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Meaningful Use: The Promise of Health Information Technology

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Introduction

Most recent attention to health care reform in the United States has primarily been paid to the Patient Protection and Affordable Care Act of 2010 and its provisions for an individual mandate for health insurance acquisition, restrictions on insurer medical loss ratios and the creation of the Patient-Centered Outcomes Research Institute, among others, in an effort to reduce the cost burden of American health care while improving its quality. However, the passage of a provision of the American Recovery and Reinvestment Act the year prior has the potential to affect the state of American health care just as profoundly. Termed the HITECH (Health Information Technology for Economic and Clinical Health) Act, the provision allocates over $38 billion[1] through 2019 to incentivize the use of information technology in health care, including the use of electronic health records (EHRs), computerized systems for recording and tracking clinical data and histories for individual patients.

Numerous studies[2-5] have shown the effectiveness of EHRs in increasing health care quality through their abilities to automate prescribing and diagnostic ordering, highlight treatment safety considerations and, in general, allow technology to organize patient information in a more meaningful and useful manner. Such digitization would lead to increased coordination of care and streamlining health care management, leading to reduced system expenditures in the short-to-medium-term while laying the administrative groundwork for more ambitious approaches toward reimbursement reform, such as payment bundling or capitation[6].

The HITECH Act

The HITECH Act aims to reap the benefits of widespread adoption of EHRs in the United States by offering both financial subsidies (see Figure 1) to providers to purchase and use EHR systems and financial penalties for non-use. Beginning in 2011, two separate incentive programs[7] operated in parallel for providers offering care to Medicare and/or to Medicaid patients. Under the Medicare incentive schedule, individual providers can receive up to $44,000 over five years, while under the Medicaid schedule, the incentive is $63,750 over six years. Hospitals under both programs can receive $2 million or more. While there are no specific regulations as to the uses of the incentives, the costs of EHR use (from $3,000 per physician per year[8] for services from one leading EHR software developer) are such that the subsidies are likely in place to defray adoption expenses.

A controversial aspect of the HITECH Act is its system[7] of reimbursement adjustments for Medicare providers, in that providers who fail to use EHRs “meaningfully” by 2015 will see a 1% reduction in their Medicare reimbursements. Each year afterwards, the reduction increases by 1% up to a 5% maximum. Providers who treat Medicaid patients will not see any reductions in reimbursement.

