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A Progress Report On Electronic Health Records In U.S. Hospitals

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ABSTRACT Given the substantial federal financial incentives soon to be available to providers who make “meaningful use” of electronic health records, tracking the progress of this health care technology conversion is a policy priority. Using a recent survey of U.S. hospitals, we found that the share of hospitals that had adopted either basic or comprehensive electronic records has risen modestly, from 8.7 percent in 2008 to 11.9 percent in 2009. Small, public, and rural hospitals were less likely to embrace electronic records than their larger, private, and urban counterparts. Only 2 percent of U.S. hospitals reported having electronic health records that would allow them to meet the federal government’s “meaningful use” criteria. These findings underscore the fact that the transition to a digital health care system is likely to be a long one.

Promoting the adoption and use of health information technology (IT) is a major priority for U.S. policy makers as a means of managing health care costs and improving quality. The American Recovery and Reinvestment Act (ARRA) authorized incentive payments through Medicare and Medicaid to providers that implement certified electronic health records and demonstrate their “meaningful use.” The U.S. Department of Health and Human Services (HHS) recently finalized the meaningful-use criteria for the first two years—2011 and 2012—of the three-stage incentive program.¹ These criteria are intended to ensure that doctors and hospitals will use health IT to improve the quality, efficiency, safety, and other aspects of care.^{2–4}

To be eligible for financial incentives, hospitals must demonstrate that they meet all fourteen “core” objectives and five of the ten “menu” objectives (Appendix Exhibit 1).^{1,5}

Tracking how quickly the hospitals meet these objectives is now critically important. Data on the providers that have successfully adopted electronic health records will help guide programs that support this unprecedented national

initiative. These tracking efforts will also help policy makers anticipate which providers will be able to meet the meaningful-use criteria and which ones might be left behind.

So far, we have had no data on hospitals’ adoption of health IT since the passage of American Recovery and Reinvestment Act. However, the American Hospital Association (AHA), funded by the Office of the National Coordinator for Health Information Technology, now administers a supplement to its annual survey of hospitals to assess the adoption of electronic health records and their use in each facility. The latest version of the supplement was completed in late 2009 and provides updated information on hospitals’ adoption of the records since the passage of the stimulus legislation.

We used these data to answer four questions: How have adoption rates of electronic health records changed since the law was passed? Which types of hospitals have newly adopted the records? How many hospitals could have met the meaningful-use criteria in 2009? Did the ability to meet the criteria in 2009 vary by type of hospital? The last question is particularly important because it will help show whether cer-

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tain types of providers are falling behind—and therefore may need additional support. Responses to the last question will also help shape meaningful-use criteria for the second and third stages of the initiative.

Overall, we found modest increases in adoption of electronic health records between 2008 and 2009. Larger, nonprofit, urban hospitals made more headway than critical-access hospitals, small and medium-size hospitals, and public and rural hospitals. We also found that a very small proportion of hospitals can meet the stage 1 meaningful-use criteria. This last finding suggests that most hospitals will have to make substantial progress to receive financial incentives over the next two years. We propose several potential policy solutions, including extending the efforts of the Regional Extension Centers to include small and public institutions.

Study Data And Methods

HOSPITAL IT SURVEY During March–September 2009, the American Hospital Association surveyed all acute care hospitals about their health IT activities as of March 1, 2009. A paper copy of the survey was sent to each hospital's chief executive officer, who asked the person most knowledgeable about the hospital's health IT efforts to complete it.

Each hospital reported on the presence or absence of thirty-two clinical functions of an electronic health record and on whether these had been implemented in every unit of the hospital; had been implemented in at least one unit of the hospital; had been partly implemented, or had resources necessary for their implementation identified; or had not yet been implemented by any unit of the hospital. The details of the survey instrument are described elsewhere.⁶

To shape the analysis and reporting of the results, we used a previously developed definition of a *basic electronic health record*: a set of ten clinical functions deployed in at least one hospital unit. We also used a previously developed definition of a *comprehensive electronic health record*: a set of twenty-four clinical functions deployed in all hospital units.⁶ These definitions were derived from a federal panel of technical experts convened by a contractor to the Office of the National Coordinator for Health Information Technology and used in previous reports on the adoption of electronic health records.⁷

STATISTICAL ANALYSIS We compared respondents and nonrespondents to the survey and found modest but significant differences. To adjust for this nonresponse bias, we estimated the propensity of hospitals to respond to the survey, using a logistic regression model.

