, Inc.

Complaints from new providers centered around several issues, a) difficulty in being able to use their own information systems to send required data, b) not enough guidance from NSMHA on what data to collect and send, c) for all counties that provide jail services, the requirement to use SDS as “clearinghouse” even though it does not provide clearinghouse functionality and d) poor communication about system and data collection changes and setting difficult deadlines. We will take these in order.

a) Difficulty being able to use their own information systems to send required data:

With the advent of the HIPAA national standard transactions for health care provision, a set of implementation guideline documents have been developed to guide providers and payers on what data elements to send in which areas of the files to be transmitted. In reality, most “trading partner agreements” between payers and providers, in all specialty areas of health care (including behavioral/mental health); have included a “companion guide”, which is a customized version of the standard national implementation guide. The “companion guide”, will ideally simplify and clarify required data for that contract. Unfortunately, there do not seem to be any rules on defining customized transactions. The adage “he who pays the bills makes the rules” seems to apply in most cases. This was the case when MHD defined the companion guide for RSN required encounter/service data.

In attracting new providers to the region, NSMHA has contracted with organizations that in several cases already have robust information systems and have experience sending the national 837P transaction for encounters. While it is the de-facto right of NSMHA to require each provider to modify their 837P export to fit the NSMHA companion guide, the unintended consequences have been that, because of the highly customized 837P protocol NSMHA provided, agencies are instead contracting with SDS to do duplicate entry into both their own information system AND into Raintree in order to meet contract obligations for data collection. This drives costs back to providers that they were likely not aware of and may put at risk the retention of these providers and the attraction of others to provide services in the region. Given that the NSMHA 837P protocol is so highly customized and so unlike a typical 837P claim transaction that providers are used to sending to other payers, NSMHA may want to consider whether it is more cost effective and provides better service to technically allow more than one format of the 837P to be sent directly to them from providers, and which could then be uploaded into the NSMHA Raintree installation. Any data needed for care coordination and for the master identification number could be then transmitted via a custom transaction to the Provider Raintree installation. In fact, NSMHA may want to go a step further and consider whether requiring providers to use Raintree via SDS is a model that can be sustained in the future. Many health care systems no longer rely on all parties using a single vendor for their information system, and instead rely on national standards of data transmission such as ANSI X12N [10]upcoming standard electronic health care transactions and HL7[11] real-time and batch messaging standards that allow many different vendor systems to communicate data needed to do business.

b) Not enough guidance from NSMHA on what data to collect and send

Several new providers expressed frustrations with how they were informed about what data they needed to collect and how they were expected to send it to NSMHA. Their experiences were quite similar in that initially they understood that they could send data directly to NSMHA, but report that later they were told that they would have to use Raintree and contract with Sound Data Services, an organization they were unfamiliar with and had no expectation of a need for a separate contract with.

c) The requirement to use Sound Data Services for all counties that provide jail services

County Human Service departments providing jail services referred us to a section in the NSMHA contract that states that "[s]ervices provided under this contract must be reported into the clearinghouse for the North Sound region, which is Sound Data." Later in the same contract, section C states simply that "the contractor must ensure the existence and operation of a single integrated information system..." The former requirement to use a clearinghouse does not appear in any of the other provider's contracts, though oddly, other provider contracts have the requirement in section C.5 (Data Collection and Reporting) that they collect and report data to NSMHA in "...accordance with Section D.5 of this Agreement," however section D.5 is titled

[10] American National Standards Institute, X12N is the subcommittee working on electronic healthcare data transmission standards for healthcare claims, authorizations, eligibility, etc.

[11] Health Level 7 real-time and batch messaging protocols between health information systems. Example: Immediate lab results transmitted to medical records at each participant information system for that patient's care.

