Clinical Health Information Technologies and the Role of Medicaid

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Clinical health information technologies (HIT) are widely viewed as essential tools for improving the quality and efficiency of health care delivery. Medicaid agencies make substantial investments in information technology (IT), have much to gain through the widespread use of clinical HIT, and can have significant influence on the adoption of HIT by providers. Medicaid agencies, however, face legal, regulatory, and financing challenges in relation to supporting HIT adoption, use, standardization, and interoperability. This article summarizes the issues related to Medicaid's participation and support of clinical HIT, and makes recommendations for addressing policy challenges at the State and Federal level.

BACKGROUND

Clinical HIT including electronic health records (EHR), computerized provider order entry, e-prescribing, and personal health records, are fast becoming the focus of quality improvement and health care efficiency initiatives across the country.[1] The Institute of Medicine (2001) has identified the need for an information infrastructure in order to achieve evidence-based decisionmaking and improve health care quality. Moreover, analyses have suggested that the use of HIT and the sharing of clinical health data amongst the multiple stakeholders in the health care arena (providers, payers, and consumers) through health information exchange (HIE) efforts could save the U.S. health care system billions of dollars annually (Walker et al., 2005; Hillestad et al., 2005).

The Federal Government has made a commitment to these technologies by creating the Office of the National Coordinator for HIT. Limited funding has been devoted to establishing Federal HIT standards and supporting the development of a national health information network. A recent Executive order directs Federal agencies to promote HIT as a means for improving the quality, efficiency, and transparency in the health care system. In addition, bipartisan legislation aimed at furthering the use of HIT and the exchange of digitized health information has recently been passed in Congress.

Despite the public policy attention being paid to the use of technology in health care settings, implementing a national HIT and HIE infrastructure will be a complex and difficult task. The significant number and diversity of stakeholders, the legal, privacy, and security issues, the lack of agreed on standards for data exchange and storage, the source of funding for these technologies, the uncertain return on investment, and the uneven distribution of the return

[1] For a comprehensive glossary of HIT terms, refer to the Certification Commission for HIT at http://www.cchit.org/about/resources/Glossary.htm.

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present persistent issues that must be addressed if these technologies are going to achieve wide-scale improvements in our health care system.

There are a number of public and private efforts under way to address these issues, but to date there has been little focus on the Medicaid Program. This article provides a review of the potential impact of HIT and HIE on key stakeholders of the Medicaid Program, including beneficiaries, providers, and Federal and State governments. By way of a literature review, Web-based research, and interviews with experts, we present an overview of the complexities and unique characteristics that should be considered as policymakers address Medicaid's role and involvement in HIT and HIE efforts.

MEDICAID MANAGEMENT INFORMATION SYSTEMS

Administered by States, in partnership with CMS, Medicaid is the health care program for the sickest and poorest Americans. Originally enacted in 1965 (Title XIX of the Social Security Act), Medicaid was designed to provide States with the opportunity and flexibility to provide health care for dependent children, the blind, disabled, and elderly under broad Federal guidelines and joint Federal and State funding. Since its enactment, Medicaid has grown to serve more than 55 million Americans and spent more than $326.4 billion in fiscal year 2005—making it one of the largest health care payers in the U.S., second only to Medicare (Centers for Medicare & Medicaid Services, 2005).

Although there is overlap with other insurers, Medicaid disproportionately covers health care for a significant percentage of low income families, pregnant women, persons with severe disabilities, chronic medical and psychiatric conditions, and the elderly in need of long-term care (LTC) including those who are dually-eligible for both Medicaid and Medicare services. Medicaid Programs offer relatively comprehensive coverage for many health care services not covered or limited by commercial insurers. In addition to traditional hospital and physician care, Medicaid covers behavioral health and LTC services. In 2001, Medicaid accounted for 27 percent of national mental health and substance abuse expenditures (Mark et al., 2005). In 2004, Medicaid accounted for 49 percent of all national LTC expenditures (Smith, 2006).

Federal expenditures for State Medicaid Programs grew rapidly from its enactment in 1965. To increase program fiscal responsibility, in 1972 Public Law 92-603 was enacted requiring each State Medicaid Program to have an automated claims processing and information retrieval system. These systems, referred to as the Medicaid Management Information System (MMIS), were designed as claims processing engines, to enhance the State's ability to pay claims accurately and efficiently and standardize Federal reporting.