The model allowed us to estimate the probability that a hospital would respond based on several characteristics, including size, ownership, teaching status, urban or rural location, and geographic region. Individual responses were then weighted by the inverse of that institution's probability of responding—that is, 1 minus the probability of responding. This technique balanced the responses and created national estimates adjusted for nonresponse.

We computed the numbers of hospitals meeting the panel definitions for *basic* and *comprehensive* electronic health records as well as the adoption rates of key functions, such as computerized physician order entry for medications.

We used bivariate and multivariate techniques to determine whether different types of hospitals—such as small, teaching, or rural—were more or less likely to have been new adopters of the records in 2009. We repeated these analyses focusing on the adoption of three key clinical functions: computerized physician order entry for medications, electronic physician notes, and clinical practice guidelines. We chose these functions because they are challenging for hospitals to implement yet have great potential for making a clinical impact.^{8–12} This analysis focused on hospitals that did not meet the criteria for a basic electronic health record—or had not adopted the key functions—in 2008 but achieved the status of basic record use in 2009.

Last, we used the final stage 1 meaningful-use criteria released by the Department of Health and Human Services (HHS) on July 13, 2010, and the responses to survey items to estimate how many hospitals met specific core and menu objectives, individually and in the aggregate. This included nine of the fourteen core objectives and three of the ten menu objectives.

Although the survey did not specifically ask hospitals about individual meaningful-use criteria as worded in the HHS rules, these twelve objectives had clear analogues in the survey (Appendix Exhibit 1).⁵ We examined how hospital size, ownership, and location were associated with the ability to meet meaningful-use criteria individually and in total. Finally, we examined how close hospitals were to meeting the nine core meaningful-use criteria by calculating the number of functions implemented.

STUDY LIMITATIONS There are several limitations to this study. First, although the survey attained a nearly 70 percent response rate and we attempted to statistically correct for potential nonresponse bias, the reported results may not accurately reflect the full population of the nation's hospitals. We attempted to adjust for this potential nonresponse bias through weighting. However, it is not possible to anticipate how

nonresponders would have responded.

Second, we focused on whether hospitals had adopted electronic health record systems rather than on how they are using the systems. As a result, this report may overestimate how much clinical care the records are supporting.

Third, any self-report contains perceptions by employees of the reporting organization, which may differ from views of independent parties.

Finally, we did not ask directly about the meaningful-use objectives; instead, we mapped our survey responses to the objectives and measures outlined by HHS. In most cases, our approach was conservative.

For example, having any patient demographic data in electronic format was adequate to meet our survey criteria. However, the meaningful-use regulations require that hospitals electronically collect key patient demographics such as age, sex, race or ethnicity, and preferred language—information that few hospitals collect. Thus, it is likely that we overestimated how often individual hospitals already have key functions needed for meaningful use.

For one criterion, the ability to engage in a health information exchange, our threshold may be too high. Our survey asks whether hospitals actually exchange clinical data with other providers. The federal meaningful-use criteria require hospitals to demonstrate an ability to exchange data, not to actually exchange them. Therefore, we also report results without requiring health information exchange.

Study Results

The American Hospital Association surveyed 4,493 acute care, nonfederal hospitals, of which 3,101 responded—giving a response rate of 69 percent. Hospitals that were large, major teaching hospitals and located in the Midwest were more likely than others to respond to the survey (see Appendix Exhibit 2).⁵ We adjusted all analyses for potential nonresponse bias, using the methods described above.

