



Increasing Interoperability in Health Information Systems for Medicaid, Mental Health, and Substance Abuse Treatment

**A COMPILATION OF PAPERS PRESENTED AT THE
CONFERENCE JANUARY 24-25, 2007**

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Introduction

On January 24 - 25, 2007, the Centers for Medicare and Medicaid Services (CMS) and the Substance Abuse and Mental Health Services Administration (SAMHSA) sponsored a meeting on State Health System Interoperability in Washington, DC. The meeting had support from the CMS Division of State Systems and SAMHSA's Center for Substance Abuse Treatment (CSAT) and Center for Mental Health Services (CMHS) and was facilitated by Thomson Medstat under a contract to SAMHSA, The Integrated Database Project (IDB). The impetus for the conference was the CMS/SAMHSA initiative that has provided support to projects that use health information technology to create shared data systems that include information from Medicaid, MH/SA agencies, and other state human services departments. Its goal was to foster the development of a community of state and federal partners interested in learning from each other to improve Medicaid behavioral health outcomes based, in part, upon improved data sharing.

Participants included representatives from six states—Connecticut, Indiana, Maryland, North Carolina, Oklahoma, and Texas—CMS, SAMHSA, HRSA, and NIDA, IDB project staff from Thomson Medstat, and a number of key academic and industry experts on data sharing and privacy, health information technology, and data collaboration.

Speakers were asked to write short white papers on their respective topics. These are included herein. We received very positive response from our participants on the papers, and have, as promised, incorporated participant suggestions and feedback to this updated and edited version.

Note: We would like to remind the readers that each of these papers is an independent contribution and represents only the views of the author(s). The papers do not represent the opinions of any federal or state agencies.

**Increasing Interoperability in Health Information Systems for
Medicaid, Mental Health, and Substance Abuse Treatment
Conference Agenda**



January 24, 2007

8:30 – 9:00 A.M.

Welcome and Introductions

Rick Friedman (Centers for Medicare & Medicaid Services – CMS)

Rita Vandivort (Substance Abuse & Mental Health Services Administration – SAMHSA)

Jeff Buck (SAMHSA)

Objectives for the Meeting

Carol Forhan (Medstat)

9:00 – 10:00 A.M.

Increasing Interoperability in Health Information Systems – What is the Value to Stakeholders? Consumers, Providers, States, Federal Partners, Taxpayers

CHAIR: Rita Vandivort

PANEL: Rosanna Coffey (Medstat)

Mady Chalk (TRI)

Discussion – Questions

10:15 – 11:45 A.M.

State Activities - Reports from States on Interoperable Data Efforts related to the CMS/SAMHSA Initiative

CHAIR: Rick Friedman – Overview of the CMS/SAMHSA Data Initiative and MITA

PANEL: Ingram Liljestrang (Indiana)

Chuck Lehman (Maryland)

Holly Stoner (Oklahoma)

Discussion – Questions

1:00 – 2:30 P.M.

Program Perspectives on Data Interoperability – Reports from Federal and State Organizations

CHAIR: Jeff Buck

PANEL: Cheryl Austein-Casnoff (Health Resources & Services Administration – HRSA)

Dave Wanser (National Association of State Alcohol & Drug Abuse Directors – NASADAD)

Ted Lutterman (National Association of State Mental Health Program
Directors)

Discussion – Questions

2:45 – 4:30 P.M.

Data Sharing Agreements and Privacy Rules – HIPAA and 42 CFR, Part 2

CHAIR: Rita Vandivort

PANEL: Bill Braithwaite – Industry Perspective

Sarah Wattenberg (SAMHSA) – Federal Perspective

John Petrla (University of Southern Florida) – Legal Perspective

Discussion – Questions

4:30 – 5:00 P.M.

Day One Wrap-up

Carol Forhan

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|-------------------------|
| January 25, 2007 |
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8:30 – 10:30 A.M.

**Emerging Health Information Technology (HIT)/Health Information Exchange
(HIE) Opportunities**

CHAIR: Rick Friedman

PANEL: Tony Pepitone (Medstat) – Big picture overview on technology changes

Denise Bazemore and Alan Shugart (CMS) – CMS/Medicaid Information
Technology Architecture (MITA)

Richard Thoreson and Jim Kretz (SAMHSA) – EHR Initiatives

Dave Wanser – E-Health Record Systems

Discussion – Questions

10:45 – 11:45 A.M.

Data System Interoperability – Lessons Learned and How to Get There

CHAIR: Jeff Buck

PANEL: Bill Marder and Carol Forhan (Medstat) – Overview of historical issues
and lessons learned about improving interoperability in data systems

Rick Friedman – Planning and Finance from a CMS/MITA perspective

Discussion – Questions

11:45 A.M. – 1:00 P.M.

Wrap-up and Next Steps

CHAIR: Carol Forhan

PANEL: Rick Friedman, Jeff Buck, Rita Vandivort

Short discussion on next steps for States – Where do we go from here?

Increasing Interoperability in Health Information Systems – What is the Value to Healthcare Stakeholders – Consumers, Providers, State and Federal Governments, and Taxpayers?

Rosanna M. Coffey, Ph.D. (Thomson Medstat), Mady Chalk (Treatment Research Institute), and Joan D. Dilonardo (Consultant)

The Vision

Interoperable information systems communicate with each other on an ongoing basis, despite different purposes, structures, and underlying technologies. Such planned interoperability, which allows very different systems to work together, holds promise for U.S. healthcare. Interoperability in health information systems will make possible health information exchange, with appropriate safeguards, which ultimately will improve the quality, efficiency, and effectiveness of treatments – dimensions of U.S. healthcare in need of innovation and improvement.

Research by McGlynn and colleagues¹ assessed the quality of healthcare in the U.S. by examining how often consumers receive the most effective treatments available – evidence-based medicine. They conclude that Americans receive quality healthcare about half of the time (55 percent). The story is worse for mental and substance-use disorders, as findings indicate that individuals with alcohol dependence receive evidence-based treatment only 10 percent of the time – the lowest proportion for all of the conditions studied.

Furthermore, every new investigation in the Institute of Medicine's (IOM) Quality Chasm Series exposes more problems. A recent report examined treatment for mental and substance-use (M/SU) disorders, finding this healthcare sector to be seriously lacking.² While treatments are effective, purchasers of healthcare seldom understand this and only a small proportion of those in need can access M/SU treatments.

The IOM recommended changes in the M/SU healthcare system in order to improve the quality of care for people who need services. Most of the changes would require major advances in health information in this sector. These recommendations include:

- *Make the patient the locus of control* for decisions about treatment – yes, even in treating serious mental illness and substance dependence where legal coercion is involved.
- *Disseminate the evidence basis* for what comprises effective M/SU treatment.
- *Devise better coding systems for M/SU interventions* so that more complete data about what treatments patients receive is collected nationwide under HIPAA-standardized payment transactions.

¹ McGlynn EA, Asch SM, Adams J, Keesey J, Hicks J, DeCristofaro A, Kerr EA. The quality of health care delivered to adults in the United States. *New England Journal of Medicine* 348(26):2635–2645.

² Institute of Medicine. *Improving the Quality of Health Care for Mental and Substance-Use Conditions*. Washington DC: The National Academies Press, 2006.

- *Develop instruments* for screening, diagnosis, and monitoring to validly assess response to M/SU treatment that are practical for routine use.
- *Develop a consensus process for developing measures of quality* for treatment and outcomes to improve M/SU care.
- *Share patient information* among healthcare providers and with social services, even if new privacy laws must be written to permit information exchange among providers of M/SU services.
- *Integrate M/SU needs into the National Health Information Infrastructure (NHII)* so that advances in standards development and information exchange fully encompass M/SU providers and services.
- *Encourage the adoption of new information technology*, such as electronic health records, computer-based clinical decision support systems, computerized order entry, etc.
- *Improve the M/SU workforce* through better planning, oversight, licensure, and training.
- *Reduce risk-selection against M/SU in health plans* to improve access to services.
- *Replace grant-based financing with quality-of-care-based financing* so that providers have the right incentives to improve patient care.
- *Fund research on treatment effectiveness and quality improvement in local settings*, the frontlines of treatment where improvement must ultimately occur for the system to change.

This agenda clearly requires health information exchange. Systems must be devised to collect information systematically and securely, while simultaneously communicating to share information among providers with a “need to know” and between providers and patients. Furthermore, to advance the science of treatment, health data must be available to support studies of M/SU treatment effectiveness, cost, quality, and accessibility.

The Role of Data Developers

Healthcare administrators in government, health plans, or provider settings can make an enormous contribution to improving healthcare in the U.S. by doggedly pushing their organizations and information systems toward interoperability. Managers, analysts, and programmers in any setting can, in seemingly small ways, move this agenda forward by designing and building interoperable databases. Developers are also well qualified to address stakeholder concerns about the privacy and security of confidential health data.

One action will build upon the next, as can be seen in the following scenario:

- A computer programmer works on the seemingly obscure task of incorporating HIPAA data standards into a data collection system.
- This leads to more complete and more accurate health data across providers, as well as a more seamless exchange with other health information systems.
- In turn, healthcare problems become more visible.
- This increased awareness causes outcries for improving treatments and services.
- The outcry stimulates providers to improve the situation.

- And, with dedicated work, healthcare becomes better – of higher quality and greater efficiency.

Thus, through such pursuits, data developers make a huge contribution to improving the U.S. healthcare system.

The Role of State and Local Governments

State, county, and local government agencies have responsibility for and direct an enormous array of health-related services, many of which receive Federal funding. Whether operating clinics or funding providers of public services, government employees control many different types of programs, such as:

- Medicaid, a program partly funded by States and partly by the Federal Centers for Medicare and Medicaid Services (CMS).
- Federal block grants to States, which include M/SU-related funds from the Substance Abuse and Mental Health Services Administration (SAMHSA) as well as maternal and child health funds from the Health Resources and Services Administration (HRSA).
- State tax revenues allocated to the State mental health agency.
- State funds for the State substance abuse treatment agency.
- Public health dollars for over 20 disease-specific programs, funded partially by the Federal Centers for Disease Control and Prevention (CDC); these include sexually transmitted diseases, tuberculosis, and other infectious diseases, as well as campaigns for managing chronic diseases such as diabetes, asthma, etc.
- Federally Qualified Health Centers (FQHC), funded at least partly with Federal HRSA dollars and operated by county and city governments.
- Ryan White HIV-services, funded through HRSA.
- Administration for Children and Families provide funding for about 13 programs related to child and family welfare.
- State and Federal criminal justice funds, used to provide mental health, substance abuse, and healthcare treatment services for inmates.
- School programs involved in health and family issues.

These programs frequently involve the same clients. The obvious overlaps are for people who have co-occurring M/SU conditions and who often are treated under separate programs of the State MH agency and the State SA treatment agency. A significant proportion of people with mental illness also receive services under Medicaid. For clients receiving their general medical care from Medicaid and MH treatment from another State agency, it may be important for the Medicaid-funded provider to understand what medications have been prescribed in a MH treatment program. Furthermore, M/SU clients are referred for many other public services—“wrap-around” social services, such as job training, employment assistance, and housing support. And measures of the success of M/SU care encompass things like holding a job, staying out of prison, following-up juvenile justice involvement with adolescent MH evaluation and services if needed, and M/SU evaluations for foster care children. Public health programs involved

in supporting families and preventing family violence, child abuse, and neglect also require information related to mental health and substance use treatment for their clients.

The overlap in public program services for clients with multiple needs leaves States with an acute need for cross-program data at the person-level. Imagine the improvements possible with seamless information systems that enable easy coordination, follow-up, and tracking of results for people with numerous needs across programs. We would have a much improved public service system if information were accessible at the individual- and family-level across programs.

The Silo Problem

Despite cross-program needs for information exchange, each program has devised its information system without considering other State government programs. Each of the State systems related to the programs in the bullets above features:

- Data systems (sometimes multiple systems) and reporting requirements on these programs so they can obtain funds from Federal sources, State budgets, or legislatures.
- Legislative requirements that specify what data will be collected and the time frames for reporting to the legislature.
- Different data system structures with different levels of information (service/encounter-level, patient-level, professional provider-level, facility-level, program-level).
- Client and provider identifiers unique to the data system (or no client identifiers).

The result is the “silo problem”—multiple and fragmented systems of data and reporting; no information sharing on the same individual across programs and providers for coordination of care; inadequate information for policy analysis and effectiveness research; and difficult, if not impossible, information sharing within the State and beyond for joint program planning. Dollars for data system revisions are most likely directed at the funders’ requirements, with little opportunity to think about the broader clinical, policy, or research needs. Furthermore, private vendors have had little or no incentive to create and support interoperable data systems for States—to a large extent, the competitive position of vendors has historically depended on creating proprietary and unique data solutions.

Why Is a *Silo* Approach Problematic?

The silo approach to data systems is ineffective for numerous reasons. Multiple government programs share many of the same clients and many clinicians work through more than one program, but one program administrator cannot plan effectively with another program administrator. Information is generally not accessible to consumers, families, providers, analysts, and policymakers in ways that help consumers and families manage their conditions, help providers manage their patients, or help policymakers know how to improve the quality and efficiency of their programs. Because information

systems are developed to address requirements of funders without sufficient granularity (e.g., rarely do systems collect data on provider-client encounters with client-level linkages), every new important policy question requires a new research protocol and large investments in new data collection.

All stakeholders are affected by no or poor information exchange:

- Taxpayers footing the bill do so at higher costs than necessary.
- Consumers and their families attempting to obtain care must contact multiple programs, and consumers trying to track their own responses to treatment are likely to rely on recall, unwritten and from memory, which is often incomplete.
- State and Federal policymakers, who want the tax dollar to go farther and strive to improve the quality of care, are stymied by poor information resources.
- Providers, who want to offer more effective and efficient healthcare services, are limited in how quickly they can learn and apply new treatments.

The silo problem limits access to and distribution of full information, reducing the potential to improve productivity of the healthcare system.