States have had significant flexibility in designing their MMIS around specific programmatic needs and eligibility requirements. Although all State MMIS investments underwent a process of Federal approval, this process was vague regarding specific architectural standards and focused primarily on MMIS system outcomes. As a result, there is great diversity in State MMIS design and specifications. In some cases, this diversity has allowed for innovation in the use of IT to enhance Medicaid Program operations. Some States have used this flexibility to develop advanced program management tools, including data mining, beneficiary access portals, immunization records and registries, and e-prescribing capacities. In some cases, however, the lack of architectural

standards, along with the political and regulatory issues associated with attaining funding for MMIS systems has led to financial, staffing, and computing inefficiencies as ongoing program changes require MMIS modifications.

To provide more consistent guidance to States interested in addressing these challenges and modernizing their MMIS, CMS, in collaboration with States and other stakeholders, began the Medicaid Information Technology Architecture (MITA) initiative in 2002 (Centers for Medicare & Medicaid Services, 2006a). This initiative, through the promotion of adaptable data, technical, and business standards for MMIS, is a promising mechanism through which CMS can assist States in planning future improvements and acquiring technical applications that are consistent with standards across the industry. One of the stated goals of MITA is to promote an integrated Medicaid IT infrastructure that supports data exchange between State agencies, public and private payers and providers, and other stakeholders by minimizing technical barriers to data exchange (Centers for Medicare & Medicaid Services, 2006a). These movements by CMS to support HIE beyond the traditional borders of the State Medicaid agencies is a significant shift in Medicaid IT policy.

Medicaid Programs currently make large investments in IT through their MMIS. In fiscal year 2004, combined State and Federal spending for Medicaid IT investments were $2.7 billion (Centers for Medicare & Medicaid Services, 2006b). MMIS systems are eligible for 90 percent Federal financial participation (FFP) match on design, development, and installation, and 75 percent participation for operation and ongoing maintenance (42 U.S.C. §1396b(a)(3), 2004). MITA, therefore, represents an opportunity for Medicaid agencies to use this enhanced funding to modernize MMIS to better serve the complex, difficult, and costly populations covered. By stipulating standards and technical architectures for data systems such as claims processing and eligibility verification within MMIS, and promoting the exchange and broader use of this data, the MITA initiative may provide efficiencies as well as opportunities to address some of the health care quality improvement needs of the Medicaid Program. MITA funding, for example, could be used for the development of infrastructures to support Medicaid's relationship with external HIE initiatives to exchange both claims and clinical information.

Some States are already using their MMIS capacity to share data with HIE initiatives to gain operational efficiencies and improve quality for Medicaid populations. The Utah Medicaid Program, for example, processes a majority of their claims through the Utah Health Information Network (Bryant, 2006). The Massachusetts Medicaid Program has been sharing pharmaceutical data in pilot projects managed by the Massachusetts regional health information organization, MA-SHARE (Massachusetts Health Data Consortium, 2006). The Recovery Collaborative of Oklahoma, a partnership organization with multiple State agencies, CMS, and the Substance Abuse and Mental Health Services Administration are using the Medicaid MMIS claims processing system and other Medicaid data to facilitate an integrated approach to behavioral health management through a single claims, eligibility, and care management system (Oklahoma Healthcare Authority, 2006). These projects represent important examples and learning opportunities for the modernization of Medicaid IT systems and for improving care through HIE.

Although there are a number of promising aspects of MITA, there are additional challenges that MITA does not address

that impact the effectiveness of Medicaid in promoting improved quality of health care delivery through HIE. MITA does not address the cultural and organizational barriers to HIT modernization in Medicaid agencies. Medicaid directors, due to limited resources, program complexity, and the political environment, are forced to focus on current issues, not potential opportunities for program improvement in the future. Thus, paying claims and verifying eligibility remains the dominant mindset for MMIS development. Also, CMS has historically drawn boundaries circumscribing the limits of its MMIS funding that stops at the State agency door. Consequently, the need for funding of provider-based HIT remains today. To exchange clinical data, the data must be created and stored in an electronic format: the fact that many key Medicaid providers do not have access to clinical HIT at their practice sites is a major challenge to achieving the benefits of MITA and HIE. Finally, there are significant legal and regulatory issues that need to be addressed, beyond MITA, for Medicaid to be a full participant in HIE efforts.