Overall, we saw modest gains in electronic health record adoption between 2008 and 2009. The proportion of hospitals rising to the highest criterion of a comprehensive record, according to the expert panel's definition, nearly doubled, from 1.5 percent to 2.7 percent (Exhibit 1). Similarly, there was a moderate gain in the proportion of hospitals that met all of the criteria for a basic record, from 7.2 percent to 9.2 percent. In total, 11.9 percent of U.S. hospitals had either a basic or a comprehensive electronic health record in 2009.

In 2009, there was wide variation in the rate of adoption of individual health IT functions.

Eighty-five percent of hospitals had electronic radiology reports in at least one unit (Exhibit 2), while only 32 percent had clinical guidelines in at least one unit. For the two functions that are likely to be the most challenging to adopt—computerized physician order entry for medications and electronic physician notes—we found that approximately one-third of hospitals had fully implemented these functions in one or more major clinical units (Exhibit 2). However, 40 percent of U.S. hospitals reported having no firm plans to adopt these functions.

We found that critical-access, small, medium-size, public, nonteaching, and rural hospitals were the least likely to have adopted at least a basic electronic health record in the twelve months before the survey (Exhibit 3). For example, critical-access hospitals had 80 percent lower odds of having adopted at least a basic electronic health record in 2009 than did large hospitals. Among non-critical access hospitals, small hospitals had 70 percent lower odds and medium-size hospitals had 50 percent lower odds of having adopted at least a basic record in 2009 compared to large hospitals.

We found similar patterns for the new adoption of individual functions, including computerized physician order entry for medications, electronic physician notes, and clinical guidelines. We found that public and rural hospitals had 40 percent lower odds of having adopted at least a basic electronic record in the year before the survey (Exhibit 3), compared to private non-profit and urban hospitals, respectively.

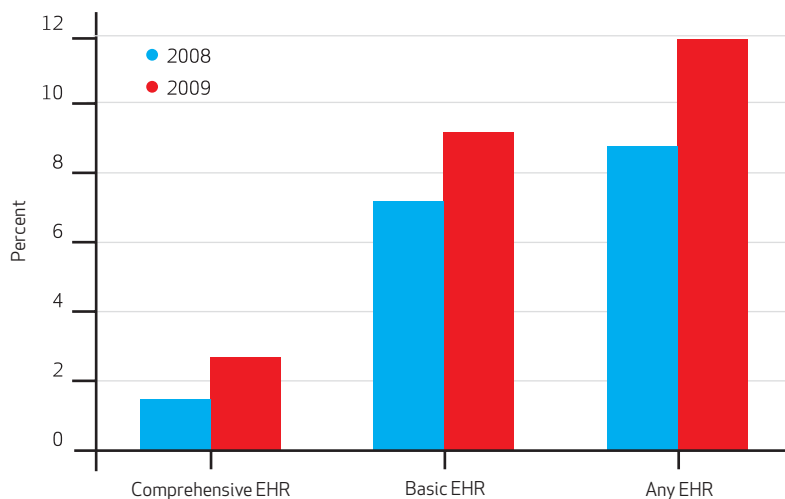
11.9%

Of U.S. Hospitals

In 2009, 11.9 percent of U.S. hospitals had either a basic or a comprehensive electronic health record.

EXHIBIT 1

Changes In Electronic Health Record (EHR) Adoption Rate From 2008 To 2009



SOURCE Authors' analysis of data from the American Hospital Association Annual Survey Health Information Technology Supplements of acute care hospitals in the United States. **NOTE** N = 3,049 hospitals (2008) and 3,101 hospitals (2009).