What Is the Solution?

There have been a number of efforts to build integrated databases from separate information systems, primarily at the back end, after the data systems have been established independently of each other. These efforts, such as the SAMHSA Integrated Database (IDB) Project that merged information from mental health, substance abuse treatment, and Medicaid agencies in just three States, have been very difficult, expensive, and disappointing.

The lack of compatibility in definitions, structure, inclusions/exclusions, level of data collection (e.g., the patient-provider encounter or the program) prevent analysts from being able to answer important questions about M/SU treatment. For example:

- How should we integrate M/SU treatment to care effectively for people with co-occurring M/SU disorders?
- How should we integrate M/SU treatment into primary care, where it is increasingly provided (rather than in specialty settings)?
- How should we provide continuing care for chronic M/SU conditions?
- How should we foster ongoing patient evaluation as a clinical responsibility, rather than just a research undertaking?
- How can we ensure that patients who need a wide array of services to manage their conditions actually obtain those services, whether health or social services?

Furthermore, attempts at integrating data from disparate systems have often resulted in one-time static databases that require substantial cost to update, re-link, and edit. Also, databases for specific purposes often must be redesigned for each undertaking, be it clinical, research, or administrative.

The solution to the silo problem is front-end database development—compatible foundations of patient-centered reporting, common definitions, identical codes, standard messaging, open-source architecture, agreed upon privacy policies and security protections, and data sharing rules, among other dimensions. A cross-system vision is needed especially to create:

- Standard identifiers for people receiving services and providers giving care.
- Standard data elements, such as service definitions with sufficient detail at the person-, provider-, and payer-levels.
- Standard data collection protocols at the individual encounter-level between providers and patients so that data can be aggregated for many reporting requirements and one database can serve multiple purposes on a continuous, evolving basis.

The goal of interoperability does not mean that every system be built or structured identically, only that systems be designed to share information and communicate with each other electronically.

It sounds so simple; but of course, it is not simple. It requires considerable vision, determination, and hard work.

What Are the Barriers to Interoperability?

Many barriers line the path to interoperability. Exploring those barriers may help information system developers recognize and manage them. (In the next section on opportunities from interoperability, we note the benefits, which will far outweigh the costs in the long run.)

- *Fear of disclosure of provider performance:* As performance monitoring and management influence medical care and care for mental and substance-use disorders, providers may be fearful of disclosure about their performance and the effectiveness of their treatment. Uncertainty about how “my” program will fare under full disclosure can be quite threatening. Some providers and program administrators want to maintain the status quo, continuing to operate or fund specific programs, even if they do not work well or achieve the expected outcomes.
- *The myopic vision of only satisfying funders:* Incentives built into funding systems drive data systems and impose reporting structures. If the vision of interoperability is clouded, often only the minimum information required by a payer or funder is collected. For example:
 - Fee-for-service insurance reimbursement requires a report on every service by every provider for every patient.

- Managed care payment typically requires a report on each episode of care for each patient, but not necessarily by service, so that costs may be reported for all services over the entire episode, if costs are reported at all.
- Block grant revenue sharing may require a report on the program's spending and total clients served, not data on each client; as a result, client-level costs and outcomes cannot be tracked.
- *Privacy objections:* Real and perceived privacy concerns must be addressed:
 - Sensitive personal health information must be protected.
 - The requirements for protecting M/SU-related data (42CFR, Part 2) are the strictest of Federal codes on privacy. Compliance with those rules can be difficult. Many providers and program administrators do not understand how they can adhere to 42CFR rules while sharing data across MH and SA agencies, let alone with other public programs.
 - Judicial subpoena power over personal health information is of paramount concern, especially for substance abuse treatment providers. For example, community living, one measure of successful M/SU treatment, is threatened in more than 20 States that criminalize drug use by pregnant women. Those States can legally incarcerate pregnant women who are discovered to be users of illegal drugs. The nexus of health records and the criminal justice system must be addressed.
 - Revealed health information can also threaten social services. For example, if substance abuse is known, welfare support can be withheld and children can be removed from the family.
- *Outdated laws:* Existing State and Federal laws may need to be changed. Privacy laws may need to be updated to the electronic age. Data sharing, when prohibited by State law, will need to be explicitly permitted in statute for specific purposes. Reporting requirements sometimes written into statute may need to be modified for specific agencies and different funding sources.
- *Data outside the health paradigm:* Many, if not most, patients with serious mental illnesses and/or substance addictions require supportive services, such as case management, social support, housing support, job training, drop-in centers, etc. These require data specifications that may be outside of the health paradigm of presenting complaint, diagnosis, treatment, and discharge. Supportive services must be tracked as part of the overall mental health and substance abuse treatment record. Furthermore, data specifications for these services must be standardized.
- *Additional work:* Providers will undoubtedly focus on the additional “work” or “computer entry” burden that they must bear. Additional work requirements will occur and there must be a positive return on investment for providers to be willing to undertake the effort. Some of the return should be reduced ad hoc data collection on patients for every performance measure that requires information across systems (health, school, housing, and jobs programs). However, the payback must be more than that.

- *Up-front costs:* The upfront costs of establishing interoperability are real and must be absorbed. The up-front activities require considerable effort, including planning, national standards development, and system modification, as well as potential disruption to a data series. However, once established, the benefits are likely to greatly outweigh the costs.
- *Organizational and financing restraints:* Where MH and SA agencies sit within the State government determines their power, and this affects their ability to promote interoperability across government programs and to garner resources to implement interoperability.

What Opportunities Arise from Instituting Interoperability?

As we noted at the outset, the IOM report, *Improving the Quality of Health Care for Mental and Substance-Use Conditions*, has exposed profound weaknesses in the healthcare system for people with mental and substance-use disorders and has sent out a call for change. Furthermore, at the heart of this change lies the need for data, information, and evidence to guide improvement. One lesson gleaned from successful quality improvement in manufacturing and other services industries is that “you cannot change what you cannot measure.” Opportunities abound at all levels to measure and improve the healthcare system of M/SU treatment and recovery—for patients and their families, treatment providers, State and Federal program administrators, and more generally for generating the evidence on what works. With information systems that communicate and share information on the same clients in a secure environment that protects personal privacy:

- Patients and families would have access to their health information for tracking health experiences and for self-managing their diseases and treatments.
- IT solutions could ensure privacy through role-based access to information and other techniques, far superior to protections under paper-based systems.
- Providers would have timely information about patients’ services, regardless of where patients received services or who paid for them, and providers could have access to patient outcomes. (For chronic illnesses, patients who “stay in touch” with their providers are more likely to avoid relapse and crisis episodes.)
- For providers, the potential would exist for assessing their processes of care and effectiveness of treatments against performance benchmarks and evidence-based protocols. Improvements in information, such as alerts and reminders, along with better tracking and communication with patients, would result in higher quality healthcare.
- Treatment providers caring for the same patients could communicate better to ensure coordination of services, identification of gaps in services, and better continuity of care, regardless of payer.
- States could eventually purchase care based on results of providers rather than only services provided. In fact, national initiatives, such as the Network for Improvement of Addiction Treatment (NIATx) and the Mutual Assistance

Program for States (MAPS, sponsored by the Treatment Research Institute), have begun to develop approaches to assist States in purchasing care in ways that help providers improve their results. These initiatives help States to prioritize service needs, rationalize dollar allocation among programs, increase accountability, and perhaps level the “paying field” across agencies and funding streams.

- Researchers could determine which treatments were most effective, without the enormous cost of new data collection as each new question arises.

The opportunity exists to create patient-centered information systems capable of communicating with other information systems to serve a multitude of purposes, satisfy different reporting requirements, and address new issues seamlessly, all because the building block of detailed data collection would be present.

Why Tackle Interoperability Now?

The reasons are many. Some relate to demands made by consumers and purchasers. Others relate to technical solutions that make interoperability feasible. And the most important reason is that a funding opportunity exists to rationalize information systems at the State-level.

Consumers and purchasers: Increasingly, consumers are demanding quality care and transparency about the care their providers deliver. Pay-for-performance (P4P) accountability systems are growing and the data must support a variety of P4P programs. While Medicare and private payers are focusing on and rewarding individual clinicians, substance abuse treatment organizations are focusing on rewards to organizations that provide incentives for enhancing services to increase access and retention in treatment. Patient self-management and the ability to provide information about how current treatments are working can further support consumer-driven systems of care.

Technical solutions: Solutions are emerging in information technology to protect privacy. Web-based data collection lowers the cost and potentially increases the accuracy of data collection. The electronic health record (EHR) is beginning to emerge and can be a powerful instrument for M/SU providers if it is designed to accommodate the clinical needs of M/SU treatment and evaluation.

A funding opportunity: Finally, a significant opportunity exists to obtain Federal support to redesign State government information systems to make them interoperable with the Medicaid information system of the State. The Medicaid Information Technology Architecture (MITA) provides a rare opportunity—through CMS matching Medicaid funding—to plan, design, and implement information systems that can communicate and work together across different State programs. States will want to learn from other State efforts using the MITA framework to integrate needed information across multiple state programs and other settings.

In sum, efforts directed toward interoperability in health information will not only improve the quality of the services and the organizations providing healthcare in the U.S.,

but will also enhance the knowledge of what works and what does not work in healthcare and treatments for generations to come. The broader the thinking on what constitutes interoperability—State health and social services programs, Federal programs, provider information systems, payer transactions systems—the more comprehensive and useful the information will be. The effort, seemingly great at this juncture, will be small by comparison to future benefits. Potential gains are enormous.

Principles for Information Sharing

By William R. Braithwaite, MD, PhD, Braithwaite Consulting

The key to health information sharing is reaching agreement across participants in a health information exchange (HIE) initiative as to the principles, policies, and procedures that each will follow to safely and securely handle the information that is to be shared. Only when trust has developed through a consensus process will such an initiative be successful; it cannot be imposed from the top down. This paper presents a summary of the principles for privacy and security that form the basis for information sharing agreements in general. The paper also provides a detailed discussion of the background for each so that greater understanding can be brought into discussions about privacy and security. [This document is based on materials developed for the eHealth Initiative Toolkit, which is publicly available on the Internet at <http://toolkit.ehealthinitiative.org/>.]

Background

The healthcare field is now so vast and complex that the full ‘practice of medicine’ has been proven humanly impossible to perform unaided with an acceptable error rate. The old paradigm of the doctor and the patient communicating to arrive at healthcare decisions for the patient must change. We learned from the well publicized reports of the Institute of Medicine (IOM), *To Err is Human* and *Crossing the Quality Chasm*, that as many as 98,000 people die in any given year from medical errors that occur in hospitals alone. These errors are systemic and cannot be detected and corrected by individual clinicians operating from memory and paper records. The only logical means available to directly address this urgent, ubiquitous failure of the healthcare system, is for the information system to be brought into the exam room and to change the paradigm of clinical practice so that it routinely involves the doctor, the patient, and the computer working directly together to provide the best advice. The means to implement this new approach is clinician interaction with a Clinical Decision Support System (CDSS). This requires an electronic health record (EHR) system with CDSS in the clinical environment. The CDSS by itself is not functional without interoperability with sources of clinical data, as well as interoperability with source(s) of rules for best clinical practices. Although not the focus of this paper, this is the impetus for the current national emphasis on interoperable health information exchange. Of course, none of this will be implemented unless there are sufficient incentives to get these systems incorporated into healthcare practice.

With respect to interoperable health information exchange, it is no longer “*whether* we should” but “*how* should we do this?” Many state, regional, and community-based organizations (more than 200 thus far) interested in health information exchange are cropping up across the country. Nearly every stakeholder group is getting into the game...the hospitals, the labs, the physicians, the employers, the plans, the Quality Improvement Organizations (QIOs), and public health agencies. Various methods and approaches for moving forward are evolving, but clearly the time is now for a

coordinated effort before divergent approaches make interoperability a more difficult endeavor.

Critical cultural issues must be addressed in order to create an interoperable healthcare system that has the characteristics of a dynamic networked information infrastructure. These issues include creating:

- A cooperative, collaborative relationship between government, business, academia, healthcare organizations, clinicians, and patients.
- An actionable consensus by both the public and private sectors on the standards to be adopted.
- A consensus at all levels of the delivery system about the need for standards.

Creation of an interoperable healthcare system that is sustainable over time requires a clear and workable model for value and sustainability. For this to occur there must be:

- Demonstrable economic value assigned to both quality and safety in healthcare.
- Planned investments by both the public and private sectors over the course of a timetable delineated in advance.
- Alignment of incentives across multiple stakeholders in order to more closely tie the investment costs to the expected benefits.

The clinical community must play an active role in efforts to migrate toward an interoperable healthcare system across the entire range of ambulatory and inpatient settings. This requires:

- Leadership and commitment to cultural and operational change.
- Activities related to clinical content and terminology.
- Investment of resources.
- A focus on the end goal of delivering higher-quality, safer care.

Common barriers to success include four key concepts:

- Lack of agreement between participants to share their data.
- Lack of agreement on standards for secure exchange of information.
- Lack of agreement on how to identify patients across institutions.
- Lack of agreement on how to deal with privacy and security breaches.

HIE requires trusted relationships; if these are absent, data sources will not be willing to share the data they hold. Each participant in an HIE initiative must agree, under contract, to follow certain information sharing policies and procedures. Items to be agreed upon must be the minimum necessary and not impinge on local decisions, unless absolutely necessary. Wherever possible, all agreement terms must be based on mutually agreed upon principles. Two of the most difficult areas on which to reach consensus are privacy and security. Sometimes this is because of misunderstanding, unfounded apprehension, or specific fears; and at other times privacy and security issues are convenient to blame

when other causes are at work, such as lack of trust or competitive instincts. In either case, it is critical that all parties learn about and understand the underlying principles on which trust and consensus may be built.