ROLE OF CLINICAL HIT

Benchmark institutions, including the Latter Day Saints Hospital in Utah, the Regenstrief Institute in Indiana, Brigham and Women's Hospital in Boston, and the Department of Veterans Affairs have demonstrated that HIT can help clinicians improve the quality of health care delivery (Bernier, Detmer, and Simborg, 2005). A comparison study between patients in the Veterans Health Administration, using their integrated EHR, and patients from a national sample without access to an EHR, demonstrated higher quality of care across broad measures for patients in the Veterans Health Administration (Asch et al., 2004). A systematic review of the literature on the impact of HIT on quality, efficiency, and costs of medical care revealed evidence that increased access to information through clinical HIT applications resulted in statistically significant enhancements of primary and secondary preventive care measures, chronic care treatment, appropriate laboratory testing, and the use of advance directives (Chaudhry et al., 2006).

Despite the growing body of evidence in support of the effectiveness of clinical HIT, it is estimated that only 17 to 24 percent of ambulatory providers in the U.S. currently use EHRs (Jha et al., 2006). In acute hospitals and post acute and LTC settings, the use of clinical HIT is estimated to be even lower (Jha et al., 2006; Kramer et al., 2004). These low adoption rates of clinical HIT have been attributed to the high costs of investment, concerns with productivity loss, lack of interoperability with other systems, and legal and privacy barriers to sharing health information (Jha et al., 2006). Additionally, recent reports have raised concerns regarding the complexity of clinical HIT systems and have found that the use of these systems alone do not always result in safer, higher quality care (Nebeker et al., 2005; Koppel et al., 2005; Han et al., 2005). The implementation of complex clinical HIT systems may result in unintended consequences if systems are not appropriately designed and understood by users.

OPPORTUNITIES FOR MEDICAID

In the absence of robust empirical evidence, the need for program management tools and data has been the driver of the limited State investments to date in supporting clinical HIT systems. As with other insurers, it is thought that Medicaid Programs will improve the quality of health care delivery and achieve efficiencies in program operations through the use and support of HIT and HIE.

Improving Quality of Care

Medicaid recipients are often in poorer physical and mental health than populations covered through commercial insurance (Hadley and Holahan, 2003/2004). More than 60 percent of Medicaid recipients have at least one chronic or disabling condition. Because of the high level of disease burden, Medicaid patients' utilization rates of health services are substantial (Garis and Farmer, 2002). Due to the eligibility rules and sociodemographic realities, many Medicaid recipients may move from being uninsured, to commercially insured, to Medicaid eligible, and back. This often leads Medicaid recipients to seek health care services and medications at multiple sites of care, compromising the accuracy and completeness of health care records, and often requiring unnecessary duplication of laboratory, radiology, and other ancillary tests. These factors create significant challenges for beneficiaries and providers often requiring a level of coordination that cannot be fully realized without clinical HIT and HIE.

We could find no studies in the peer reviewed literature that addresses the Medicaid population specifically with regard to improvements in the quality of health care that might result from HIT. We are left, therefore, to infer from the literature derived from commercial or mixed populations which demonstrate improvements in health care safety and quality with the appropriate use of HIT and HIE. Reductions in medical errors and improved patient safety are important for all health care consumers, but are especially salient for Medicaid beneficiaries who, on average, utilize more health care services and medications than those who are commercially insured, and are therefore exposed to increased risk of medical errors and adverse drug events. This risk may be especially true in LTC settings where Medicaid is the primary purchaser. The age and frailty of these patients, coupled with the high volume of medication use, complex drug interactions, and side effects, increases the risk of medication errors (Gurwitz et al., 2000). Clinical HIT in these settings has the potential to decrease preventable medication errors.

The complex health care issues of Medicaid beneficiaries, including the interaction of physical and behavioral health, and the high prevalence of chronic conditions result in a need for care coordination and management amongst multiple providers. Real-time information and data about past encounters, conditions, and health issues generated in clinical HIT systems from multiple sites would greatly facilitate comprehensive health and wellness for these populations.

Improving Efficiency

As a result of more effective health care delivery through the use of clinical HIT, Medicaid agencies stand to realize savings in a number of areas. Reductions in unnecessary utilization of tests and procedures related to the lack of coordination and data sharing among providers and generic substitution as a result of generic drug list information made available to providers when prescriptions are written, are two examples of areas where the use of clinical HIT can be translated to cost savings for Medicaid agencies in reduced medical assistance payments.