EXHIBIT 2

Selected Electronic Health Record (EHR) Functions And Implementation In U.S. Hospitals In 2009

Function	Fully implemented in at least 1 unit (%)	Began implementation or resources identified ^a (%)	No implementation and no specific plans (%)
CLINICAL DOCUMENTATION			
Medication lists	66	16	18
Physician notes	33	27	40
Problem lists	46	21	33
VIEWING OF RESULTS			
Lab reports	82	6	9
Radiology images	83	8	9
Radiology reports	85	6	8
COMPUTERIZED PHYSICIAN ORDER ENTRY			
Medications	34	26	40
DECISION SUPPORT			
Clinical guidelines	32	24	44
Clinical reminders	38	23	39
Drug allergy alerts	63	15	22
Drug-drug interactions	63	15	22
Drug dosing support	48	20	32

SOURCE Authors' analysis of data from the American Hospital Association Annual Survey Health Information Technology Supplement of acute care hospitals in the United States. **NOTE** N = 3,101 hospitals. ^aHospitals that reported that they were either "beginning to implement in at least one unit" or "have resources identified to implement in the next year."

Our survey results suggest a wide range in adoption rates across functions that parallel specific proposed meaningful-use criteria. Overall, 2.1 percent of hospitals met all nine of the core objectives required to meet stage 1 meaningful

use (Exhibit 4). When we excluded the ability to exchange clinical data, 3.9 percent of hospitals met the remaining criteria. But when we added the requirement to have adopted all three menu objectives—where hospitals have some choice—

EXHIBIT 3

Odds Of New Adoption Of An Electronic Health Record (EHR) Or Key Functions, By Hospital Characteristics, 2009

Characteristic	Basic or comprehensive EHR	Physician notes	CPOE for medications	Clinical guidelines
SIZE				
Critical access	0.2**	0.4**	0.4**	0.4**
Small (non-critical access)	0.3**	0.5**	0.5**	0.6**
Medium (non-critical access)	0.5**	0.9	0.5**	0.8
Large (non-critical access)	— ^a	— ^a	— ^a	— ^a
PROFIT STATUS				
For-profit	0.8	1.2	1.2	1.3
Nonprofit	— ^a	— ^a	— ^a	— ^a
Public	0.6**	0.7**	0.9	0.8**
TEACHING STATUS				
Major teaching	— ^a	— ^a	— ^a	— ^a
Not major teaching	0.5**	0.6**	0.6**	0.6**
HOSPITAL SYSTEM MEMBER				
Yes	— ^a	— ^a	— ^a	— ^a
No	0.9	0.7**	1	0.6**
LOCATION				
Urban	— ^a	— ^a	— ^a	— ^a
Rural	0.6**	0.6**	0.7**	0.5**

SOURCE Authors' analysis of data from the American Hospital Association Annual Survey and the American Hospital Association Annual Survey Health Information Technology Supplement of acute care hospitals in the United States. **NOTES** N = 3,101 hospitals. CPOE is computerized physician order entry. ^aReference category. **p < 0.05

EXHIBIT 4
Percentage Of U.S. Hospitals That Could Meet Certain Criteria Of Meaningful Use, 2009

Criterion	Overall	Size				Ownership			Location	
		Critical access	Small	Medium	Large	For-profit	Public	Private nonprofit	Urban	Rural
CORE MEASURES										
Record key demographics	86%	72%	82%	94%	97%	82%	78%	90%	91%	78%
Maintain up-to-date problem list	46	32	43	53	61	43	42	48	52	39
Maintain active medication list	66	46	63	77	87	68	55	71	75	55
Give patients, upon request, electronic copy of their health information, including discharge summary	62	44	56	74	78	60	67	52	70	53
Use CPOE	30	19	27	33	53	27	27	32	35	23
Implement drug-drug, drug-allergy checks ^a	14	8	12	15	33	13	13	15	18	10
Have capability to exchange key clinical information	11	8	9	12	18	4	9	13	12	9
Implement at least 1 of 4 clinical decision rules	61	40	59	71	80	61	51	64	69	50
Report hospital quality measures to state or CMS	26	16	24	31	35	26	22	27	30	21
All 9 core criteria except clinical data exchange ^a	3.9	1.8	3.4	4.1	10.0	2.6	4.0	4.2	5.3	2.1
All nine core criteria ^a	2.1	1.0	1.2	2.0	7.5	0.0	2.0	2.7	3.0	1.0
MENU MEASURES										
Incorporate clinical lab-test results into EHR as structured data	84	66	81	95	97	83	74	89	92	74
Perform medication reconciliation	53	39	48	63	67	47	47	58	60	45
Record advanced directives	49	34	42	58	66	39	54	42	54	41
All 3 menu criteria	34	22	27	42	50	25	29	38	39	27
All 9 core and all 3 menu criteria, except clinical data exchange ^a	3.4	1.7	2.9	3.2	9.4	2.6	3.4	3.5	4.7	1.6
All 9 core and all 3 menu criteria ^a	1.6	0.9	1.0	1.2	6.7	0.0	1.7	2.0	2.4	0.6