After the central principles have been agreed to, the work of applying them to specific use cases becomes paramount. The experience of existing HIE efforts shows that this is an interactive process. Most efforts begin with something that everyone feels comfortable with – typically the sharing of health information between healthcare providers for treatment purposes. As one adds use cases to this basic foundation, the interaction between the principles and the applicable policies and procedures becomes more difficult, and consensus becomes less easy to achieve. For example, adding biosurveillance for public health purposes to the mix sparks questions that require agreement among all aspects of the project:

- What data sources report what data in what time frame to public health?
- What are the legal and ethical drivers to report these data?
- What protections do the data have once received by public health?
- Can patients opt-out from this type of reporting and, if so, how?
- Are the data reported in identified or de-identified form?
- If de-identified, what policies and procedures allow for re-identification for specific investigations, and by whom?

Determining who participates in an HIE initiative also raises major questions. For example, in the broader scheme of things, the clinical data held and processed electronically for claims purposes by health plans and their agents (e.g., pharmacy benefit managers or PBMs) could be very useful in clinical situations where the original data is unavailable electronically. If the HIE project allows health plans to share such data, a major question is raised:

- Will health plans be allowed to search for other clinical data on their beneficiaries, and for what purposes?

In addition to the practical issue about whether other clinical data sources will agree to be part of the system under such circumstances, particular privacy and security issues arise:

- How are patients notified of the potential disclosure of their information to their payers?
- How will patients be given control over such disclosures or must they opt out of the whole system?
- How does one define and control the purpose for which information is being sought?
- How are the roles of authorized users defined and controlled and to what information can they have access, under what circumstances?

Technical and architectural decisions also affect what privacy and security policies and procedures must be defined. If a record locator service is used to locate sources of data,

are the privacy and security policies and procedures different from those used for direct queries for the clinical data, and how? If clinical data are to be copied and standardized in preparation for responding to a query, how is the control of the data steward maintained over the copies and implemented in the resulting proxy server?

Finally, the cultural context of the HIE effort can make a difference. In some regions, an HIE initiative can declare a policy that all clinical information will be available for sharing, with appropriate controls and constraints, and that patients may not opt out (i.e., they must go elsewhere for healthcare services if they don't want to participate). In other regions, the local culture would require more patient control and ability to opt out of participation in the data sharing system, so the implementation would have to accommodate that ability. How do you obtain community consensus on a particular approach?

The following discussions cover the general areas of principles on which such agreement must be reached before writing and signing formal contracts/agreements.

Privacy Principles

The HIPAA privacy rule, the Federal Privacy Act of 1974, and the privacy laws and regulations that have been adopted in other countries over the last few decades have all been based on a commonly accepted set of fair information practices. The earliest public documentation of this concept was the "Richardson Report" on "Records, Computers and the Rights of Citizens," published in 1973, which introduced four "Fair Information Practices Principles" (known as "FIPPs"; see <http://aspe.os.dhhs.gov/datacncl/1973privacy/tocprefacemembers.htm>).

The four FIPPs are:

1. Notice: Data collectors must disclose their data collection.
2. Choice: Data subjects should have rights to opt out of uses and disclosures of their data.
3. Access: Data subjects should be able to view their information and have it corrected, if necessary.
4. Security: Data collectors must take reasonable steps to ensure that their data is accurate and protected against unauthorized use and disclosure.

These were first codified into law in the Privacy Act of 1974, applicable only to Federal agencies, and they have since been the model for most privacy laws, including HIPAA. You can find several versions of these principles using a Web search, but the following set of five common principles is a distillation of the work of many sources and succinctly represents the concepts.

Five Principles of Fair Information Practices

1. **Notice:** The existence and purpose of record-keeping systems must be known to the individuals whose data is contained therein.
2. **Choice:** Information must be collected only with the knowledge and implicit or explicit permission of the subject, used only in ways relevant to the purpose for which the data was collected, and disclosed only with permission of the subject or in accordance with overriding legal authority (such as a public health law that requires reporting of a serious contagious disease).
3. **Access:** Individuals must have the right to see records of information about them and to assure the quality of that information (accuracy, completeness, and timeliness). In the healthcare arena, records are rarely deleted or replaced, but this principle implies that there is at least a due process for individuals to amend poor quality information about themselves.
4. **Security:** Reasonable safeguards must be in place for the confidentiality, integrity, and availability of information.
5. **Enforcement:** Violations must result in reasonable and consistently applied penalties to deter violators and in reasonable mitigation efforts to offset the effects of a breach as much as possible.

Many other versions of privacy principles are available on the Internet, including a version with nine Privacy Principles used most recently by the Markle Foundation *Connecting for Health* project. These were used as a basis for their comprehensive privacy protective architecture. Regardless of which set you choose to work with, everyone involved must buy into the principles. In addition, all participants must be thoroughly familiar with them and their effect on the agreements that must be made, and the consensus that must be reached, before a community is able to implement health information exchange.

Security Principles

Since security is one of the five principles of fair information practices, it should be clear that one cannot have privacy (or confidentiality of private information) without security measures to protect the information from being used or disclosed in ways that violate the other principles. The most confidential information is that which is secured in such a way that no one but the originator can access it. Clearly, this would be inappropriate in the healthcare field, where the purpose of such information is to be available when and where needed to improve clinical decision making about the subject whenever and wherever the subject appears. As well as being available, in order to be trusted, such information must have integrity such that it cannot have been altered between the data source and the decision maker. These characteristics of confidentiality, integrity, and availability are the backbone of health information security. To support all three, security must be implemented as a careful balance of administrative, technical, and physical safeguards tailored to the particular information systems environment of each installation. This is best accomplished through a risk assessment of the information systems environment, followed by ongoing risk management through the selection,

implementation, and monitoring of reasonable and appropriate measures to minimize the risks while controlling the costs. This flexible and scalable approach is the basis for the HIPAA security rule and was taken because security threats and solutions evolve too quickly to be cast in stone in the form of Federal regulation.

Often, these measures involve policies, procedures, and contracts with business associates more than technology. We recognize that the majority of security breaches are from the ‘inside’, and for security technology to work, behavioral safeguards must be established and enforced. This requires administration commitment and responsibility at the highest executive level in an organization, without which any security measure is likely to fail. In a nut shell, security involves the documentation of the implementation of reasonable and appropriate administrative, technical, and physical safeguards to protect the confidentiality, integrity, and availability of electronic health information.

Because security is such an important and visible aspect of HIE programs, it is important to identify and make known the person responsible for the development and implementation of the policies and procedures, as well as the implementation and ongoing maintenance of security measures for the HIE initiative. The HIPAA rule provides good general guidelines to follow for health information security, but there are a few areas that should be emphasized for HIE projects which may be different, based on the goal and implementation technology of the project. For example, if the HIE initiative is simply to serve as a conduit between participants without access to the content, then the security aspects are much simpler than if the HIE initiative is holding copies of the clinical data and responding to queries on behalf of the data sources.

In general, special attention must be paid to the following areas of security when designing the policies, procedures, and agreements for HIE:

- User identification and authentication.
- User authorization.
- Role based access control.
- Transmission security.
- Providing the minimum information necessary for the purpose.
- Audit trail and information system activity review.
- Response to security incidents including reporting, sanctions, and mitigation.

Reasonable safeguards must be in place to ensure the confidentiality, integrity, and availability of the information for its intended purposes. The HIPAA security rule sets these very general principles in place as they apply to covered entities holding protected health information (PHI). However, because HIPAA gives each organization the flexibility to implement security in a different way, implementing security when exchanging PHI between organizations on a nation-wide health information network (NHIN) requires a more well-defined, standard set of mechanisms than when this information is shared among known and understood electronic systems under the control of a single organization. Sharing PHI between institutions requires a degree of trust in the technology (and in the other organizations) that is often absent today. The standard

security mechanisms that must be in place to support that trust are: authentication, authorization, non-repudiation, auditing, encryption, and transportation.

Principles of Multi-Lateral Agreements

Outside the purely technical realm, the most difficult problems involve obtaining consensus or agreement across all the institutions that propose to exchange health information. Agreement needs to be at all levels of implementation: the high principles level, the NHIN policies and procedures level, the regional level, and the individual institution (Participant) level. Each of these levels of agreement must be committed to in contract language, a model for which is found in the Markle Foundation *Connecting for Health* materials on the Common Framework available at:

<http://www.connectingforhealth.org/commonframework/>. Specific agreements from actual HIE efforts are available from successful collaborations, such as the HIE in Memphis, Tennessee, called the MidSouth eHealth Alliance (MSeHA). A good source of Web-based reference materials can be found at:

http://www.mc.vanderbilt.edu/vcbh/ds/0606_privacy/resources.htm.

Summary

To enable the successful exchange of individually identified health information between institutions, a level of trust between institutions must be reached. That trust must be based on well understood principles of privacy and security that are embodied in policies and procedures to which all are bound by contracts between the institutions that participate in such health information exchange. Only when standardized, interoperable exchange of patient's information becomes ubiquitous can the healthcare system change its current paradigm to fully incorporate the power of clinical decision support and begin to address the current crisis in delivering safe healthcare.

Some Thoughts on HIPAA and Cross-System Collaboration

By John Petril, J.D., LL.M., Professor, University of South Florida

The public mental health system that existed from the 1950s through the 1980s has irrevocably changed in most states. There are many reasons for this, including downsizing of the state hospital system; the use of managed care with Medicaid, which eroded the role of the state mental health director; and the lack of adequate capacity for acute care in many jurisdictions.

The result has been the emergence of what many have described as the “de-facto” behavioral healthcare system. This de-facto system has three defining characteristics:

1. People with serious behavioral health disorders are assessed and treated in many settings (e.g., criminal and juvenile justice systems, foster care, the educational system, the primary healthcare system) where the assessment and treatment of such disorders is, at best, a secondary concern.
2. The prevalence and volume of behavioral health disorders in those sectors comprising the de-facto system has created significant problems, despite the fact that assessment and treatment may not be primary functions. For example, in the criminal justice system, it is estimated that at least 900,000 of the approximately 14 million people arrested in the United States each year are acutely mentally ill at the time of arrest, while the overall prevalence of mental disorder approaches 70 percent among incarcerated individuals.
3. Many individuals with a serious mental disorder find themselves in multiple treatment systems over time. For example, the child placed in foster care may eventually commit an offense that places him or her in the juvenile system. Later, that same individual may be arrested as an adult for a criminal offense, and the court may resolve the case by requiring the person to obtain substance use or mental health treatment.

It is readily evident that both short-term and long-term efforts to address the needs of individuals in the de-facto system require that information be available over time and across systems. Yet the perceived inability to exchange information – including healthcare information – within and across systems has emerged as a major barrier. There are a variety of reasons for this. First, each sector of the de-facto system has its own information system, driven by its own primary mission. Even within a particular sector (for example, within the court system), information systems vary significantly from jurisdiction to jurisdiction. This makes information exchange and retrieval difficult for technical reasons, and may confound efforts to match individual records across systems.

Second, and most important for the purpose of this paper, confidentiality concerns often impede information sharing. On occasion, such concerns are legitimately grounded in ethical or legal principles, given that confidentiality is a primary value in healthcare

generally and in the arena of behavioral healthcare, in particular. However, concerns over confidentiality are too often raised as a barrier when, in fact, the disclosure of information is legally permitted, ethically appropriate, and clinically in the best interest of the client.

Since the adoption of HIPAA, a default objection to the disclosure of protected health information (and in some cases, other types of information falling outside of HIPAA's scope) is that "HIPAA says we can't do that." It is ironic that HIPAA is so often cited as a reason that information cannot be shared because, in reality, HIPAA is very generous in the disclosure it permits. For example, HIPAA allows protected health information to be disclosed without the individual's consent for purposes of treatment, payment, or for healthcare operations. An individual *state* law may require consent in these circumstances, yet it is likely that HIPAA will be referred to (incorrectly) as the reason disclosure cannot occur. The practical effect is that efforts at cross-system collaboration have ground to a halt in some jurisdictions because of the myths associated with HIPAA.

In fact, HIPAA creates no real barriers to cross-system collaboration, as it even permits the use of a variety of tools (e.g., uniform consent forms, business associate agreements, and standing judicial orders) that will ease the appropriate sharing of information while providing adequate legal protection in most jurisdictions. HIPAA must be considered in conjunction with other laws governing confidentiality and privacy, including but not limited to state statutes, judicial decisions, and other Federal laws (for example, Federal regulations establishing stringent rules for the protection of records associated with the treatment of alcohol and substance use disorders). Yet, in many situations, the conversation regarding confidentiality does not involve other laws or how one may share information in a manner consistent with these different sources of law. Rather, the conversation begins, and then ends, with HIPAA.

A number of myths have developed around the application and limits of HIPAA, nearly all based in something other than the actual text of the regulation. Nothing in HIPAA bars cross-system collaboration; thus, it is time to put HIPAA aside as the barrier that many refuse to cross.

Fostering Interoperability with Service Oriented Architectures

By Tony Pepitone, Thomson Medstat

The phrase “Service Oriented Architecture” (SOA) is so widely used in the IT world that it has almost become a cliché, but many people outside the enterprise IT organization still don’t understand what it means. In this paper, we will talk about the fundamental concepts behind SOA, describe the benefits of the approach, and give examples of how a SOA can be put to practical use by State stakeholders attempting to integrate Medicaid, Mental Health, Substance Abuse, and other agency IT operations.

What Is a Service Oriented Architecture?

The obvious question to be answered in defining a Service Oriented Architecture is: “What is a service?” The simple answer is that a service is a collection of activities to be performed on a client’s behalf (the client here is a client *computer*, or a client *system*, not a human being receiving State agency services) fostering interoperability between systems.

Interoperability – the idea that different computer systems can work together, cooperate, share the workload, each doing what they do best, avoiding duplication of development effort – is so obviously a good idea that you have to wonder why it hasn’t always been standard operating procedure. On the surface, we have lots of enablers of interoperability: our computers support connectivity, we have Ethernet and local area networks, and most of our computers are on the Internet, so theoretically, they all should be able to talk to each other!