In addition, administrative savings for Medicaid through HIE may be significant. A recent study from the New England Electronic Data Interchange Network found that the average labor and material cost of a single claim transaction submitted via paper and e-mail was $5.00, whereas the same transaction exchanged electronically was $0.25, representing a 95-percent savings

moving to electronic transactions (Halamka et al., 2005). The potential savings associated with transmitting claims electronically has been an important driver for many commercial payers to support hardware, software, and administrative HIT and HIE investments. Medicaid agencies may stand to reap 2.5 times the fiscal benefits associated with administrative HIE than do commercial payers due to their high volume and complexity of transactions (Walker et al., 2005). In addition to transaction savings, Medicaid agencies may be able to reduce staffing and labor costs. The Utah Medicaid agency has redeployed 12 full-time employees from claims adjudication and eligibility verification to other essential programs by participating in the Utah Health Information Network (Bryant, 2006).

Commercial insurers have reported programmatic efficiencies associated with clinical HIT adoption (Mandel, 2006), many of which may be translatable to Medicaid Programs. For example, prior authorization is an important tool for Medicaid agencies to manage utilization of selected services. When performed manually without electronic access to data, prior authorization decisions are staff intensive and are often delayed while waiting for clinical information, incurring significant expenses for providers and Medicaid agencies. HIE between Medicaid and providers will likely reduce the burden of data gathering and reporting needed for quality monitoring and improvement purposes, and improve the detection of fraud and abuse through the real-time capture of data. HIE between Medicaid and other public and private agencies also has the potential to ensure accurate and efficient population tracking and monitoring through linking data collected within MMIS to public health systems and initiatives.

POLICY CHALLENGES

On August 22, 2006, President George W. Bush signed an Executive order to "…ensure that health care programs administered or sponsored by the Federal government promote quality and efficient delivery of health care through the use of health IT, transparency regarding health care quality and price, and better incentives for program beneficiaries, enrollees, and providers." (Bush, 2006.) It is notable that this order, although important for the promotion of HIT as a tool for quality improvement for the Federal Government, specifically excludes Medicaid and the State Children's Health Insurance Program (Bush, 2006). Through the 2005 Deficit Reduction Act, $150 million has been made available over a 2-year period for transformation grants for Medicaid agencies to promote the efficiency and effectiveness of their programs, with HIT specifically listed as a permissible use of these funds. Yet according to the Henry J. Kaiser Family Foundation (2006), "… [m]any of the policy changes in the 2005 Deficit Reduction Act would shift costs to beneficiaries and have the effect of limiting health care coverage and access to services for low-income beneficiaries." These policies send mixed messages to Medicaid agencies: On the one hand DHHS and CMS have been promoting the vision of Federal programs as leaders in the development of HIT and HIE (Leavitt, 2006), yet Medicaid—one of the largest purchasers of health care for the Nation's poorest and sickest populations—is either excluded or included as a tradeoff for decreased coverage. The lack of consistent Federal guidance and leadership on Medicaid's involvement in HIT and HIE efforts are indicative of the significant challenges facing State Medicaid agencies.

Nevertheless, the current high-level interest in promoting HIT and HIE by the Federal Government and other health care stakeholders presents an opportunity to DHHS and CMS to coordinate with other Federal efforts and put Medicaid at the forefront of discussions regarding the advance of health care quality and efficiency through the use of HIT and HIE. There are a number of HIT-related quality improvement initiatives in the Medicare Program. How these programs may be leveraged in Medicaid will be an important question to be answered. Also, Federal policymakers need to provide cohesive guidance on the range of potential financing mechanisms available to Medicaid agencies to support HIT and HIE. Although CMS currently invests $2.7 billion annually for IT, little of that funding is allocated to health care quality improvement efforts in provider settings. If promoting health care quality and efficiency is a priority for the Federal Government, DHHS and CMS have an opportunity to demonstrate their commitment by clarifying the boundaries of Medicaid MMIS investments through MITA and the potential use of Medicaid demonstration waivers and other financial mechanisms to support HIT adoption.

States Medicaid agencies have an interest in supporting HIT and HIE as both health care quality and program improvement tools. Along with the potential efficiencies previously discussed, the appropriate design, use, and support of HIT and HIE by State Medicaid agencies will allow for more accurate and timely data collection from their providers. As pay-for-performance and other payment policies are implemented, the accuracy and timeliness of the data used to determine these policies will be of paramount importance.