SOURCE Authors' analysis of data from the American Hospital Association Annual Survey and the American Hospital Association Annual Survey Health Information Technology Supplement of acute care hospitals in the United States. **NOTES** N = 3,101 hospitals. All results were statistically significant ($p < 0.05$). CPOE is computerized physician order entry. CMS is Centers for Medicare and Medicaid Services. EHR is electronic health record. ^aStatistically significant for hospital size and location.

only 1.6 percent of U.S. hospitals could meet all of the core and menu objectives we examined.

Critical-access, small, and rural hospitals had consistently lower levels of adoption of individual criteria, compared to large or urban hospitals. For example, although 7.5 percent of large hospitals met all nine core requirements, only 1.2 percent of small hospitals did (Exhibit 4).

We found that 53 percent of U.S. hospitals are likely to meet five or more of the nine core meaningful-use criteria and 21 percent need to add only one or two functions to be able to meet the core criteria (Exhibit 5). The primary functions that these hospitals lacked included engaging in health information exchange functions, the implementation of checks to protect patients from adverse drug interactions or allergic reactions to drugs, the ability to report quality measures, and computerized physician order entry for medications.

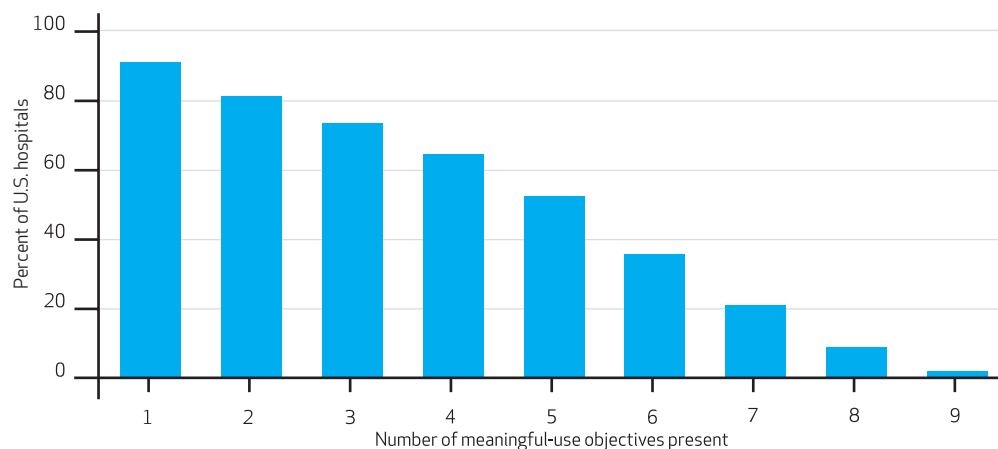
Discussion

In 2009, during challenging economic times, U.S. hospitals continued to adopt electronic health records, but at a slow rate. Between 2008 and 2009, basic and comprehensive record adoption increased modestly, although both started from a low baseline level.

However, our findings also suggest important areas for concern. The percentage of hospitals that meet the definition of either a basic or a comprehensive record, although increasing, remains low—less than 12 percent. From 2008 to 2009, critical-access, small, public, or rural hospitals in effect fell even further behind in the adoption of electronic health records and their key underlying functions. The same survey of U.S. hospitals conducted in the summer of 2008 found that hospitals that were critical access, small, public, nonteaching, or rural had 2–10 percent lower levels of adoption of the records.⁶ Our data reported above suggest that these gaps have widened.