Unfortunately, there are many complex impediments to interoperability. Not only must we connect physically distinct machines to each other, but they might be *very* different inside and out: built by different manufacturers and incorporating different architectures; have different electronics and instruction sets; contain different operating systems, languages, and databases; have different communication protocols; maintain different security protocols; etc. These different machines from different manufacturers were not designed to talk to each other, and right out of the box, they typically don’t!

A good place to start, if we want to promote interoperability across such divergent platforms, is to assess what different computers do, in fact, have in common. It’s not numbers, as different systems use different formats for storing numbers, as well as very different representations, byte orders, and number of bits for storing them. It’s not programs, either, because programs on different machines rely on different underlying hardware instructions. It’s not languages – even the same language (such as “C” or “Java”) is slightly different across different vendors and therefore incompatible. Operating systems have “Application Programming Interfaces” (APIs) but there is no uniformity of APIs across different operating systems, either.

Within this technological Tower of Babel, it turns out that just about the only characteristic different computer systems share is that they all manipulate

| |
|--|
| “Hiya, what’s up?” “Not much, I’m kinda bored.” “Me too – see ya!” |
|--|

strings of characters.³ Because of this commonality, and with appropriate software systems in place, computers can send text messages to each other. What might two computers' text message conversation look like? Like the box above, maybe? Probably not.

So can we really have interoperable computer systems if all they can do is trade text messages? Absolutely! We are all familiar with one very common form of computer-to-computer text interaction via our Internet browsers: the Hypertext Markup Language (HTML) queries we pose, and the HTML responses we receive in the form of Web pages. When we type www.samhsa.gov into the address line of our browser, our computer sends an HTTP GET request (which is just a character-based text message) to the SAMHSA Web server, which sends back a few thousand characters⁴ of HTML text that displays the SAMHSA home page, in its entire graphically-formatted splendor, in our browser. This conversation is shown below, in a much-abbreviated form.

```
GET http://www.samhsa.gov/index.aspx

<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
    "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html>
<head>
<title>Substance Abuse and Mental Health Services Administration (SAMHSA)
Website</title>
    <meta http-equiv="Content-type" content="text/html; charset=UTF-8" />
    <meta http-equiv="Content-Language" content="en-us" />
    ...
```

If HTML is the text-based language for describing the content, formatting, and visual layout of Web pages, is there a corresponding text-based language for describing arbitrary collections of data, and preserving the types of hierarchical and iterative data relationships we would find in a database or in a computer program? The answer is yes – that language is called Extensible Markup Language (XML) and the XML standard is fully defined by the World Wide Web Consortium (W3C). XML is a tag-based language,

³Even character data, however, has not always been uniformly represented in the computer world, as those of you that recognize the acronyms ASCII, BCD, EBCDIC, and Unicode will attest. Fortunately, the World Wide Web Consortium has designated a single character code, Unicode (itself a superset of ASCII), as the lingua franca of the Internet and its relevant communications protocols.

⁴The reality is that the HTTP response that the SAMHSA website sends back to us probably also contains references to pictures (in JPEG or GIF format), movies (in MPEG or WMV format), sounds (MP3), and other fun and interesting novelties that are not strictly character text messages – but we'll ignore that embellishment for now.

like HTML, but the tag names can be defined arbitrarily (extensible!) by the users of XML, as in the following XML fragment.

```
<?xml version="1.0" encoding="UTF-8"?>
<DOCUMENT>
  <GREETING>
    Hello From XML
  </GREETING>
  <MESSAGE>
    Welcome to the world of XML.
  </MESSAGE>
</DOCUMENT>
```

Since it is possible to request and supply Web pages with HTML and to request and supply arbitrary data from computer to computer with XML, surely it is possible to take the final step and request other computers to perform actions (services) on a client computer's behalf. The protocol to accomplish this feat is called Simple Object Access Protocol (SOAP) – a way for a program running on one system to communicate with a program on a different system by using XML as the mechanism for information exchange.