"Medical Necessity and Second Opinion," which does not seem to be related to the topic of data collection. The description of Sound Data Services as a "clearinghouse" may be simply a mistake in wording but it has implications in that if SDS did in fact operate as a clearinghouse, issues noted in to item 1) above would be easily handled by the clearinghouse taking any provider's 837P files and translating them in a way that the NSMHA system could easily import. More to the point, if NSMHA's intent is at some point that every provider, current and future, is expected to contract with SDS, the implications and costs to the providers should be more clearly explained to them early in the negotiations.

d) Poor communication about system and data collection changes and setting difficult deadlines: We received consistent feedback from many providers about their experience in being asked to collect and transmit new data elements and feeling that they were given little guidance on what was expected of them and short deadlines to get it done. Unfortunately, the state MHD does not manage to provide the required 120 day lead time for changes in MHD data requirements which impacts the amount of time NSMHA can give to providers. Both SDS and many providers reported great difficulty in making use of the data dictionary, as provided in the current form available on the NSMHA website. They indicated the on-line *NSMHA Data Dictionary* is great for drilling down to specific data elements when they knew what they were looking for, however we believe that providers also need to be able to see the big picture and the relationships between data elements. In the questionnaire, one question on this topic was "the usability of the RSN data dictionary." The average response was "2", which indicated a below average degree of satisfaction. Multiple providers said they had asked for a printed copy of the dictionary and were told that the only version was the one on the NSMHA website. We asked for the same and got the same response. It appears that while all the aspects of a dictionary are provided via the website, providers are having a difficult time seeing how the elements fit together. Odd field names such as "_rlguid^" and undefined "field code" values appear to add confusion to those unfamiliar with and responsible for determining how to send data to NSMHA. A provision that allows users to print a formatted version of the dictionary with definitions that are grouped together logically would be a help.

5. The Consumer Perspective

Early in the project the NSMHA Advisory Board was briefed on this review and several consumers met with us to discuss their concerns for the project and for any information system that stores their healthcare information. Foremost in their concerns was the security and privacy of their data, in its storage and transmission. Their other main concern was that information about their recent treatment history, personal care plan and crisis plans would be available to all care providers whom they come in contact with during crisis situations, so that their plans could be seamlessly followed. The current system for display of consumer data, crisis plans, care plans and central access and scheduling appears to meet both of their concerns as far as our assessment of data security and care coordination was carried out in this project.

I. Meetings

Both NSMHA and SDS meetings provide the opportunity to schedule trainings, brainstorming sessions, and work groups before or after the meeting time. With travel costs high, it is always useful to maximize participant's time by offering more than one gathering on the same day.

1. NSMHA

NSMHA hosts several regular meetings which provide opportunities to keep agencies and participants in the MH system informed of data and information requirement changes as well as to disseminate reports for data verification or confirmation. Meetings are scheduled for the NSMHA Board of Directors, Advisory Board, agency directors, quality assurance/improvement, and IS related functions.

The IS standing committee charged with some responsibility for the overall information system is the "Consumer Information System" Committee. Made up of representatives of all contracted providers and SDS, they meet monthly throughout the year. The committee is chaired by Greg Long, Deputy Director of NSMHA, and Michael White, IS Administrator, Dennis Regan, Data Support Analyst attend and lead discussions depending on the topics. Minutes are kept and as of November, 2007, are available to the public on NSMHA's website. The committee's purview is ambitious, with the stated role of "facilitating and coordinating an effective information system...". The term "information system" is not defined. They seek to fulfill this role through review of "processes and procedures to" monitor and improve data accuracy, quality and validity, through recommending changes to, or new processes and procedures, for changes to data dictionaries, etc. Their goal is stated as improving and assuring complete, accurate data, resolving system procedural issues, and improving the understanding of data going into "the system" as well as coming out.

This committee appears to handle a large number of issues that relate to both clinical and business practices and policies, as well as how data collection is done and how information systems properly handle that data. It is unclear from the minutes whether the right provider and RSN representatives are in attendance or whether enough policy review is being done prior to the meetings, so that attendees can focus on the information system changes needed to support those policies. Observation of one of these meetings and discussions with providers at site visits leads us to surmise that this is in fact the case. We also note that over the last nine months of meetings, scheduled each month for two hours, the average meeting time is an hour and 20 minutes.

