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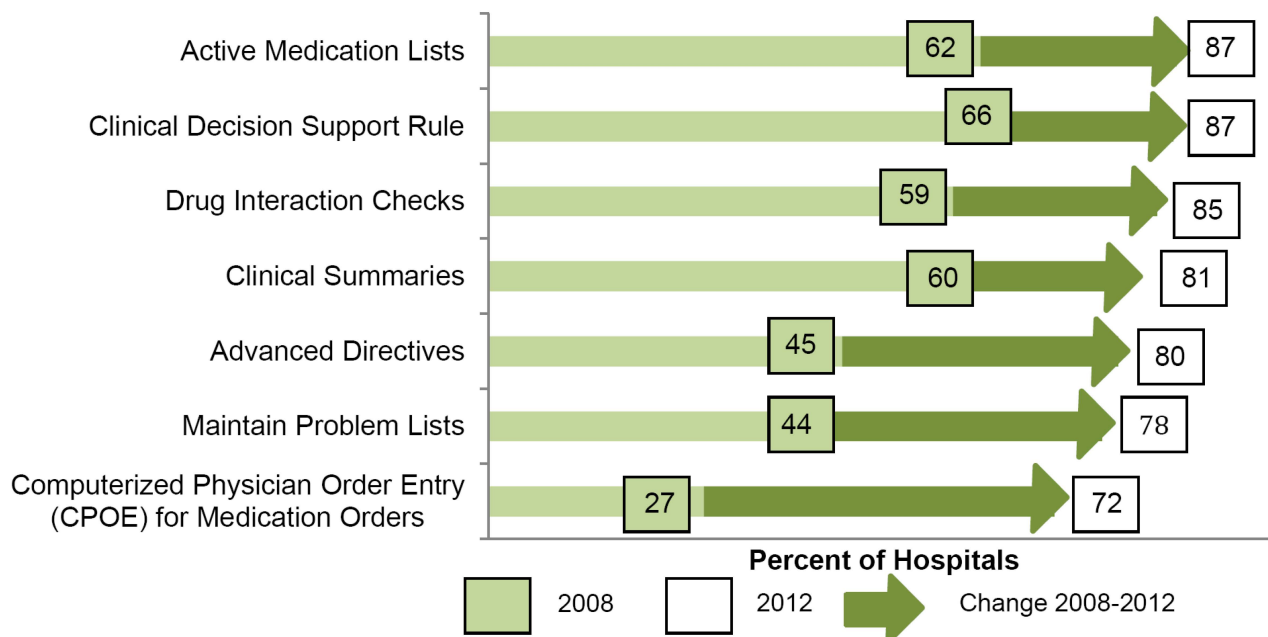
**Hospital Adoption of Electronic Health Record Technology to Meet Meaningful Use Objectives: 2008-2012**

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The Health Information Technology for Economic and Clinical Health (HITECH) Act of 2009 authorized incentive payments to eligible professionals and hospitals for the adoption and meaningful use of certified electronic health record (EHR) technology (1,2). To participate in the Medicare and Medicaid EHR Incentive Programs, eligible hospitals are required to demonstrate computerized capabilities that meet defined “Meaningful Use” objectives (3,4). This brief describes trends in adoption of EHR technology to meet selected Meaningful Use objectives by non-federal acute care hospitals since 2008 and from 2011 to 2012.

**Since 2008, hospital adoption of EHR technology to meet Meaningful Use objectives has increased substantially.**

Figure 1: Percent of non-federal acute care hospitals with computerized capabilities to meet selected Meaningful Use objectives: 2008-2012