There are a variety of mechanisms available for States Medicaid agencies to support the adoption of HIT and HIE in provider settings. One potential mechanism is through existing Medicaid provider payment rules. Could HIT at Federally-qualified health centers or other providers such as those in the LTC setting be considered an allowable cost in capital investment? If so, those providers could receive enhanced payments to supplement their HIT investments in proportion to their Medicaid patient mix. Another mechanism to support adoption and increase quality could be the creation of Medicaid-specific EHRs. For example, Tennessee, through a public private partnership between BlueCross® BlueShield® of Tennessee and TennCare (Tennessee Medicaid) in 2005 began a project to create patient-centered EHRs for all TennCare recipients. Initial financing of the project was supported by Tennessee's BlueCross® BlueShield® with proposed ongoing financing supported by TennCare on a per-enrollment basis (Shared Health™, 2006). In another example, Missouri Medicaid recently awarded a contract to APS Healthcare to establish a chronic care improvement program. Through this project, a community EHR will be created for all participants that will be used to coordinate care across the program (Clark-Lynn, 2006).

The opportunity to facilitate the creation of public private EHRs for all Medicaid Programs may not be feasible for all States. In the absence of clinical HIT systems at provider sites, payers and purchasers, such as Medicaid can promote provider effectiveness by sharing clinically relevant claims data at the point of care. There is a significant amount of clinically relevant data embedded in claims that would be useful to providers in the presence or absence of an EHR. For example, using an internally developed IT application, Fallon

Community Health Plan of Massachusetts provides weekly extracts of claims, diagnoses, procedures, and dates to each provider's rudimentary online electronic chart. This system has been used to support coordination of care, health maintenance and disease management, medication compliance, targeted quality improvement, and improved patient safety (Garber, 2006). Claims are designed to facilitate payment functions and therefore the accuracy of diagnoses, the presence of co-morbidities, and the appropriate coding of procedures must be scrutinized if the information within the claim is used clinically. Yet, if used appropriately, claims data can be an important tool to promote higher quality health care delivery.

The use of managed care arrangements, such as Medicaid managed care organizations (MMCO), represents another opportunity for Medicaid agencies to support HIT and HIE adoption. The MMCO contracting process may be a leverage point that States can use to support quality improvement and HIT adoption. Risk-based MMCOs often have the flexibility and the resources to develop organized programs that can harness HIT for quality monitoring and improvement strategies. MMCOs can also directly implement information systems that either integrate or supplement providers' clinical systems. To improve the quality of care for Medicaid enrollees, State Medicaid agencies can build into MMCO contracts obligations to further the use of clinical HIT.

There are a number of legal and regulatory issues that must be addressed as Medicaid agencies expand their involvement with HIT and HIE. Protecting patient privacy and security is paramount to the success of these technologies. CMS and States cannot ignore the special challenges related to sharing sensitive clinical data, especially for those patients with behavioral health, substance abuse, HIV, and reproductive health issues. CMS can help by addressing and clarifying the intersection of the Medicaid Privacy Statute and Health Insurance Portability and Accountability Act as related to HIE (Rosenbaum, MacTagart, and Borzi, 2006). States should also examine their privacy and security laws for consistency and equity in the context of HIE. A current project funded by the Agency for Healthcare Research and Quality and managed by RTI International (2006) is helping 34 States and U.S. Territories address privacy and security policy questions regarding HIE. It is unclear, however, if this project will address the privacy and confidentiality concerns of the high risk Medicaid populations. The challenges of sharing sensitive information should be specifically addressed in these efforts so that these vulnerable and high cost populations are not denied the benefits of improved quality of care though the exchange of necessary health information.

CONCLUSION

Medicaid agencies pay for health care services for the poorest, sickest, and most complex populations in the U.S. The benefits associated with the appropriate use of HIT and HIE offer significant promise for Medicaid agencies to ensure the effective management of the complex medical care needed by their beneficiaries without limiting or cutting benefits. In addition, data generated through these technologies will provide a range of research opportunities that can further inform and advance improvements in health care quality and efficiency.

There are many areas where Medicaid represents a natural leverage point for a national HIT strategy. Its disproportionate influence in certain provider settings, its position as one of the largest purchasers of

health care in the Nation, the significant IT investments made through the MMIS, and most importantly, its role in supporting the health and well-being of U.S. citizens in need, positions Medicaid as a key player in facilitating the universal adoption and appropriate use of HIT and HIE. With consistent support and leadership from Federal and State policymakers, Medicaid can be an important contributor to a national health information infrastructure that will support safer, higher quality health care, and better health outcomes for all.

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