It is our experience that when regular meetings more often than not end a good deal earlier than planned, that it is time to reconsider the purpose for the meetings. This can be done with a review of the group's charter, the amount and speed of progress the group has made, attendance patterns, whether the "right" people are attending the meeting and meeting leadership. The review should also include consideration of any interpersonal or intergroup dynamics that are hindering progress. A comment was made at one of the exit interviews that not all agencies attend meetings regularly. Meeting organizers need to consider attendance and how to disseminate important requirements when not all agencies are represented at certain meetings. Consideration should also be made for other ways to communicate with some agencies and offices rather than the expectation that they should be in attendance.

2. Sound Data

Sound Data Services hosts a number of meetings including a general user group consisting of clinical, A/R, and billing staff; an Integrated Crisis Response Services (ICRS) group; and a regular Report Writer's Group. SDS also provides trainings in Mount Vernon and offers remote

"shadow"[12] training as needed. In addition, the Board of Directors for Sound Data, Inc. meets to discuss issues related to the Provider RT DB.

We noted earlier the enthusiasm providers expressed over how useful the Report Writer's group is to them. This group reportedly still meets monthly. Although minutes are not kept of these proceedings, a meeting summary is provided to people listed with interests in the group which seems appropriate since it acts more as a "hands-on" work group than as a formal organization.

Each of the user groups is an opportunity for SDS customers to meet with their staff about various issues. The general user group has met monthly but reportedly was meeting less often due to travel costs and there have been discussions on how to meet via teleconference. Minutes are kept of these proceedings and distributed to participants and interested parties. SDS recommends that each agency hold regular, internal Raintree user meetings and that they send a representative(s) from that group to the SDS user group meetings. SDS has also offered to send a SDS representative to each agency to participate in the agency user group meetings; however agency user group meetings do not seem to be common.

The Sound Data, Inc. meetings are generally held once each calendar quarter with increased frequency as needed. Minutes are kept for Sound Data, Inc. meetings.

3. Raintree Users

SDS mentioned Raintree training opportunities in Temecula, California and that Spokane RSN is also using Raintree software. Other users of the same software are often a great resource to network and learn new functions, reports, and other features of the software. In looking at the Raintree software, we did not see specific training opportunities or user groups; however, we encourage all users to take advantage of opportunities to work with other Raintree users. SDS indicated that training opportunities through Raintree are listed after logging into the Raintree Intranet but it is unclear how many users have the login to see Raintree announcements and tools. According to SDS, Raintree hosts two technical training seminars each quarter in Temecula or remotely using the Shadow system.

J. Implementation of an Electronic Medical Record (EMR)

For several years SDS and providers have been discussing the implementation of an EMR. Interfaith has already implemented an EMR using their own separate information system.

In 2005, Raintree released a major upgrade to the EMR modules and provided a time-limited discount to purchase EMR licenses. An additional 200 licenses were purchased and 50 of the original concurrent licenses were converted to EMR licenses. Sound Data Services encouraged their customers to increase their user licenses to take advantage of early pricing that the vendor offered. Several providers have expressed frustration that they have not realized any of the benefits of an EMR despite paying for the additional licenses. Presumably the additional licenses would require an increase in support paid to Raintree each year.

In discussions with providers and with SDS staff, three themes arose, 1) provider capacity to implement an EMR, 2) provider confidence in SDS's ability to complete the project and 3) the lack of a coherent plan which defines the scope, stages and time lines to bring an EMR to fruition.

[12] Phone call and computer connection to share a user session so that the trainer and trainee both see the same screens and movements through the system.

NSMHA indicated an interest in the EMR function for utilization reviews so their staff could start with the electronic record and be able to spend less time at each agency location. This would minimize interruptions to agency staff when NSMHA staff are on-site and decrease travel time and costs for NSMHA.

Providers that have made an organization-wide emphasis on data quality often made business process and workflow changes that gained results. For example, one provider improved their data quality when they added the event information to the progress note, making it one piece of paper. Clinicians could then enter both the event information, such as date, time, place and service code, along with their progress note, providing almost 100% completeness of the service records. The EMR has the potential of solving this challenge by linking the service with the progress note as well as providing staff with immediate feedback about services in the system for any given day or consumer.