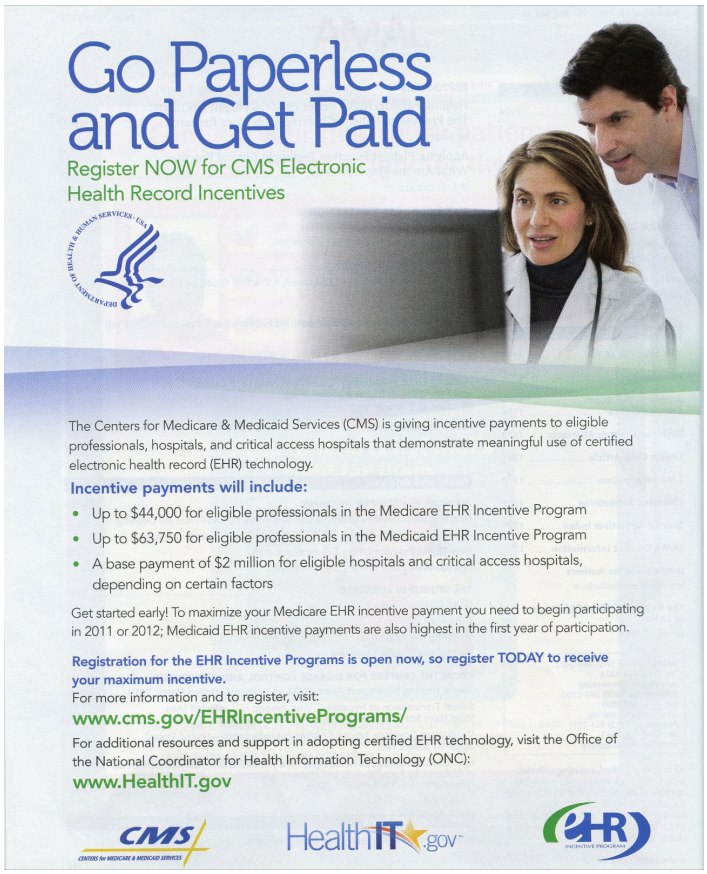

Figure 1 Sample advertisement from the *Journal of the American Medical Association* on financial incentive payments for adoption of EHRs.

EHR Incentive Payment Timeline

Fall 2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	
	Stage 1											Maximum Payments
			Stage 2									
					Stage 3							
Medicare Incentive Payments	$18,000	$12,000	$8,000	$4,000	$2,000							$44,000
		$18,000	$12,000	$8,000	$4,000	$2,000						$44,000
			$15,000	$12,000	$8,000	$4,000						$39,000
				$12,000	$8,000	$4,000						$24,000
Medicaid Incentive Payments	$21,250	$8,500	$8,500	$8,500	$8,500	$8,500						$63,750
		$21,250	$8,500	$8,500	$8,500	$8,500	$8,500					$63,750
		$21,250	$8,500	$8,500	$8,500	$8,500	$8,500					$63,750
				$21,250	$8,500	$8,500	$8,500	$8,500	$8,500			$63,750
					$21,250	$8,500	$8,500	$8,500	$8,500	$8,500		$63,750
						$21,250	$8,500	$8,500	$8,500	$8,500	$8,500	$63,750

Figure 2 Subsidy payment schedule[9] for physician adoption of EHRs

Meaningful Use

The key attribute of EHR use (and, thus, the ability to claim subsidies or to disclaim penalties under the HITECH Act) is that it be "meaningful." While the phrase does appear in quotes to indicate its role as a proper adjective in federal regulations describing the use of health IT assets, the term is surprisingly accurate—the intention is for providers to integrate the use of the EHR in all aspects of health care, from documenting care to prescribing drugs to processing laboratory results[10], and to leverage that integration to improve quality and efficiency of care on both a local and a national level[6]. An EHR that has been certified for meaningful use must allow the provider to check for drug interactions, record an array of patient demographic information (including preferred language, signaling an increased emphasis on effective patient communication), provider educational resources specific to the patient's history and exchange data electronically with other providers, among other measures[10]. Importantly, the federal government has restricted its influence to that of a regulator, not a software developer. Most certified EHRs have been created by private-sector firms (a major public-sector EHR created by the Veterans Health Administration is VistA).

Most references in the popular media to the HITECH Act focus on its requirement for providers to achieve meaningful use of EHR software by 2015—while this is a requirement and is a critical element of efforts to reduce cost and improve quality, it is but the first stage in a three-stage process for achieving a greater transformation of the American health care system through health IT. While there are multiple issues with implementation of meaningful use requirements (relating to inefficiencies in data entry, idiosyncrasies in different software packages and obstacles to interoperability between EHRs developed by different firms), mandating universal use of electronic means of recording health information sets the stage for Stages 2 and 3 of EHR meaningful use.

Moving Beyond Stage 1 Meaningful Use

The Stage 1 meaningful use criteria encourage the wide adoption of EHRs by providers to make possible the larger-scale improvements detailed in the next stages. Stage 2 primarily focuses on integrating health IT solutions into EHRs to enhance quality of care[6]. While federal regulations detailing the specific steps to be taken are still forthcoming as of the writing of this case, they will most likely include recommendations for inclusion of clinical decision support (CDS) (computerized analytical tools for predicting diagnoses and treatments based on patient clinical inputs[11]), disease management and health care quality reporting systems. In the same light, Stage 3 builds upon Stage 2 to expand health IT-mediated integration to the collection of population datasets, the greater measurement of clinical outcomes and increased patient access to their health records[6]. The general trend is toward embracing the abilities of technology to aggregate, analyze and organize data automatically to improve health care.