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <getProductDetails xmlns="http://warehouse.example.com/ws">
      <productID>827635</productID>
    </getProductDetails>
  </soap:Body>
</soap:Envelope>
```

The SOAP message above is sent from a client computer to a server computer and requests the server to run a Web service, supplying a “productID” of 827635, and asking the server to execute a method called “getProductdetails” to return those product details in XML format to the requesting computer.

We've now returned to the point of being able to answer the question, “What is an SOA?” A Service Oriented Architecture is a way of designing, implementing, and extending interoperable systems as a collection of cooperating (and potentially distributed) systems that request and supply XML-based services.

An Example of an SOA

How might be a Service Oriented Architecture be used in a real-world Medicaid, Mental Health, Substance Abuse, or other agency integrated data system – and what is an example of a service that might be useful across all these systems? Consider an *Identity* service. The rationale for an identity service is that multiple agencies provide services to the same individuals and it is therefore possible (and obviously beneficial, where legally practical) to have an integrated view of the person. There are several ways this might be accomplished technically, but one obvious approach is to use a central repository and an associated service to store, search for, and update identifying information for individuals such as name, address, phone number, birth date, system IDs, and other basic demographics.

The way we would go about accomplishing this is to implement XML-based services that allow the requestor (one of the various agency’s computer systems) to:

- Insert a new person (with appropriate information) into the repository
- Search for an existing person in the repository
- Update a person’s information in the repository.

With just these basic services, the various agency systems could work together to make sure that individual identities were tracked and preserved across systems, even if existing mandates prevented the sharing of agency information. Without a shared identity service, when any of the agency systems needed to determine if an individual was already in the system, they would look in their own repository (e.g., MMIS eligibility module, or SA Agency client table). Under the shared SOA, the system would instead invoke the identity service, and use the returned ID if the person was found, or create and insert a new identity if not found.

But you might be thinking that this shared identity function could be implemented as a standard database lookup or a SQL stored procedure, which is true. Why implement it as a service and what is gained by doing so? To answer this question, you need to consider how a SOA-based identity service might evolve during a typical scenario in the software development lifecycle.

Assume that a system is implemented to provide the core functions listed above and that it is successfully being used by multiple agencies to track individuals. Next, imagine that the SA Agency (which is using the identity services) decides that it is important to also track *previous* address, *previous* phone number, etc., back for as many prior generations as possible. This means that changes will need to be made to the underlying database schema to incorporate the historical data. To incorporate n-generations of previous information, we’ll probably add a new table or two, new relations, keys, etc. By itself, this is not a big deal. But, if we were using a “tightly-coupled,” API-style interface for the identity service, we would need to change all the calls to the service from all the users across all the different agency systems, requiring a coordinated and scheduled software update across all systems that use the identity repository. This would be a very difficult, time-consuming, and costly process.

But with a SOA, we just extend the available XML tags for the affected services, making these new “previous” data fields optional, and enabling the use of the “previous” data fields just for the systems that want to utilize them. The SA system would be modified immediately to use the optional tags and receive the optional information; other agency systems would be modified only if and when they needed to incorporate the new data. In this way, the services can evolve to support the needed (but not necessarily identical) functions of the client systems, while the client systems need only be changed and updated when *they* require new functionality, not when the services change. In an era when more money and time is spent modifying data systems over their lifecycle than in their initial development, the benefits of the SOA approach are obvious.

Another Example – A “Fuzzy” Match or “Probabilistic” Search

Let’s take the example of an identity service one step further to illustrate its utility. We know that clients don’t always use precisely the same identifying information when registering for services and when visiting providers and, similarly, office staff sometimes make typographical or other data entry errors when accessing data systems. We need something like the method Google uses when you ask it to find “Thomas Alva Adison” and the search engine responds:

“Did you mean: [Thomas Alva Edison?](#)”

Somehow, the search engine knew that although “Thomas Alva Adison” and “Thomas Alva Edison” are not identical, the lexical *distance* between them is relatively small. Many of us have used mechanisms and techniques of probabilistic search to link individuals from different systems for research purposes using offline processes we perform long after the original assignment of identity occurs. The twist here is to perform the search as a service – in real time – to support the resolution of identities as individuals are being enrolled and as providers are providing services. The solution is to implement a service that works like a Web search: the client system supplies whatever information it has available about a person, the service performs a search, and the client gets back either a direct hit, or the first 10 most likely hits, then the next 10 hits, etc.

Although the transition from a shared system that requires exact matches to establish identity to one that allows searches for close matches might require wrenching changes on the client side of systems under traditional tightly-coupled client-server architecture, the transition could be managed in a very graceful way under the SOA scenario. As an example, using the same information about individuals passed into the search service, the service might return exact hits with one set of XML tags, and possible close matches with a different set of tags. Systems that require an exact match would only process the exact match tags, while systems that can display and use close matches would process the alternate tags. The key is that the same service could provide all the information to all the clients – but the clients simply use what they want and ignore the rest.

Implementing State Medicaid and Other Agency Systems with a SOA

As a final example, consider tying a number of service providers together to create a Medicaid “Big Picture” reporting system. The idea is that the Medicaid agency wants beneficiary reports that not only encompass Medicaid utilization, but services provided by other State agencies as well. Under the SOA paradigm, this functionality can be quite

easily created by utilizing services that other agency systems provide. The diagram in Figure 1 on the following page illustrates how this might be accomplished.

Notice that the Medicaid “Big Picture” reporting system does not access the Medicaid database directly. Rather, it obtains what it needs from the Medicaid Reporting Service. This level of separation is important because it isolates and buffers the database itself from the users of the data, allowing changes to the database to occur without requiring changes to the service consumers. Similarly, the Medicaid “Big Picture” reporting system does not attempt to access the SA Agency database directly either, as it obtains what it needs from the SA Agency Reporting Service. The reporting service for an agency can provide data to other consumers, based on and subject to the privacy and confidentiality policies of the agency. Once the reporting service is created and its policies are made known, other data consumers can contact it to provide services to systems outside the owning agency, even though the two systems might reside in different parts of the State and run on entirely different hardware and software platforms. This is the promise and the potential of the SOA approach. A number of good references exist that describe the SOA framework in general⁵ and how it might be applied in the specific context of Medicaid and other State agencies.⁶

Conclusion

This brief introduction was designed to give you a reasonable idea of how an integrated set of systems designed to conduct Medicaid and other state agency operations could be constructed by connecting services – such as an identity service – to form an interoperable network of producers and consumers of information. The systems providing services can grow and evolve over time, extending their capabilities on an as-needed basis for different clients.

⁵Service-Oriented Architecture: Concepts, Technology and Design,” by Thomas Erl, 2005.

⁶CMS Medicaid Information Technology Architecture (MITA) Version 2. Center for Medicare and Medicaid Services.

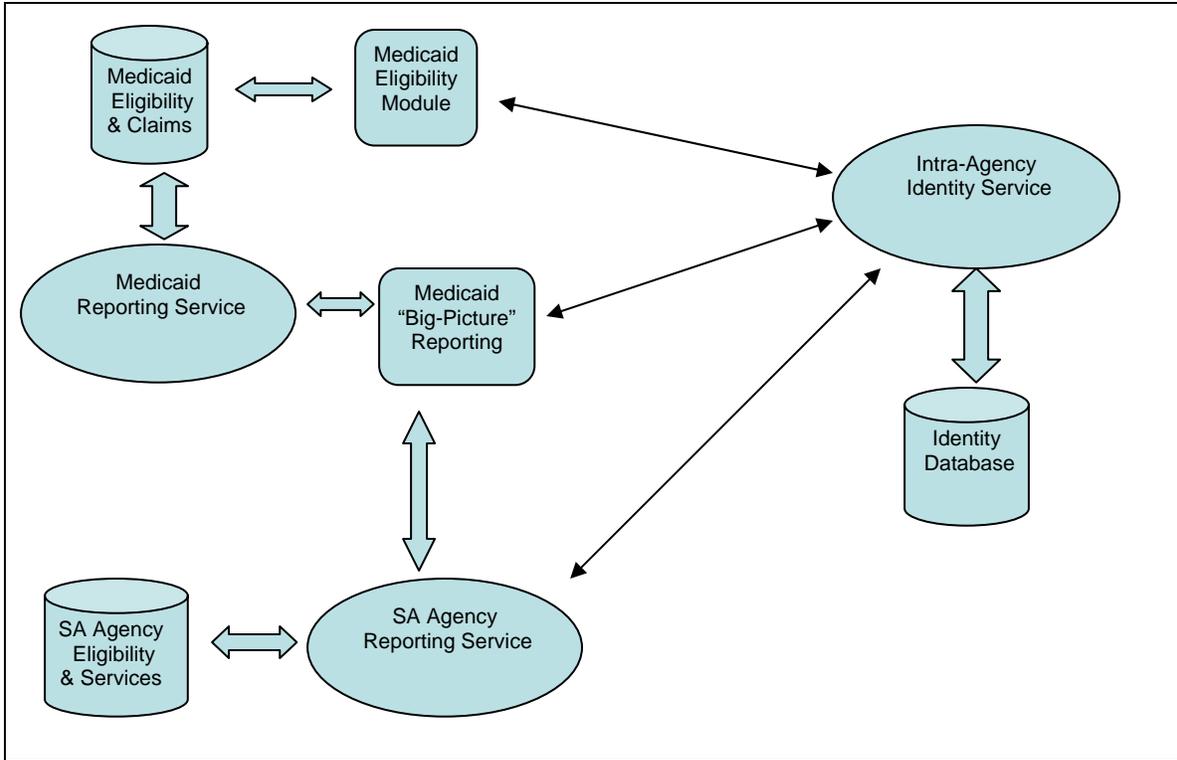


Figure 1. Medicaid “Big-Picture” Reporting Embedded in a Service Oriented Architecture.

What Is the Medicaid Information Technology Architecture (MITA)?

By Denise Bazemore and Alan Shugart, CMS

Original Concept of the Medicaid Management Information System (MMIS)

In the early 1970s, Congress passed legislation supporting Federal investment in “claims processing and information retrieval systems” to help States manage their respective Medicaid programs. Commonly referred to as the “Medicaid Management Information System” (MMIS), these systems have served as the information technology (IT) workhorses for all Medicaid agencies in the United States and the District of Columbia for the past 35 years.

Although the original focus of the MMIS has been on processing Medicaid claims accurately and timely, the concept of the MMIS has evolved over time to be much more than a very sophisticated system for writing checks. States have made much use of the data contained within their MMIS through the use of decision support analytical tools to build data marts and warehouses capable of storing huge amounts of claim-related information. Even more importantly, this stored MMIS information has proven to be indispensable in ferreting out patterns of fraud and abuse by providers and beneficiaries across the country. In addition, today’s MMIS is quite capable of identifying other insurers who should pay prior to Medicaid (The Payor of Last Resort), with the addition of sophisticated third-party liability algorithms. In addition, many States make use of the latest Web-based technologies to speed transactions and the exchange of critical information between provider and various stakeholders.

Re-Thinking the MMIS

Medicaid, unlike Medicare, is a joint venture between the States and the Federal government, with the States clearly given the authority to design and administer their Medicaid program as they see fit, within the parameters established by the U.S. Department of Health and Human Services (DHHS) Centers for Medicare and Medicaid Services (CMS). As a result, the eligibility rules, benefit packages, reimbursement rates, and nearly everything else varies widely from one State to the next. Similarly, the MMIS varies from State to State. While CMS shares in the costs of these systems, and provides basic ground rules all States must follow in developing their MMIS, each state has been given wide latitude to develop an MMIS that best suits its needs. There have been many advantages during the last 35 years to the approach of allowing “a thousand flowers to bloom.” The downside, in terms of the MMIS, has been that systems developed from the ground up, in the absence of national data and IT standards, are simply incapable of sharing data across organizational silos without the development of a lot of workarounds.

In an era of increased interest in sharing data electronically, seamlessly, and at low cost, the MMIS needed to be re-conceptualized

Today's emphasis on healthcare outcomes is also a forceful agent of change in terms of the MMIS because little, if any, meaningful real-time, clinical data comes through the MMIS. Medicaid managers know what they are paying for but have a much harder time knowing whether the service was ultimately worth the investment, in the absence of healthcare outcome information tied to the clinical record.

In short, the MMIS of today is akin to the instrument panel of a very expensive airplane that tells the pilot, while en route, how far and fast it flew, but not whether it has or will land at the right destination.

What Is MITA?

Recognizing the need for change, CMS began several years ago to re-think the MMIS. The initiative, known as the Medicaid IT Architecture (MITA) framework, is being developed by the Center for Medicaid and State Operations (CMSO) within CMS.

MITA is establishing new national guidelines for technologies and business processes that will enable improved administration of the Medicaid program nationally while allowing States flexibility to customize their business solutions locally.

MITA is both an initiative and a framework. As an initiative, it is a plan to promote improvements in the Medicaid enterprise and the systems that support it through collaboration between CMS and the States. As a framework, MITA is a blueprint consisting of models, guidelines, and principles to be used by States as they implement business and technical enterprise solutions.

MITA has the following goals:

- ✓ Develop seamless and integrated systems that communicate effectively
- ✓ Achieve common Medicaid goals through interoperability and shared standards
- ✓ Promote an environment that supports flexibility, adaptability, and rapid response to changes in programs and technologies
- ✓ Promote an enterprise view that supports enabling technologies aligned with Medicaid business processes and technologies
- ✓ Provide data that is timely, accurate, usable, and easily accessible to support analysis and decision making for healthcare management and program administration
- ✓ Provide performance measurement for accountability and planning
- ✓ Coordinate with public health and other partners to integrate health outcomes within the Medicaid community.

The Medicaid IT transformation is guided by the following principles:

- ✓ MITA is a *business-driven* enterprise transformation.

- ✓ *Commonalities and differences will co-exist* – MITA defines processes, data, and technical solutions that are common to many State Medicaid enterprises, and includes provisions for adapting and extending them to meet State-specific needs.
- ✓ MITA emphasizes the *use of standards* – MITA promotes the use of data and technical standards to improve the cost effectiveness of IT development, administrative efficiencies, and, most importantly, to provide critical stakeholders with the timely and accurate information they need from a variety of interdependent sources to improve healthcare quality and outcomes.
- ✓ *Security and privacy are built-in* – Security and privacy capabilities are defined and woven throughout the architecture.
- ✓ MITA orchestrates *data consistency* throughout the enterprise – MITA will ensure, to the maximum extent possible, that the number of copies of data elements is minimized, that multiple copies (if they must exist) are synchronized in a timely manner, and that official data of record are always available.

The key concepts of MITA include the following:

- ✓ *Maturity Model* describes how Medicaid operations will mature over time by defining the characteristics of five levels of improvement.
- ✓ *Business Process Model* defines a set of common business processes used across the Medicaid enterprise.
- ✓ *Business Capability Matrix* defines the maturation characteristics for individual business processes. The Business Capability Matrix aligns with the Maturity Model.
- ✓ *State Self-Assessment* process asks States to compare current business operations, technical capabilities, and targeted levels of improvement to models supplied in the MITA Framework materials (e.g., Business and Technical Capability Matrices).
- ✓ *MITA Service-Oriented Architecture* provides an overall concept for implementing MITA business services.
- ✓ MITA business and technical services provide a standard set of operations with a *standard interface for all business processes*.

MITA's Principle Goals

1. Patient/Consumer-Centric Perspective Unconstrained by Organizational Silos

In contrast to the MMIS, the primary goal of MITA is to promote a patient/consumer-centric perspective that is not constrained by organizational silos. MITA seeks to collect, use, and provide for analytical purposes, information on Medicaid beneficiaries obtained from a variety of sources inside and outside of the Medicaid agency. Because people are constantly moving on and off Medicaid eligibility, it is critically important that managers have a comprehensive understanding of the totality of a Medicaid beneficiary's care, regardless of whether a claim for reimbursement was submitted to the Medicaid program. By having this broader, more comprehensive base of information, the analysis of healthcare outcomes becomes a

more achievable goal under MITA than is possible today with the current MMIS. Thus, integration of public health and clinical data becomes a critical part of MITA's scope in the future.

2. Interoperability Based on Standards

A second goal of MITA is to ensure that all future Medicaid systems are built according to national data and technical standards that facilitate system interoperability. In the absence of standards, achieving the more comprehensive data profile mentioned earlier becomes virtually impossible. By building the systems with such standards, a number of opportunities begin to open up for States, ranging from communicating more effectively to driving down program and administrative costs. Savings can be achieved as system components developed on behalf of one State can be used by another State, assuming that the technology is standards-based. Thus, the costs experienced for major hardware and software changes on a state-by-state basis today can be avoided or, at a minimum, significantly mitigated. As a result, commercial-off-the-shelf (COTS) software becomes a real option in Medicaid, as it has been in industries as diverse as banking and transportation, where IT solutions based on industry standards enabled pieces of the architecture to be interchanged at little additional cost.

3. Transparency in Terms of Access, Quality, and Cost

Third, MITA seeks to leverage the concept of transparency across the Medicaid platform. Transparency in this context means affording all stakeholders – beneficiaries, providers of care, and Medicaid program administrators – with a window into the cost and quality of care aspects of the Medicaid program (Leavitt, 2006). MITA provides these stakeholders ready access to program information that is comparable, comprehensive, and accessible via Web portals on a secure need-to-know basis. By doing so, MITA will provide the necessary link between Secretary Leavitt's transparency vision and the day-to-day reality that consumers have been seeking in terms of assurance in relation to choices, quality, and competitive pricing for their healthcare. Of the four cornerstones of healthcare transparency – interoperable health systems, quality standards, price standards, and properly placed incentives – MITA will serve as a major impetus to establishing health information technology standards so that different health information systems can quickly and securely communicate and exchange data.