SDS has been preparing for the EMR by providing EMR demos, educating people about the EMR, and most importantly doing the necessary upgrades to MySQL to support EMR functionality. Clearly, the number of MHD data dictionary changes over the years has kept SDS staff from having the time to commit to an ERM implementation. Ultimately, the project needs clinical and administrative leadership to take the EMR to fruition. According to SDS, two agencies appear particularly interested in moving forward on the EMR.

1. Provider capacity for EMR implementation

Some providers expressed a desire to implement an EMR but expressed a number of concerns for their ability to implement it. Currently a few providers have clinicians using Raintree to enter their appointment schedules, to look up their consumer's scheduled appointments and other demographic information, and to check on treatment plan review dates. Some clinicians have commented that they find the system too slow, and that it takes “too many steps” to accomplish their data entry.

Staff training and acceptance of the use of a computer to do their work is seen as a large undertaking. Providers are concerned with the reduction in productivity that would most likely occur during implementation. Providers expressing an interest in an EMR also anticipate a good deal of time savings once clinicians are using an EMR, by reducing the amount of time completing clinical notes, they would not have to hand-write notes and then enter them, but rather would just enter them once. However, other providers have concerns that since staff are encouraged to work with consumers out in the community, they wonder whether the savings of reduced handwritten notes would be realized.

Another issue is each agency’s ability to afford enough workstations for clinicians to use, and the network infrastructure to support those extra workstations. At some sites, clinicians do not have their own offices, so additional planning would have to be done to provide workstations for them to interact with an EMR. While overall, most providers report reliable and adequate network connection to the Raintree system, there is inconsistent quality of service that would have to be addressed for an EMR to succeed.

2. Provider confidence in EMR project

One provider expressed confidence in SDS's ability to implement an EMR, citing their awareness that SDS has decreased the amount of outsourcing they have done for programming work, indicating most likely correctly, that Sound Data staff have acquired a good deal more skills in managing and modifying the system compared to when it was first implemented. It is

important to remember, however, that the programming is only one aspect of the EMR project and that clinical and administrative leadership is also essential for a successful outcome. Other providers interviewed are less confident. The provider questionnaire contained three items about an EMR; clinical staff reaction to an EMR, provider IT staff reaction and their satisfaction with the EMR project in general. Of six providers that responded to this part of the questionnaire, the average and mode response to each of the three items was a below average degree of satisfaction. Some providers commented that they base their current lack of confidence on past experiences where they feel they were not asked their opinions and feedback on how new business functions should work in the Raintree system and that the feedback they did give was ignored. Again, these are perceptions but these perceptions are affecting current confidence.

3. EMR Implementation Plan

SDS management have noted several times that their current upgrade to the database storage method used in Raintree is a required step to then implement an EMR. That work is going on this summer and is expected to be completed by this fall. They also note that turnover of CEOs at several providers recently and a good deal of turnover of SD, Inc. board members in the last two years has affected a coherent understanding of and commitment to an EMR project.

An EMR can mean many things to many people, from customized workflow screens that simply show staff a “to do” list of activities and provide the ability to enter events and track their completion, all the way to a completely electronic record with all notes and records including scanned documents from other sources stored in an information system and digital signatures vetting all clinical notes and decisions. SDS indicated that in discussions with providers, there was some interest in a clinical workflow, “to do” list presented to clinicians as a “dashboard” screen. That could be quite successful and add useful functionality for providers while utilizing the investment in additional Raintree licenses and testing the network capacity for increased users.

Implementation of this simpler version of an EMR takes planning on both the part of providers and SDS, not just for software modifications but also for work flow analysis; design; training; budgeting; purchasing additional equipment and supplies; installation of computer equipment; network capacity analysis and network infrastructure upgrades to handle additional simultaneous users. Planning and preparing is essential so that providers have the ability to make use of the new functionality. SDS staff do not yet have a project plan for implementation of any aspect of an EMR and while they conceptualize the project being done in phases, those have not been defined, a scope of work at each stage has not been described, and no time lines and milestones have been identified. Most importantly, the Board of Directors of Sound Data Inc. has not reviewed and approved any EMR plan. Most providers also described a vague awareness that within their organizations, an EMR had been discussed but no planning has yet to be done.