EXHIBIT 5

Hospitals That Adopted 1–9 “Core” Meaningful-Use Objectives In 2009



SOURCE Authors' analyses of data from the American Hospital Association Annual Survey Health Information Technology Supplement of acute care hospitals in the United States. **NOTES** N = 3,101 hospitals. See text for definition of “core” objectives.

We also found that very few hospitals met the final stage 1 meaningful-use criteria. Consistent with our analysis of electronic health records, certain key hospital characteristics were associated with lower levels of adoption of specific proposed meaningful-use objectives.

It is unclear whether the implementation of the Medicare and Medicaid meaningful-use incentive payments will help close these gaps or further widen them. If the incentives motivate certain hospitals—such as smaller, rural institutions—to adopt electronic health records, we may see the gaps begin to close. It also is possible that if larger, academic hospitals receive the bulk of the incentive payments, they may be able to upgrade their systems and implement new features, further widening the digital divide.

A growing gap in the adoption of electronic health records has potentially important consequences for the health of Americans and the quality of hospital care they receive. Electronic records have been associated with several important benefits, including the potential to reduce or eliminate gaps in the quality of care provided to underserved patients,¹³ improve patient safety through electronic prescribing,⁸ and improve adherence to evidence-based care through clinical decision support.² Use of the records has also been associated with improved coordination of care through the electronic exchange of information, improved public health through electronic reporting to disease registries and state public health databases, and greater engagement of consumers through access to clinical records.

If certain types of hospitals fall further behind in adoption and meaningful use, they would be at

a serious disadvantage in each of these realms. This potential gap could have important implications for the health of the nearly 60 percent of Americans who receive care in small or medium-size hospitals and for the sizable proportion who receive care in public or rural hospitals.

Our findings are comparable to other groups' assessments of health IT adoption. The Leapfrog Group surveys selected hospitals' use of computerized physician order entry and has consistently found rates similar to ours.¹⁴ The Healthcare Information and Management Systems Society (HIMSS) Analytics program has its own Electronic Medical Record Adoption Model. Our definitions of *basic* and *comprehensive* records, created by a federal panel of experts, closely match HIMSS levels 4 and 7, respectively.¹⁵

That society estimates that through 2008—the date of its most recent publicly reported data—approximately 5.5 percent of hospitals had achieved levels 4–6, and an additional 0.3 percent had achieved level 7. The mild discrepancies in adoption rates probably reflect differences in definitions and in sampling strategies.

POLICY IMPLICATIONS Most U.S. hospitals must make major progress in health IT adoption to meet the critically important goals set out in the meaningful-use criteria. Approximately 2 percent of U.S. hospitals are able to meet all of the objectives as articulated in the final rules that we were able to examine using the final meaningful-use criteria.

Ours is surely a conservative estimate. We were able to examine the adoption of only nine of the fourteen mandatory, or core, criteria and only three of the ten menu criteria, from which hos-

pitals may select any five to implement. Our survey gave credit for having even the basic function, without requiring that hospitals meet the specific detailed rules for meaningful use, as discussed in the Study Limitations section above. Thus, it is likely that the actual number of hospitals currently able to qualify as meaningful users is lower than our projection.

Policy makers need to consider ways to make it easier for hospitals to adopt electronic health records and meet the criteria for their meaningful use—especially in the case of smaller, rural, and public hospitals. One possible approach is to increase assistance from Regional Extension Centers to these providers.

The Office of the National Coordinator for Health Information Technology has already identified additional technical support that may be needed for the institutions that care for some of the underserved—primarily critical-access hospitals. Our findings underscore the need for such an approach and suggest that these efforts may need to be broadened to include other small and medium-size hospitals, as well as public institutions.

Another option might be to offer additional incentive payments or to lend money to smaller, public, or rural hospitals to offset the costs of purchasing or upgrading a certified electronic health record system. There is precedent for this approach: Congress has already allocated extra incentive payments for providers that care for a large proportion of Medicaid patients. If we wait until after 2011 to identify the early recipients of meaningful-use incentives, it may be too late to reverse these trends in a timely fashion.