MITA's Components

MITA is comprised of three interdependent pieces – a business architecture, an information architecture, and a technical systems architecture. These pieces are designed to differentiate between the processes, data, and technical solutions that should be common to all Medicaid programs and those that should be specific to individual States. States will participate in defining these pieces. The MITA models and templates are constructed in such a way as to capture and represent these differences, while

accommodating cost effective implementation of State-specific needs using common solutions.

Such an approach balances the common needs across the country with the individual program differences that provide the flexibility managers need to customize their solutions. MITA's goal is to maximize the benefit across the Medicaid enterprise, while promoting innovation and creativity in local implementation.

1. MITA's Business Architecture

MITA's Business Architecture is based on a concept of operations that is a reflection of where States believe they need to be five to ten years from now if they are to meet their goals. CMS interviewed the business and technical leaders of more than 30 States to arrive at this baseline understanding of their sense of future challenges and opportunities. By utilizing MITA's business architecture, States are able to define both where they are today, as well as where they want to be in the future, using a common vocabulary that has as much utility for California and New York as it does for Wyoming and Rhode Island. MITA is business-driven; that is, the IT system developed under MITA needs to serve as a means to achieving each State's business goals, rather than becoming an end in itself. A MITA Maturity Model has been developed to enable States to develop a roadmap toward becoming MITA-compliant. CMS does not expect States to change their IT infrastructure overnight. But it does anticipate working with each State individually to identify its current position along the MITA pathway and determine the incremental steps that can be taken over time to achieve MITA's goals.

2. MITA's Information (or Data) Architecture

The MITA Information Architecture is a companion to the MITA Business Architecture, with business processes mapped to conceptual and logical data models. In addition to the specific data elements, it also includes a data management strategy and data standards. MITA will not focus on creating new standards; instead, it will attempt to utilize data standards developed by other national organizations. This includes those organizations that are responsible for implementation of the Health Insurance Portability and Accountability Act (electronic transmission standards) and Health Level-7 (clinical data standards).

3. MITA's Technical Architecture

MITA's Technical Architecture similarly works together with MITA's Business and Information Architectures. It includes business, technical and data access services, as well as an application architecture and technology standards. Together these components define a specific set of services and standards that States will use to plan and develop their unique IT solutions, all with the same common set of building blocks. The Technical Architecture is based on a service-oriented architecture (SOA) model that places high priority on achieving business goals, rather than IT goals. The

Technical Architecture is also highly adaptable and extensible, it places a premium on common interoperability and access services, and it involves a hub architecture. In addition, the Technical Architecture contains performance metrics so that States can track their overall progress in becoming MITA compliant.

Time to Transition from MMIS to MITA

CMS recognizes that States will need time to transition from their existing MMIS to MITA. The period between now and the publication of the new requirements (approximately 24 to 36 months) will provide the Medicaid agencies time to begin to familiarize themselves with MITA as well as understand how MITA can be adopted to address the corollary issues of enterprise architecture at the state level.

State Chief Information Officers (CIOs) and the state Human Services Agencies' CIOs are currently thinking through many of the same issues that CMS has been examining relative to breaking down barriers to data sharing. CMS has been working with a number of organizations such as the National Association of State Medicaid Directors, the American Public Human Services Association's Information Systems Management Board, and the Federal Office of the National Coordinator for Health Information Technology to coordinate MITA with their respective initiatives.

MITA and Health Information Exchange (HIE)

Finally, a considerable amount has been written in recent years about the promise of HIE. To the extent health information technology and HIE are defined only in terms of the electronic health record, personal health record and e-prescribing, that situation is unlikely to change immediately for all of the reasons mentioned above. Specific examples include the absence of clinical information in the MMIS, a program orientation focused more on paying claims accurately and timely than on health outcomes, and system incompatibilities to cite just a few. MITA, however, will provide the building blocks upon which Medicaid agencies can participate with, and in some cases, lead the electronic healthcare revolution.

HIE ultimately is about developing quality standards for comparative purposes, lowering the barriers to provide invaluable information to those with a need-to-know quickly and seamlessly, and, ultimately, having the tools at our disposal to look at our return-on-investment from the perspective of managers, providers, and beneficiaries.

CMS believes that MITA will serve as both a catalyst and a springboard within the Medicaid program to achieve those ends.

* * *
For more information, see <http://www.cms.hhs.gov/MedicaidInfoTechArch/> with links to MITA white papers, presentations, and detailed descriptions of the MITA Framework 2.0 that was published in Spring 2006.

National EHR Systems Development: Federal Activities

Richard Thoreson, SAMHSA/CSAT

At the November meeting of State Medicaid Directors, Mike Leavitt, Secretary of Health and Human Services (HHS), outlined a four-step strategy for controlling costs and improving the quality of U.S. healthcare. While repeatedly emphasizing that quality problems and spiraling costs are unacceptable, he illustrated how standards-based automation (software and hardware) has transformed other economic sectors (e.g., financial services, manufacturing, and retail) by driving quality improvements and productivity gains. During the meeting, he called for a similar transformation of the healthcare system.

The first step is to develop and deploy Electronic Health Record systems (EHR-s) nationwide. Hosted by local providers, or by Web servers covering larger areas, EHR-s at all levels shall interoperate via a national health information network (NHIN). The NHIN shall carry personal health information between providers, as well as between providers and consumers/patients, no matter where they reside. Since 2004, the National Health Information Infrastructure (NHII) initiative has primarily focused on the selection and development of EHR “interoperability standards” that will enable the NHIN.

In line with recent pronouncements from the National Institute of Medicine, *Connecting for Health* (Markle Foundation), and other leading healthcare authorities, the Secretary called for interoperability standards that empower consumers. Patients/consumers should have major, new choices among prevention and treatment options, and among service providers.

The Secretary sketched out his long term vision for market-based, consumer sovereignty. However, in the nearer future, the Secretary and other healthcare leaders are calling for development of new Electronic Personal Health Record systems (EPHR-s). EPHR-s should empower consumers to drive both quality and efficiency improvements.

At this point, health insurers and other private and public groups have announced, but only vaguely defined, EPHR-s. The following is a list of services that EPHR-s may provide as fiduciary agents for each of their patients/consumer beneficiaries:

- Receive, compile, and interpret personal health information (PHI) from service providers
- Protect the confidentiality of PHI
- Transmit PHI to service providers, at the direction of each beneficiary
- Manage patient/consumer “consents” to re-disclose PHI to third parties
- Identify and encourage appropriate health maintenance and disease prevention activities
- Assess and report provider quality and patient satisfaction
- Develop electronic ‘second opinions’ before any major intervention, based on automated reviews of the relevant professional literature
- Assess health insurance options

- Identify insurance reimbursement problems and support favorable dispute resolution
- Report de-identified health status and services information for public health monitoring.

In 2005, the Secretary formed the American Health Information Community (AHIC) to advise him on EHR development and deployment strategy. At about the same time, the HHS Office of the National Coordinator (ONC) delegated responsibility to and provided funding for “specification” of national EHR standards to the Health Information Technology Standards Panel (HITSP). HITSP is an arm of the American National Standards Institute (ANSI). Working jointly to produce these national standards, the AHIC defines EHR interoperability ‘use cases,’ and then the HITSP further defines them by selecting national standards for system functionality and vocabulary.

Besides the AHIC and the HITSP, the HHS-NHII initiative has funded three other major activities:

- NHIN prototypes (phase I): four consortia have developed and pilot-tested mini-national health information networks
- Certification Commission for Health Information Technology (CCHIT): a new body to certify EHR vendor systems against HITSP and other national standards
- Health Information Security and Privacy Collaboration (HISPC): a consensus development process to harmonize State-level privacy-confidentiality laws and practices.

SAMHSA and members of the SAMHSA-funded Behavioral Health Standards Workgroup contribute to the NHII in three ways:

- Represent behavioral health within Health Level 7 (HL7), including development of the HL7 EHR Functional Model and the HL7 functional standard for consent-to-disclose personal health information (PHI)
- Development of a ‘certification profile’ for CCHIT certification of Electronic Behavioral Health Record systems (EBHR-s), based on the HL7 Functional Model
- Represent behavioral health within the HITSP Consumer Empowerment Technical Committee and the Security and Privacy Working Group.

All these new abbreviations, acronyms, and “IT” terms point to a brave new world of bureaucracy and politics, but it is a world that you can explore via the Internet. Most, if not all, important policy and technical documents are available electronically, and official AHIC and HITSP meetings are broadcast over the Internet or (as a last resort) can be heard via open conference calls. Not only is the Internet a critical infrastructure for the future NHIN, but it is also an indispensable tool for “consensus” development of national EHR policy and technical standards.

As you know, behavioral health stakeholders have strong convictions and deep experience in preserving and respecting patient confidentiality. We want EHR functionality that can protect sensitive consumer/client information in ways similar to 42 CFR Part 2 protections for Federally-funded, substance abuse treatment clients. States, however, have other patient consent requirements that go beyond behavioral health. In the new NHIN, will patients have the right to consent or withhold consent prior to re-disclosure of their PHI to third parties?

As you may also know, there is considerable pressure within the NHII initiative to minimize obstacles to “interoperability.” For many, prior patient consent not only threatens NHIN interoperability in the abstract, but also threatens to keep physicians in the dark concerning important patient problems and treatment complications. With these concerns in mind, behavioral health stakeholders are cautioned against pursuing strong electronic consent rules. Meanwhile, they only further marginalize specialty providers by blocking the integration of behavioral health with mainstream healthcare.

Nevertheless, SAMHSA and the BHS Work Group are pursuing a strong, electronic consent functionality standard for the U.S. This occurs because we believe that interoperability is enhanced by granular consent, not threatened. As is often said, not only in behavioral health, when consumers/clients trust that their personal information will be protected they more willingly share what is important for clinicians.

We are pursuing strong confidentiality first by supporting development of a new HL7 confidentiality standard, one based on specifications developed in Canada and the United Kingdom. Second, we are supporting adoption of this standard by the HITSP Security and Privacy Work Group. In a nutshell, the new HL7 standard defines messaging structure for the transmission of PHI between any two locations or entities. In this message, each item of PHI can be “tagged” with a consent indicator documenting who can see the item and for what period of time. It also conveys whether the item can be re-disclosed or not. Tags notwithstanding, all information in the message can be viewed and utilized if a clinician “breaks the glass.” If that happens, the reason must be documented, with the patient and others informed via an audit trail.

Fortunately, because of 42 CFR Part 2, many EBHR-s currently support granular consent and “break the glass.” However, opponents point out that most legacy EHR-s do not. Of course, without granular consent, “break the glass” is just business as usual, and probably without an audit trail. The essential problem is who will pay for upgrading or replacing these legacy systems? We want HITSP to make granular consent a NHIN messaging standard. Legacy EHR-s may only support “role-based” access control (e.g., only physicians can see detailed PHI) in the near future, but because privacy concerns in this country go well beyond behavioral health, a strong NHIN standard could eventually become a gold standard for all healthcare.

The Behavioral Health Integrated Provider System (BHIPS)

By David Wanser, Ph.D., Texas Deputy Commissioner for Behavioral and Community Health Services

The Behavioral Health Integrated Provider System (BHIPS) is Web-based, open-source software that allows behavioral health providers to integrate tracking, clinical, and billing data into a comprehensive behavioral health service delivery system. Developed and implemented by the Texas Department of State Health Services (DSHS), its architects successfully leveraged scarce financial resources to develop and deploy a comprehensive clinical and administrative information system.

Because it is a Web-based system accessed via the Internet, the only elements needed to use BHIPS are a personal computer, access to the Internet, and a standard Internet browser. No local file servers are necessary for an organization to access the system, and because BHIPS is built on open source code, it has the potential to be modified to address individual State needs.

From its inception, BHIPS has been a “work in progress.” The system can be rolled out and adapted in response to changing needs. In fact, one of the most interesting aspects of BHIPS development is the manner in which continuous, open, and frank dialogue between the end users and the system developers is used to inform system evolution.

In order to document this system, the Substance Abuse and Mental Health Services Administration’s Center for Substance Abuse Treatment (SAMHSA/CSAT) Division of State and Community Assistance (DSCA) and the Performance Management Technical Assistance Coordinating Center (PM TACC) requested the National Association of State Alcohol and Drug Abuse Directors, Inc. (NASADAD) interview system developers and users in a series of on-site visits. It is hoped that this product will serve as a resource for both SAMHSA and NASADAD members, providing:

- An assessment of the utility of BHIPS from the perspective of not only the State Alcohol and Other Drug AOD Agency, but from the vantage points of the clinician, client, provider, and program manager.
- A reference to inform discussion and observation of State progress in the building of data infrastructure to support reporting of NOMs data.
- A tool for the analysis of current State data collection and reporting systems and evaluation of alternative systems, with an eye toward meeting National Outcome Measures NOMs and State Outcome Measure Management System SOMMS data collection and reporting requirements, along with State-level requirements.

Introduction

A goal of the Texas Department of State Health Services (DSHS) Division of Mental Health and Substance Abuse Services (DMHSAS) is to promote transformation of the Texas behavioral health system to build a solid foundation for delivering evidence-based mental health and substance abuse services, foster recovery, improve quality of life, and

meet the multiple needs of clients when and where they present for services. To achieve this goal, DSHS is using four guiding strategies recommended by the Institute of Medicine in *Crossing the Quality Chasm*:

- Apply evidence to health care delivery
- Use information technology
- Align payment policies with quality improvement
- Prepare the workforce.

These four strategies are intended to change the environment and provide the opportunity to transform behavioral health services in Texas by redesigning the framework, the content, and the culture of behavioral health services provided throughout the state. The intent is to move the system from disparate programs to a coordinated system of care that offers behavioral health promotion, prevention, and treatment services to Texans across the life span.

In support of this goal and using the information technology strategy, DSHS developed the Behavioral Health Integrated Provider System (BHIPS), a Web-based computer system that is designed for use by DSHS-funded providers as they deliver services to clients who have substance use disorders. BHIPS is a clinical tool that assists the clinician in case management and automates the individual client record, which benefits clinicians, the clients, and program managers. Demographic, service, and clinical data is entered only once into the system and is used to monitor client progress, track services, report State and Federal data as required, and bill for services delivered. Management reports are generated that provide analysis of financial information and assess provider performance. These reports assist the State and providers in managing for results and improving client services and outcomes because they feature a continuous quality improvement (CQI) approach.

Dave Wanser, Ph.D., Deputy Commissioner of Behavioral and Community Health Services, provided executive leadership support as John Keppler, M.D., the Texas Clinical Director, and Charlesta Lee, the Software Development Project Leader, led the BHIPS development effort. Providers were included in the development process and assisted in pilot projects to test the system. The system is widely accepted and used by providers, and training and technical assistance is readily available. The system does not require any unnecessary steps and reduces errors and costs. It has easy-to-use features, such as storing information as you enter and leave the system, automatically including data from the assessment function in the treatment plan, allowing clinicians to update the assessment plan periodically, and providing real-time feedback.

Value of BHIPS for Clinicians