Our experience is that the successful implementation of any additional functionality in the realm of an EMR hinges on a coherent, specific and agreed upon project plan that also includes accurate cost estimates and we encourage SDS to either assist in leading the process of developing a plan or consider bringing in outside resources to lead the project. Either way, it is critical that administrators set the goals for an EMR and rely on functional users to make recommendations and to participate in the entire project.

VI. In Conclusion

A. Summary of Concerns

NSMHA's overall mandate is to be the conduit to meet the mental health needs of individual members of the community. As a quasi-governmental entity, that goal must, of necessity, be altruistic and based on the needs of the region.

The original goal of this review is to ensure that NSMHA "...has a system or systems" that meets the needs of all users while providing flexibility to support future changes in service provision and business functions. It is clear that the current Information Systems meet many of the needs of all users, but as with all systems, there is room for improvement. This review and survey process has identified areas of concern that we feel should be addressed for the system to indeed meet the needs of all concerned. Those areas are summarized below as areas of possible improvement:

1. NSMHA -

a) Keeping current providers and attracting new ones by ensuring:

- clearer instructions and procedures and adequate support for information collection and transmission are provided
- that providers are paid in a model that supports reliable reconciliation or a "claims" model using an information system configured to process claims
- that HIPAA transactions can be transferred in less expensive, more standardized formats, rather than highly customized layouts that require extensive programming
- Written definitions and samples of data transactions and methods for transmission and testing for all NSMHA data requirements that will support agencies using any software capable of creating the transactions
- A method to make available useful screening and crisis information for all NSMHA consumers, regardless of the software used by the agency serving the consumer.

b) Maximize fiscal and staff resources:

- by eliminating the cost for the separate installation of Raintree and associated multiple data stores
- to improve data collection and reporting

2. Sound Data – Improving the Information System by:

- Increasing confidence in the ability to fully implement an EMR by developing an effective project plan
- Removing the possibility of unfavorable perceptions about the business relationship between Sound Data Services and Compass Health and the resulting affect on the confidence in SDS abilities, along with engendered suspicion about their motives

- Provide an equitable method of charging providers for usage of Raintree and their service level agreement, one which does not put providers at disadvantage and limit their use of the system
- Work to eliminate provider frustration with technical support, communication, documentation, and training for users

B. Recommendations

Many providers noted that approximately five years ago, when Raintree was being implemented, there was a great deal of frustration and complaints that the system was slow, that connections were unreliable and there was little confidence that data entered remained stored. At this point, much has improved. With providers that helped implement the system from inception, there is a general perception that Raintree is “not worse” and is better (depending on the provider, a “little” to a “great deal” better) than prior systems used in the region.

It is important to remember that thousands of consumers are served and that data on those consumers and the tens of thousands of services are entered each day, week, and month from agencies into the Raintree CIS and exported to NSMHA CIS and finally sent to the MHD. We know that these processes are working and have been working for well over a decade and that NSMHA and the region’s provider agencies have been audited with very positive results by both private and public auditor as well as internal quality managers.

NSMHA, SDS, and the contracted mental health service providers in the area contribute a wealth of skills, passion, and information technology expertise to mental health care that supports staff, consumers, families, neighbors, jails, and business owners. Although we have put together a number of recommendations, it is important to utilize the strengths within each group and to prioritize those tasks and projects that will best support the agencies and staff while continuing to do all of the things that are already working well. Everyone should proceed forward accepting the premise that challenges are an opportunity to make things better.

VII. Next steps

Upon approval of a plan by the NSMHA planning committee and Board of Directors, a set of next steps will be sent to all stakeholders describing the involvement desired by all parties to review the report, prioritize a set of recommendations and create a plan for implementation. NSMHA will also incorporate recommendations and next steps into their next budget.

VIII. Attachments

A. Figure 1: NSMHA Region: Flow of Data

B. Appendix A: CIS Issues Identified

C. Appendix B: North Sound Information Systems Review Recommendations