CONCLUSION We examined changes in the adoption of electronic health records after the passage of the stimulus law of 2009. Our findings provide reasons for both optimism and concern. While adoption rates increased modestly, smaller, rural, and public hospitals fell further behind their counterparts. By 2009, very few hospitals could meet the final stage 1 rules for meaningful use.

Federal policy makers need to take concrete actions now to address this emerging digital divide and to ensure that all Americans, regardless of where they receive care, derive the benefits that health IT has to offer. ■

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Appendix

Appendix Exhibit 1. Final Stage 1 Meaningful Use Rule for Eligible Hospitals and Analogous AHA IT Survey Question

Objective and Measure	Analogous AHA IT Question
Core Set (Mandatory 14 Objectives)	
Objective: Record patient demographics (gender, race, ethnicity, date of birth, preferred language, and date and preliminary cause of death in the event of mortality) Measure: More than 50% of patients' demographic data recorded as structured data	Does your hospital have a computerized <i>Electronic Clinical Documentation</i> system for Patient demographics ?
Objective Record and chart changes in vital signs (height, weight, blood pressure, calculate and display body-mass index, plot and display growth charts for children 2-20 years, including BMI) Measure: More than 50% of patients 2 years of age or older have height, weight, and blood pressure recorded as structured data	N/A
Objective: Maintain up-to-date problem list of current and active diagnoses Measure: More than 80% of patients have at least one entry recorded as structured data	Does your hospital have a computerized <i>Electronic Clinical Documentation</i> system for Problem Lists ?
Objective: Maintain active medication list Measure: More than 80% of patients have at least one entry recorded as structured data	Does your hospital have a computerized <i>Electronic Clinical Documentation</i> system for Medication Lists ?
Objective: Maintain active medication allergy list Measure: More than 80% of patients have at least one entry recorded as structured data	N/A

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Objective: Record smoking status for patients 13 years old or older Measure: More than 50% of patients 13 years of age or older have smoking status recorded as structured data	N/A
Objective: Provide patients an electronic copy of hospital discharge instructions at time of discharge, upon request Measure: Clinical summaries provided to patients for more than 50% of all patients who are discharged from the inpatient department or emergency department of an eligible hospital or critical access hospital and who request an electronic copy of their discharge instructions are provided with it	N/A
Objective: Provide patients with an electronic copy of their health information (including diagnostic test results, problem list, medication lists, medication allergies, discharge summary and procedures) upon request Measure: More than 50% of requesting patients receive electronic copy within 3 business days	Does your hospital have a computerized <i>Electronic Clinical Documentation</i> system for Discharge Summaries ?
Objective: Use CPOE for medication orders directly entered by any licensed healthcare professional who can enter orders into the medical record per state, local and professional guidelines Measure: More than 30% of patients with at least one medication in their medication list have at least one medication ordered through CPOE	Does your hospital have a <i>Computerized Provider Order Entry</i> system for Medications ?
Objective: Implement drug–drug and drug allergy interaction checks Measure: Functionality is enabled for these checks for the entire reporting period	Does your hospital system for <i>Computerized Provider Order Entry</i> for <i>Medications</i> have drug-drug and drug-allergy checks ?

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Objective: Capability to electronically exchange key clinical information (for example, discharge summary, procedures, problem list, medication list, medication allergies, diagnostic test results), among providers of care and patient authorized entities electronically Measure: Perform at least one test of EHR's capacity to electronically exchange information	Does your hospital electronically exchange any of the following patient data with hospitals or ambulatory provides outsides your system? (1) Patient demographics; (2) Clinical Care Record; (3) Lab results; (4) Medication history; or (5) Radiology reports?
Objective: Implement one clinical decision support rule relevant to high priority hospital condition along with ability to track compliance with that rule Measure: One clinical decision support rule implemented	Does your hospital have a computerized <i>Decision Support System</i> which allows for: (1) Clinical Guidelines; (2) Clinical Reminders; (3) Drug-Lab Interaction Alerts; (4) Drug Dosing Support?
Objective: Protect electronic health information created or maintained by the certified EHR technology through the implementation of appropriate technical capabilities Measure: Conduct or review a security risk analysis, implement security updates as necessary, and correct identified security deficiencies	N/A
Objective: Report hospital clinical quality measures to CMS or states Measure: For 2011, provide aggregate numerator and denominator through attestation; for 2012, electronically submit measures	Does your electronic system allow you to automatically generate Hospital Quality Alliance measures by extracting data from an electronic record for a Medicare inpatient prospective payment system update?