BHIPS promotes and ensures the professionalization and standardization of clinical practices and documentation in Texas, the second largest state in the U.S., with one of the largest treatment populations in the country. The clinician uses BHIPS as a tool to guide the clinical interview and implement best practices, capture client data, monitor client

progress, and update client information as the client receives needed services. The clinician uses a well structured, standard approach and selects appropriate functions in the system during the client interview to capture detailed information. The order of the functions shown in the user interface follows the logical flow of the client interview. Information collected through the use of earlier functions is automatically included in subsequent functions, as appropriate. For example, information collected through the use of the assessment function is automatically included in the treatment plan function and is used to generate the treatment plan.

All clinicians use the same guided clinical interview processes, with the same screening and comprehensive assessment tools. After standard screening and assessment tools are used, clients are diagnosed using DSM-IV criteria, and a standardized treatment plan is developed. Treatment plans are directly tied to the assessment and are reviewed and revised on-line as clients receive treatment and make progress. It is possible to identify issues that emerge during the course of treatment and to address these in modifications to the treatment plan, which is informed and updated via the on-line client progress reports. Automated messages help the clinicians meet their process and documentation requirements. Client confidentiality and privacy is protected through a function that automates the process for sharing client information.

The system includes clinical features and administrative features. Key clinical system functions include:

- Client Profile, Screening Instrument
- Addiction Severity Index Assessment (ASI-Lite)
- Clinician's Assessment
- DSM-IV Diagnostic Instrument
- Treatment Plan, Treatment Plan Review
- Admission Report
- Progress Notes
- Didactic/Educational Group Progress Notes (These notes display the didactic and educational services provided for a large group. Each client's Activity List is populated with the group note.)
- Discharge Report
- Discharge Summary
- Follow-up Reports
- Automated Messaging/Reminders
- Automated Release of Confidential Information/Revocation of Consent.

Administrative functions include HIPAA-Compliant Billing Transactions, Financial Eligibility and Role-Based Applications Security, Performance and Activity Measures, Monthly Report, and Curriculum Outcome Measures.

Clinician tasks are tied in to the individual treatment plan and to the progress notes. A saved progress note for a billable service generates a claim for submission to DSHS for payment (residential services are the exception to this fee-for-service model; they are

reimbursed for treatment days). This tying of specific counselor tasks to both the treatment plan goals and to reimbursement ensures that both the client and the counselor stay “on task” during therapeutic group sessions, individual sessions, and didactic/educational sessions.

This also has the effect of creating a third “neutral party” in the client/counselor relationship, one that objectively monitors compliance with treatment plan goals and other elements of client progress. This can have the effect of reducing tension in the client/counselor relationship. It demands that counselors pay close attention to myriad details concerning the progress and activities of the many clients in their caseload, but it also helps counselors in this task by providing regular prompts and reminders. BHIPS offers a valuable client monitoring tool for counselors, as DSHS provides reports on client progress in meeting the objectives and goals of their individual treatment plans.

Although a certain portion of a counselor’s time and effort is still (and will by necessity always be) expended in the daily chores related to client record keeping, these chores are now tied directly to meeting State and Federal reporting requirements. Paper client charts must still be maintained at the facility level, but this process has been simplified and the overall reporting burden on the counselor and the provider has been reduced.

Improvement in practice must be driven by outcomes, but determining outcomes in a timeframe that provides meaningful feedback to clinicians demands a flexible and responsive data collection and reporting system. BHIPS has this functionality built into its system. It collects and matches admission and discharge data, but also collects data related to services provided while in treatment, and generates follow-up reports. Counselors are prompted by BHIPS when tasks must be performed – for example, when it is time to place a follow-up call to a former client, or address some aspect of a current client’s treatment plan.

Value of BHIPS for Clients

As clinicians use BHIPS to assist them in their clinical practice, clients receiving treatment are the true beneficiaries. BHIPS is a client-centered system that creates an electronic health record (EHR) for the individual client. It provides accurate and up-to-date demographic and treatment service information in one place. Providers are able to access complete, accurate, and timely electronic treatment information throughout the treatment process, which enables them to provide the most appropriate treatment at various stages of the treatment process. The release of confidential information/revocation of consent function allows client information to be easily shared, as authorized and needed. Errors and service delays are reduced, delivery of timely and appropriate services is improved, and the quality and safety of client care is increased. The system supports the use of standard approaches including evidence-based practices (EBP) that should result in improved client outcomes. While clients are in treatment, client progress and change can be tracked using unique client identifiers (UCIs) and adjustments can be made using a CQI approach to improve client outcomes. A structured but flexible treatment approach

allows for measurable client progress as well as the ability to consult with the client to modify the treatment plan, as needed.

Value of BHIPS for Managers

The information collected using BHIPS can be used to create tangible performance management strategies that administrators and clinicians can employ using a CQI framework. Using the data collected, performance management reports are produced and examined with an eye toward improving service delivery. DSHS uses these reports to evaluate and monitor service providers' contract performance to determine their ability to meet their goals. DSHS generates reports on provider-contracted performance, along with reports comparing their performance to other providers in the State, and delivers these to providers so they can use the CQI model to improve their processes and client outcomes. DSHS develops reports on client progress and informs providers and clinicians so they can adjust their treatment plan and approach. Providers can also use the system to create reports for their own use on clinician performance and treatment outcomes. For example, it is simple to run reports on counselor activities to ensure that they are keeping up with the demands of their caseloads. Researchers are able to provide additional input to managers as they use data to examine trends in drug use and determine effective treatment practices.

Well-organized quantitative and qualitative data are easily accessible to authorized persons, allowing continuous quality improvement processes to be conducted from State offices. For example, site visits are no longer necessary for the conduct of peer reviews. The uniform procedure for generating unique client identifiers ensures tracking of clients as they move in and out of the treatment system, providing access to clinical information concerning current and previous treatment episodes and outcomes.

At the State level, BHIPS-related improvements lead directly to reduction in the time counselors and providers spend managing paperwork, reduction in the time a client spends waiting for treatment (from a matter of weeks to a matter of days), increases in client admissions, and improvement in client retention during the critical first few days of treatment.

Managers have realized improvements in quality and efficiency through implementation of BHIPS, and DSHS has successfully reduced paperwork and associated costs. The system automatically generates HIPAA-Compliant billing and captures outcome data to meet Federal and State reporting requirements. The DSHS Quality Management staff have been able to reduce on-site provider visits and associated travel costs by accessing BHIPS to perform their short- and long-term analysis of data. Providers have reduced their administrative workload and associated costs while improving their overall quality of provider clinical documentation.

Providers Using BHIPS

During the SAMHSA and NASADAD onsite BHIPS review, report authors visited a residential treatment facility and an independent outreach provider in Austin, Texas, to better understand how providers use BHIPS. NASADAD met with Laurie DeLong, the Director of Phoenix House, and Tina Hosaka, an independent Outreach, Screening, Assessment, and Referral Provider (OSAR) at the Bluebonnet Trails Community Mental Health and Mental Retardation Center.

The Phoenix House is a multi-state program with more than 100 facilities. The Phoenix House in Austin is a residential academy for teens (47 beds). It uses BHIPS and all its functions as it provides comprehensive drug and alcohol abuse treatment to adolescents while helping them catch up academically. During the initial client encounter, the clinician uses the system to guide the interview with the client and collect client information. As treatment progresses, the clinician uses the system to monitor the client and to update the client's records. Administrators use the system to monitor both clinician performance and client progress. Phoenix House collects additional data not required by BHIPS but required by their own organization and enters that information into another parallel system at a later time. It also keeps additional paper forms and records in a separate notebook for each client. The provider has integrated BHIPS into its operations by using BHIPS as its primary clinical tool and employing it to support clinical record keeping, reporting, and billing functions.

Every form the State requires is included in and generated by the BHIPS system, so the system can be relied upon to bring the provider into compliance with State regulations. Some forms require client signature and physical retention. The reduction in paperwork is considerable (from 50% to 80%) and the transmittal and retrieval of client paperwork is greatly simplified.

Standardized screening and assessment through BHIPS has allowed DSHS to establish OSAR Providers in the State's 10 services regions, in most of the counties in each region. These providers are integrated with the substance abuse, mental health, and mental retardation treatment systems. They are able to identify and refer Access To Recovery (ATR) clients seamlessly and transparently, collecting and reporting the necessary Government Performance and Results Act (GPRA) data through the BHIPS system. Because they are independent, with the authority to determine the initial placement of clients based on accepted indicators of severity, patient placement in care matches patient need, contributing to improved outcomes. Providers and clinicians have access to these intake records and are assured of appropriate referrals. Treatment programs and staff are not burdened with the task of screening, assessing, and referring clients whose needs do not match the level of treatment they provide. Provider claims are less likely to be refused, and the system helps to ensure that the State is the payer of last resort.

The establishment of OSAR Providers resulted in higher-severity clients being placed in residential treatment services and then transferred to a lower intensity level of care as their condition improved, rather than being discharged. A higher percentage of clients

requiring a lower intensity of care were also appropriately placed, and were more likely to complete treatment.

Providers and clinicians have ready access to technical assistance in a variety of forums, and confirmed that BHIPS administrators and trainers are truly accessible. The usual avenues of technical support are maintained, including a help desk and a discussion forum, but help also includes access to individuals who thoroughly understand both the technical aspects of BHIPS and the work of clinicians. Providers and clinicians do not hesitate to use this resource. A training center (for training the trainers), a training CD issued with the software, and ready access to a discussion forum, help desk, and pager-based technical support facilitate the learning process.

Conclusion

BHIPS contributes to the professionalization and standardization of substance abuse treatment services. Within the DSHS treatment system, clinicians use BHIPS as a clinical tool to guide them through the treatment process as they conduct the initial interview, develop the treatment plan, and chart client progress. As the clinician selects appropriate functions, data is collected and stored in an electronic health record (EHR) for each client. The BHIPS system facilitates provider collection of clinical information while also ensuring adherence to business requirements. Access to timely and high quality data and analysis of data using a CQI framework leads to improved client outcomes and improved system outcomes, such as reduced errors, reduced costs, and increased efficiency. The use of information technology adds significant value to the delivery of substance abuse treatment services and leads to improvement in clinical practice, data, and outcomes.

Lessons Learned Through Building and Using Integrated Medicaid, Mental Health, and Substance Abuse Data

By Carol Forhan, Thomson Medstat

For more than a decade, the Substance Abuse and Mental Health Services Agency (SAMHSA) has supported states by facilitating the integration of state-level data across state mental health (MH), state substance abuse (SA), and state Medicaid agencies. Initially, SAMHSA invested in *performing* the data integration for the states. Thomson Medstat (Medstat) led the project team on this effort, working with three states – Delaware, Oklahoma, and Washington – to integrate their data. Beginning in 2001, SAMHSA funded a second phase of this work to *assist* the same states in utilizing their integrated data, while also helping other states to integrate their data and data systems. This new contract was also led by Medstat.

We would like to share some of our lessons learned from this important work with states, with the hope that our new insights can inform and encourage states seeking to assemble a comprehensive picture of publicly funded MH/SA services. Hence, this report answers two central questions:

- What lessons can we draw from this decade-long effort?
- How can these lessons inform State MH/SA policy, data collection, and data system efforts?

Seven key lessons learned emerged from our state-based efforts. These include:

1. Integrating behavioral health treatment data from various sources within a given State can be expensive, complicated, and time consuming. However, we have found that **data integration projects that include a planning phase are more likely to be completed sooner and to cost less**. The planning exercise can help set expectations and streamline the work effort. Planning also helps the state project team establish clear timelines and identify interim deliverables so that progress is documented and celebrated.
2. Integrating data from multiple sources to create a large database is challenging. **Starting with modest simple data or data system integration efforts – for example, integrating between the Medicaid and Mental Health agency within a state – can help produce quick results and a tangible return on investment**. After the first stage of integration, other agency data (SA, criminal) can be added.
3. Sustaining support for data integration efforts is often challenging. State priorities may change from one year to the next, while Federal and state funding is not always consistently available. **An important source of commitment can come through securing public support for a baseline-level of effort from high-level administrators in each of the participating state agencies**. This public commitment can help the project secure needed funding and staffing for a well-defined “basic” project. The effort has a better chance of succeeding when state funding for key resources, such as project leaders from each of the participating

agencies, is secured. This consistent support and leadership can help smooth variations in funding from Federal or non-profit grants.

4. Data sharing efforts can be delayed or even terminated because data contributors may be concerned about inappropriate uses of the shared data even though management and analytic reporting, research, and related efforts using integrated data are clearly allowed under HIPAA, 42 CFR Part 2 rules, and most state laws. Therefore, clear communication that describes system controls and compliance with data protection rules will help move data efforts along. We've found that **data confidentiality concerns can be addressed with data sharing agreements that clearly enumerate the terms, conditions, and responsibilities for data contributors.** Indeed, these agreements may be the most important component of the data integration effort.
5. The resulting integrated database may have limitations, including problems with missing records (diagnoses, expenditures, encounters, and/or providers), incomplete data, differences in coding and classification, overlapping data reported across the data sources, and unreported services. **Several important analytic tools and research methods can be used to overcome these data quality shortfalls and create meaningful analyses and reports. These tools are available on the SAMHSA IDB website (<http://www.csat.samhsa.gov/IDBSE/index.aspx>).**
6. Some data issues cannot be solved by integration – only by collecting better data or improving how data are collected. **If state agencies move toward data standards (common data elements and definitions) and common system architecture, integration between Medicaid and MH/SA data would be simpler and more straightforward.**
7. Many states have already made considerable progress integrating behavioral health data systems. **Sharing information, tools, and software code from successful state programs can help other states accelerate their integration efforts.** Two examples of promising state programs are described below:
 - a. The state of Texas uses an electronic health record system for the state's publicly-funded substance abuse treatment programs. The software code developed for this system is open source and available for other states to use.
 - b. Ohio has created a central enrollment system and unique client IDs to better manage their behavioral healthcare programs and integrate data from their MH, SA, and Medicaid programs.

In summary, individual state efforts to create improved interoperability in data systems will be, by their nature, unique for each state. We recognize that differences in state laws and the needs of a particular constituency will always influence how and when data improvement projects are initiated. However, states can use historical references and resources along with thoughtful planning to accelerate their rate of progress and to bring early success to MH/SA system projects.

A Road Map for Obtaining Federal Financial Support from CMS for State Data Sharing Projects Involving Medicaid

By Richard Friedman, CMS

Over the past 35 years, Medicaid agencies have made excellent use of information technology to pay claims, analyze patterns of fraud and abuse, coordinate third party payments, and pursue program improvements with the assistance of Medicaid Management Information Systems (MMIS).