Implications of System-Wide EHR Adoption

A key Stage 2 and 3 implementation is that of CDS systems. While medicine is, of course, a complex discipline involving hundreds, if not thousands, of decisions honed by years of education and experience, analytical tools could help providers focus their diagnostic and treatment efforts based on the current evidence. Work[11] in primary clinics affiliated with Partners HealthCare (the parent institution of the Massachusetts General Hospital, Brigham and Women's Hospital and other Harvard teaching hospitals) found promising correlations between quality of diabetes and coronary artery disease management and use of CDS, although a retrospective national assessment[12] of the usage of EHRs with and without CDS found very little evidence supporting the utility of CDS systems as currently implemented.

EHRs would also likely make the collection of data for population-based analysis much easier. Comparative effectiveness research (CER) rests on the aggregation of thousands of patient experiences with a drug or procedure to assess the usefulness of new therapies. The near-universal adoption of electronic means of recording clinical data, coupled with better interoperability standards, yields a system built for CER that can gather thousands of patients for rigorous analysis of common and uncommon medical therapies and for sensitivity assessments of treatments across different clinical factors[13]. A common factor cited as a driver of rising health costs is an increased reliance on newer, more expensive, technologies—more widespread access to CER would allow those technologies to be put to the test in real-world circumstances.

CDS and CER are just two of the many implications of system-wide EHR adoption that could lead to better quality of care and reduced costs (see Figure 3)—the others range from increased awareness of patient histories and clinical progress among medical students[14] to enabling machine learning[15] of medical diagnostics and treatment for better simulation of physiological processes[16] to providing the tools for true outcomes-based reimbursement[17] that reward hospitals and providers for providing high-quality care.

EXHIBIT 2

How Health Information Technology For Economic And Clinical Health (HITECH) Programs Advance Health Reform Goals

Health reform objective	Complementary HITECH program	HITECH funds
PRIMARY OBJECTIVES		
Better quality of reporting and measurement	Medicare and Medicaid incentive program: incentive payments to "meaningful users"	Up $2 million per hospital and up to $63,750 per physician
	Regional extension centers: up to 70 centers will help providers through the process of selecting and implementing EHRs	$643 million
Improved efficiency	Health information exchange: state programs to ensure the exchange of health information within their jurisdiction	$564 million
	Nationwide Health Information Network and standards and certification: creation of a common platform for health information exchange; development of interoperability specifications	$64.3 million
Breakthrough examples of delivery reform	Beacon community grants: 15 demonstration communities in which clinicians, hospitals, and consumers show how EHRs can achieve breakthrough improvements in care	$250 million
SECONDARY OBJECTIVES		
Improved health care delivery infrastructure	Strategic health IT advanced research projects: projects focused on breakthrough advances in health IT including security of health IT, patient-centered cognitive support, health care application and network platform architectures, and secondary use of EHR data	$60 million
Workforce development	Workforce training programs: supporting education of up to 45,000 new health IT workers	$118 million

SOURCE Authors' analysis. NOTES HITECH was passed as part of the American Recovery and Reinvestment Act of 2009. EHR is electronic health record. IT is information technology.

Figure 3 Concordance between goals of health reform and of the HITECH Act[6]

Questions

- What is the value of encouraging wide-scale adoption of health IT tools? What are the pros and cons of decentralizing both the purchase and implementation of such tools?
- Why were subsidies included in the HITECH Act? Partners HealthCare implemented EHRs in 2002—was the HITECH Act necessary to encourage adoption of such tools?
- Is there value in allowing the private sector to take the lead in the development of EHRs?
- What are the advantages of incorporating IT solutions into clinical practice? Are there disadvantages?
- What are other implications of nationwide meaningful use of health IT?

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