Menu Set (Select any 5 of 10)	
Objective: Implement drug formulary checks Measure: Drug formulary check system is implemented and has access to at least one internal or external drug formulary for the entire reporting period	N/A
Objective: Incorporate clinical lab-test results into certified EHR as structured data Measure: More than 40% of clinical laboratory test results whose results are in positive/negative or numerical format are incorporated into EHRs as structured data	Does your hospital have a computerized <i>Results Viewing</i> system which allows for the viewing of Lab results ?
Objective: Generate lists of patients by specific conditions to use for quality improvement, reduction of disparities, research, or outreach Measure: Generate at least one listing of patients with a specific condition	N/A
Objective: Use EHR technology to identify patient-specific education resources and provide those to the patient if appropriate Measure: More than 10% of patients are provided patient-specific education resources	N/A
Objective: Perform medication reconciliation between care settings Measure: Medication reconciliation is performed for more than 50% of transitions of care	Does your electronic system allow you compare patient's inpatient and preadmission medication lists ?
Objective: Provide summary of care record for patients referred or transitioned to another provider or setting Measure: Summary of care record is provided for more than 50% of patient transitions or referrals	N/A

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Objective: Capability to submit electronic data on immunizations registries or Immunization Information Systems and actual submission in accordance with applicable law and practice Measure: Perform at least one test of data submission and follow-up submission (where registries can accept electronic submissions)	N/A
Objective: Capability to submit electronic syndromic surveillance data to public health agencies and actual submission in accordance with applicable law and practice Measure: Perform at least one test of data submission and follow-up submission (where public health agencies can accept electronic data)	N/A
Objective: Record advance directives for patients 65 years of age or older Measure: More than 50% of patients 65 years of age or older have an indication of an advance directive status recorded	Does your hospital have a computerized <i>Electronic Clinical Documentation</i> system for Advanced directives ?
Objective: Submit of electronic data on reportable laboratory results to public health agencies Measure: Perform at least one test of data submission and follow-up submission (where public health agencies can accept electronic data)	N/A

Source: HHS Centers for Medicare & Medicaid Services, "Medicare and Medicaid Programs; Electronic Health Record Incentive Program," RIN 0938-AP78, 2010; Blumenthal D, Tavenner M. The "Meaningful Use" Regulation for Electronic Health Records. *N Engl J Med*. July 13; AHA Annual HIT Supplement of Acute Care Hospitals in the U.S.

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Appendix Exhibit 2. Characteristics of hospitals sampled, respondents, and non-respondents.

		All hospitals N=4493	Responding Hospitals N=3101	Non-responding Hospitals N=1392	P-value*
Hospital Characteristic		%	%	%	
Size	Small (<100 beds)	48	47	49	<0.001
	Medium (100-399 beds)	43	42	44	
	Large (≥ 400 beds)	10	11	7	
Region	Northeast	13	14	12	<0.001
	Midwest	30	34	21	
	South	38	35	43	
	West	19	17	24	
Ownership	For-profit	15	10	25	<0.001
	Non-profit	61	64	53	
	Public	24	25	22	
Major teaching hospital		24	26	18	0.003
Urban location		56	54	59	<0.001
Member of a system		55	51	63	<0.001

Source: Authors' analysis of data from the American Hospital Association Annual Health Information Technology Supplements of Acute Care Hospitals in the U.S.