How can States obtain Medicaid financial support for data sharing to improve their clients' healthcare outcomes?

Because our national healthcare goals are increasingly focused on *outcomes* rather than *inputs*, Medicaid stakeholders need to have access to a wider range of data than has typically been included on a Medicaid claim. Clinical data, together with patient-related information from many different organizations outside of the State Medicaid agency, will provide a more comprehensive understanding of the efficacy of the beneficiary's care. Electronic health records, electronic medical records, personal health records, and e-Prescribing are only the latest in a long line of e-Health initiatives designed to expand our collective understanding of healthcare outcomes, regardless of which organization paid the bill or what entity provided the service.

In today's environment of limited resources, an obvious question arises: How can States obtain Medicaid Federal financial participation (FFP) to improve client outcomes through enhanced data sharing?

The Prior Approval Process and Advance Planning Documents

Regulations at Subpart F, Part 95 of the Code of Federal Regulations (CFR) require that States receive Federal prior approval for IT activity in which they are seeking FFP.

A critical first step in the process to receive Medicaid FFP is the submittal of an Advance Planning Document (APD) by States to Centers for Medicare & Medicaid Services (CMS). An APD is a written plan describing how the State will design, develop, implement, and, ultimately, operate the IT system or enhancement for which funding is being sought.

Two types of APDs exist that initiate projects – Planning APDs (P-APDs) and Implementation APDs (I-IAPDs). After the project is underway, there are also APD Updates (APD-U) that provide CMS with periodic status reports. An APD-U can be of two types: Annual or As-Needed.

All States interested in obtaining Medicaid FFP for HIT/HIE adoption or data exchange purposes should submit a Planning APD to their Regional CMS Office.

For the purposes of this paper, the discussion focuses upon the Planning-APD because it provides CMS with a preliminary understanding of the State's goals and objectives without the need for all the details to be worked out ahead of time. The P-APD is a "plan for planning," and is useful in quickly obtaining initial "seed" money for

planning purposes. As a result, a State can receive CMS approval on a conceptual level while continuing to flesh out its ideas in more concrete ways. The P-APD is reviewed and approved by one of CMS' 10 Regional Offices, typically within 60 days or less from the time the P-APD is submitted. Such plans need to meet the Federal requirements specified in the CFR and Part 11 of the State Medicaid Manual (SMM).

(Ultimately, an Implementation-APD will also need to be submitted that provides considerably more detail than included in the P-APD. The Federal requirements for an I-APD can be found at 45 CFR 95, Section 95.605(2).)

Planning APDs (P-APD)

The P-APD is a relatively brief document, usually not more than 6-10 pages, submitted *prior to initiating* Planning Phase activities. Its purpose is to develop a high-level management statement of project vision, needs, objectives, plans, and estimated costs. The focus is on describing how planning will be accomplished, as well as demonstrating that the State has established a plan that is reasonable for the level of effort and State funding required by the project.

Planning activities eligible for the FFP include:

- Preparing a detailed Project Management Plan
- Determining system needs
- Assessing project feasibility
- Evaluating alternatives
- Conducting cost/benefit analyses
- Preparing APDs
- Developing functional requirements
- Assessing other States' systems for transfer
- Preparing procurements.

Criteria for CMS' Approval of a Typical Planning - APD

- ✓ Is the need clear?
- ✓ Does the State have a reasonable plan?
- ✓ Has the State committed to preparing a needs assessment, feasibility study, alternatives analysis, and cost/benefit analysis?
- ✓ Has the State estimated the costs for the plan?
- ✓ Are the estimated planning costs and cost allocations reasonable for the project?
- ✓ Has the State estimated the project cost?

As shown in Exhibit 1, below, the P-APD has four sections: (1) statement of need; (2) project management plan for planning; (3) planning project budget; and (4) estimate of total project cost.

Exhibit 1: Requirements of a P-APD

| SECTION | TOPICS ADDRESSED WITHIN A PLANNING-APD |
|-------------------------|---|
| Statement of Need | <ul style="list-style-type: none"> ✓ Statement of “Vision” ✓ System interrelationships ✓ Problems or deficiencies in existing system(s) ✓ New or changed program requirements ✓ Opportunities for economy or efficiency |
| Project Management Plan | <ul style="list-style-type: none"> ✓ Planning project organization (State and contractor) – people, responsibilities, and relationships ✓ Planning activities, products, and deliverables ✓ Commitment to conduct requirements, such as analysis, feasibility study, alternatives analysis, cost/benefit analysis, and functional specification or systems design ✓ Explanation of how systems will be assessed for transfer ✓ State and contractor resource needs ✓ Planning project procurement activities and schedule ✓ Summary of requirements and evaluation plan ✓ Planned restrictions prohibiting following work |
| Planning Project Budget | <ul style="list-style-type: none"> ✓ Budgets by categories, cost elements, and amounts ✓ For enhanced and regular funding, by fiscal quarter and summarized by fiscal year, planning project total, and program totals |
| Total Project Cost | <ul style="list-style-type: none"> ✓ Estimated project costs ✓ Prospective Federal/State cost distribution |

For more information, State staff should contact their CMS Regional Medicaid systems representative.

Basic CMS IT Funding Principles

The reader will notice that even at the preliminary “plan for planning” stage of the P-APD, an important element under the Total Project Cost section is “prospective Federal/State cost distribution.” It is important to understand the basic ground rules

HIT/HIE data-sharing projects are likely to stretch our current funding rules that were developed in the past when the boundaries of Medicaid systems were defined by the programs that paid for them, rather than by the people they served.

relative to Medicaid IT financial support. Understanding what they are and what they imply for the future is critical to receiving Federal financial support relative to multi-Agency and/or health information technology (HIT)/health information exchange (HIE) data-sharing initiatives. This is because HIT/HIE data-sharing projects are likely to stretch CMS’ current funding rules, which were

developed in the past, when the boundaries of Medicaid systems were contained within the four walls of the Medicaid agency itself. Because data sharing by its very nature involves transcending organizational boundaries, the FFP rules developed for an earlier paradigm are increasingly outmoded by the need to focus on the sources of the beneficiary’s care, rather than on the Medicaid program’s operational constraints.

In today’s environment, where Medicaid clients receive care from many sources outside the Medicaid agency (such as grant-assisted community health centers, facilities supported by state Departments of Public Health, etc.), allocating the costs of IT systems used by many different stakeholders becomes very challenging.

Cost Allocation Among Benefiting Programs

Federal regulations prohibit CMS from paying for services that do not directly support Medicaid clients. As a result, any IT project that benefits a mixture of client types – as HIT/HIE data sharing activities are generally designed to do – will need to have its costs carefully allocated between Medicaid clients and all other individuals and programs that benefit from the activity.

Medicaid funds can only be used to pay for IT activities that directly benefit Medicaid clients.

The applicable cost allocation Federal requirements can be found in *95 CFR Subpart E – Cost Allocation Plans*.

This subpart establishes requirements for the preparation, submission, and approval of State agency cost allocation plans for public assistance programs, including Medicaid. One particularly useful document, *Cost Allocation Methodologies Toolkit – Helping States Determine Equitable Distributions of Software Development Costs To Benefiting Programs Over the System Development Lifecycle*, commonly referred to as the “CAM Toolkit,” can be found at:

http://www.acf.hhs.gov/programs/cse/stsys/ref/CAM_Handbook.doc.

Applying the Correct FFP Matching Rates to the Specific IT Activities

After the proportion of shared costs is allocated appropriately to the Medicaid program based on the methodologies referenced above, each separate activity must then be analyzed relative to the appropriate FFP matching rate applicable to that particular activity.

Different IT activities qualify for different matching rates, ranging from zero to 90 percent FFP.

For activities that are part of the State's certified MMIS, a 90% FFP rate generally applies for activities associated with the design, development, and installation of the software. Equipment typically qualifies for a 75% FFP match as part of the MMIS, as do most costs associated with the direct operation of the MMIS. Please note that this equipment is part of the MMIS; CMS does not provide any FFP for equipment used by providers. Provider equipment is considered part of the administrative costs they bear related to participating in the program.

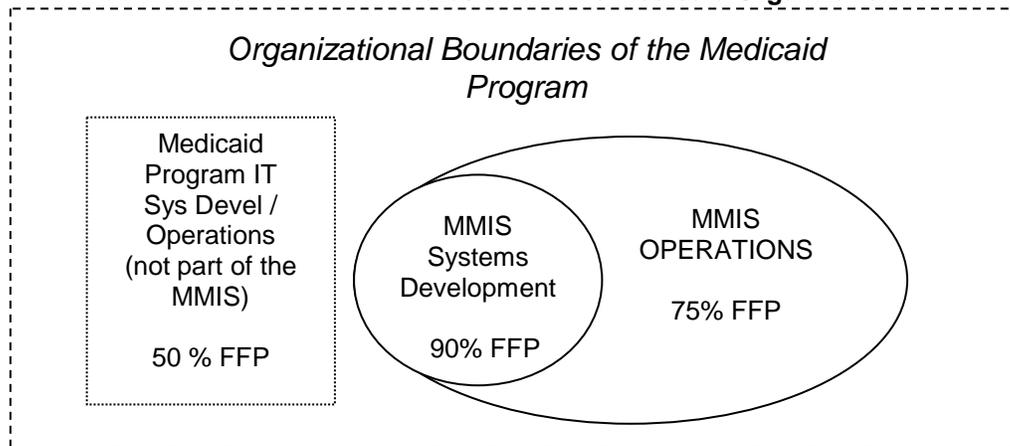
While MMIS enhanced rates are the goal for many States seeking CMS financial support, many worthwhile IT projects involving Medicaid clients do not qualify for MMIS support.

While MMIS enhanced rates represent the goal for many States seeking CMS financial support, it is important to recognize that many worthwhile IT projects involving Medicaid clients do not qualify for MMIS support. This is because the IT project is not a direct expansion of the State's MMIS. To qualify as MMIS-eligible, the IT initiative must be statewide, not a pilot or demonstration, under the control of the Medicaid agency, and meet the standards defined in

Part 11 of the State Medicaid Manual. Projects, systems, or subsystems that make use of data downloaded from the MMIS are also typically ineligible for MMIS rates, as well. Instead, these are viewed as analytical software initiatives, typically matchable at 50% FFP. Another example of a non-MMIS activity that is matched at 50% FFP is the integrated eligibility determination system used by nearly all states to match applicants with various human service programs, ranging from Food Stamps and Child Support to TANF and Medicaid. (Note: the determination of Medicaid eligibility is a 50% FFP activity, whereas the verification of Medicaid eligibility is an activity performed through the MMIS, usually prior to the payment of a claim, and is eligible for a 75% FFP match from CMS.)

A listing of various MMIS and non-MMIS IT activities is contained in the State Medicaid Manual, Part 11, as are the rates associated with each activity. Because of the complexities involved in determining which rate applies to a particular activity, States need to work with their State MMIS staff members who have developed significant expertise through long involvement in this area. In addition, States are urged to consult with their Region's Medicaid systems specialist for assistance prior to submitting the previously mentioned P-APD.

Exhibit 2 -- IT FFP Rates within the Medicaid Organization



Enter MITA

Because CMS recognizes that the transaction-based MMIS needs to change to encompass an enterprise-wide, patient-centric view, development of the Medicaid IT Architecture (MITA) began several years ago. MITA is many things to many people, but at its most basic level, it represents a new way for CMS and the States to view the relationship of their IT activities in the context of serving Medicaid beneficiaries more effectively.

For more detailed information about MITA, please see:

http://www.cms.hhs.gov/MedicaidInfoTechArch/02_MITAWhitePapers.asp.

Because MITA is continuing to evolve, CMS has not developed standard guidance relative to what activities qualify for which FFP rates, unlike the current situation with the MMIS in which we have had 35 years to clearly delineate our matching rates. In some ways, MITA is the “MMIS on steroids.” Faster than a speeding bullet and able to leap tall buildings with a single bound, CMS is currently relying on its existing SMM guidance for the MMIS to support MITA’s considerably broader scale.

Data Sharing Across Multiple Boundaries

Data sharing in the context of HIT and HIE is a case in point. Today, CMS does not consider the cost of a provider’s hardware or software to be eligible for FFP. These are regarded as the costs of doing business, remaining part of the provider’s administrative overhead for which no IT match is available. The billing devices a provider uses to send Medicaid a bill, for example, fall into this category, as do devices used by providers to verify Medicaid eligibility. And, while this MMIS-principle is still applicable today, the situation has become much more complex as provider land-lines have given way to the Internet. As the MMIS reaches beyond its geographical constraints with the aid of the Web, so, too, are providers extending their communication links far beyond their offices.

It is in the “middle distance” in which these data exchanges begin to take place that the challenges, as well as the opportunities, for collective resolution exist today, in answering the question, “Who pays for what?”

It is in the “middle distance” in which these data exchanges begin to take place that the challenges, as well as the opportunities, for collective resolution exist today. These challenges often pertain to the concept of deciding who will pay for what.

For example, if a Medicaid agency links its MMIS to its agency website, and through that website providers can access information (with

all appropriate access privileges and patient confidentiality safeguards in place), who should pay for what? Certainly, the agency owns the website and therefore must cover maintenance-related costs. Providers, however, can use their own equipment to access the website. Who pays for the providers’ software that enables them to access that website?

Another example involves the use of a data warehouse that is built within the MMIS and houses only Medicaid data from Medicaid claims processed by the MMIS. That data warehouse and the decision support analytical engine that sits on top of it is today eligible for MMIS enhanced FFP. However, if a second State agency wants to add its data to that Medicaid warehouse, who should pay? For what?

An extension of the example above is to take the Medicaid data warehouse and move it outside the immediate control of the Medicaid Director into an organizationally “neutral” location. In this way, other agencies would be allowed to add their data to the Medicaid claim history, with the assurance that everyone who contributes abides by a set of governance rules relative to data sharing, formats, access to the data, etc. Similarly, a multi-organizational governance board would have to be established to monitor the data warehouse.

Now who pays for what?

CMS is currently working on the answers to this brave new world of data sharing with the help of its Federal and State partners. We look forward to engaging in real world data and systems policy issues with our partners relative to data sharing and systems interoperability to help us evolve sensible, practical, and equitable answers.

* * *

Disclaimer: The views expressed in this paper are those of the author and do not necessarily reflect those of the Centers for Medicare and Medicaid Services.

Appendix A: Dictionary of Acronyms

| Agencies, Organizations, and Centers | |
|--------------------------------------|--|
| CDC | Centers for Disease Control and Prevention |
| CMS | Centers for Medicare & Medicaid Services |
| CSAT | Center for Substance Abuse Treatment (SAMHSA) |
| CMHS | Center for Mental Health Services (SAMHSA) |
| DHHS | Department of Health and Human Services |
| HRSA | Health Resources and Services Administration |
| IOM | Institute of Medicine |
| NASADAD | National Association of State Alcohol and Drug Abuse Directors |
| NASMHPD | National Association of State Mental Health Program Directors |
| SAMHSA | Substance Abuse and Mental Health Services Administration |
| | |
| Health Information Technology | |
| APIs | Application Programming Interfaces |
| CCD | Continuity of Care Document |
| EHR | Electronic Health Record |
| HIE | Health Information Exchange |
| HIT | Health Information Technology |
| HITSP | Health Information Technology Standards Panel |
| HL7 | Health Level Seven |
| NHIN | National Health Information Network |
| PHR | Personal Health Record |
| SDOs | Standards Development Organizations |
| SOA | Service Oriented Architecture |
| SOAP | Sample Object Access Protocol |
| XML | Extensible Markup Language |
| | |
| Systems and Data | |
| ANSI | American National Standards Institute |
| APD | Advance Planning Document |
| BHIPS | Behavioral Health Integrated Provider System |
| CDSS | Clinical Decision Support System |
| IDB | Integrated Database |
| FFP | Federal Financial Participation |
| HTML | Hyper Text Markup Language |
| MITA | Medicaid Information Technology Architecture |
| MMIS | Medicaid Management Information System |
| | |

| Principles, Privacy, and Regulations | |
|--------------------------------------|---|
| CFR | Code of Federal Regulations |
| GPRA | Government Performance and Results Act |
| FIPPs | Fair Information Practices Principles |
| HIPAA | Health Insurance Portability and Accountability Act |
| PHI | Protected Health Information |
| | |
| Other Healthcare Related Terms | |
| AOD | Alcohol and Other Drugs |
| ATR | Access to Recovery |
| BH | Behavioral Health |
| CQI | Continuous Quality Improvement |
| EPB | Evidence-based Practices |
| FQHC | Federally Qualified Health Centers |
| MH | Mental Health |
| NOMS | National Outcomes Measures |
| PBM | Pharmacy Benefit Manager |
| QIO | Quality Improvement Organization |
| SA | Substance Abuse |
| SOMMS | State Outcomes Measurement and Management Systems |
| TANF | Temporary Assistance for Needy Families |

Appendix B: SAMHSA Integrated Database (IDB) Related Publications, Presentations and Other Reports

(Reverse Chronological Order within Group)

| <i>Published Government Reports</i> |
|---|
| Coffey R, Dilonardo J, Vandivort-Warren R, Graver L, Schroeder D, Miller K, Adamson D, Forhan C. <i>Expenditures on Clients Receiving Treatment for Both Mental Illness and Substance-Use Disorders: Results from an Integrated Data Base of Mental Health, Substance Abuse, and Medicaid Agencies for Three States in 1997</i> . SAMHSA Publication No. SMA-07-4263. Rockville, MD: Substance Abuse and Mental Health Services Administration, 2007. |
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| <i>Submitted for Journal Publication</i> |
| Bartosch W, Vandivort-Warren R, Dilonardo J, Schroeder D, Whalen D, Forhan C, Miller K, Federman EB, Bray JW. Services for persons with evidence of withdrawal: an analysis of integrated state data. Submitted to <i>Journal of Behavioral Health Services Research</i> , 2007. |
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| Date/Location: | January 24-25, 2007, Washington DC |
| Sponsored by: | Centers for Medicare and Medicaid Services (CMS) Substance Abuse and Mental Health Services Administration (SAMHSA) |
| <i>Presentations—January 24-25, 2007</i> | |
| Austein-Casnoff C. Health Resources and Services Administration (HRSA) Office of Health Information Technology. | |
| Bazemore D, Shugart A. Medicaid and Health Information Technology and Exchange (HIT/HIE) Opportunities. | |
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