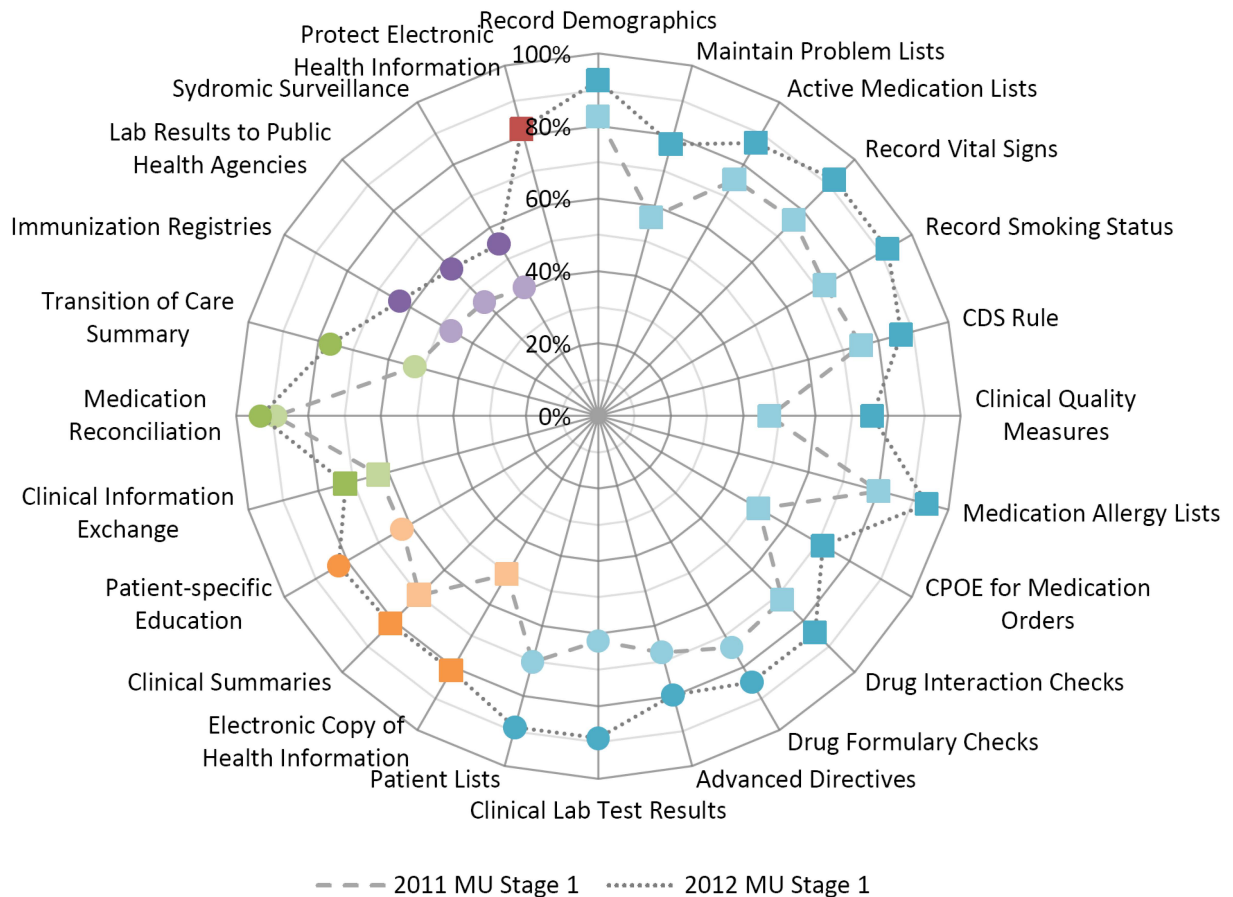


All differences are statistically significant from the previous year ( $p < 0.05$ ).  
 SOURCE: ONC/AHA, AHA Annual Survey Information Technology Supplement

- ★ From 2008 to 2012, hospitals’ capability to meet each of seven Meaningful Use objectives grew significantly, with increases ranging from 32% to 167%. (Figure 1).
- ★ Hospital adoption of CPOE for medication orders showed the highest growth between 2008 and 2012, increasing by 167%.

**From 2011 to 2012, hospitals' capability to meet Meaningful Use objectives increased significantly.**

Figure 2: Percent of non-federal acute care hospitals with capability to meet Meaningful Use objectives: 2011-2012



Squares (■) represent Stage 1 Core objectives. Circles (●) represent Stage 1 Menu objectives.  
 Blue = Objectives to improve quality, safety, and efficiency. This includes the right side of the chart (12 to 6 o'clock.) Record Demographics through Patient Lists are blue.  
 Orange = Objectives to engage patients and families, including: Patient-specific Education, Clinical Summaries and Electronic Copy of Health Information  
 Green = Objectives to improve care coordination, including: Transition of Care Summary, Medication Reconciliation, and Clinical Information Exchange.  
 Purple = Objectives to improve public and population health including: Syndromic Surveillance, Lab Results to Public Health Agencies; and Immunization Registries.  
 Red = Objective to ensure privacy and security for personal health information, including: Protect Electronic Health Information NOTE: All differences are statistically significant from the previous year (p < 0.05). Estimates reported in Table 2.  
 SOURCE: ONC/AHA, AHA Annual Survey Information Technology Supplement. To meet the federal requirements for Meaningful Use and be eligible for incentive payments, a hospital must meet all 14 core measures plus 5 of 10 menu items.

★ Of the 24 Meaningful Use objectives examined, 16 objectives had adoption rates of at least 80% in 2012. (Figure 2).

Table 1: Percent of non-federal acute care hospitals with capability to meet Meaningful Use objectives: 2011-2012

Meaningful Use Measures	Meaningful Use Objective	2011	2012	% Change
<b>Stage 1 Core Measures</b>				
Medication allergy lists	Quality, safety, and efficiency	80	94	18%
Record demographics	Quality, safety, and efficiency	83	93	12%
Record smoking status	Quality, safety, and efficiency	72	92	28%
Record vital signs	Quality, safety, and efficiency	76	92	21%
Active medication lists	Quality, safety, and efficiency	75	87	16%
Clinical decision support rule	Quality, safety, and efficiency	75	87	16%
Drug interaction checks	Quality, safety, and efficiency	72	85	18%
Protect electronic health information	Privacy and security	NR	82	NR
Electronic copy of health information	Engage patients and families	50	81	62%
Clinical summaries	Engage patients and families	70	81	16%
Maintain problem lists	Quality, safety, and efficiency	57	78	37%
Clinical quality measures	Quality, safety, and efficiency	47	76	62%
Clinical information exchange	Care coordination	63	72	14%
CPOE for medication orders	Quality, safety, and efficiency	51	72	41%
<b>Stage 1 Menu Measures</b>				
Medication reconciliation	Care coordination	89	93	4%
Patient lists	Quality, safety, and efficiency	70	89	27%
Clinical lab test results	Quality, safety, and efficiency	62	89	44%
Drug formulary checks	Quality, safety, and efficiency	74	85	15%
Patient-specific education	Engage patients and families	63	83	32%
Advanced directives	Quality, safety, and efficiency	67	80	19%
Transition of care summary	Care coordination	52	77	48%
Immunization registries	Public and population health	47	63	34%
Lab results to public health agencies	Public and population health	44	57	30%
Syndromic surveillance	Public and population health	41	55	34%

NR = not reported, the 2011 estimate for Protect Electronic Health Information was not reliable.

NOTE: All differences are statistically significant from the previous year ( $p < 0.05$ ).

SOURCE: ONC/AHA, AHA Annual Survey Information Technology Supplement

- ★ In 2012, hospital adoption rates for each of the 14 Meaningful Use Stage 1 Core objectives ranged from 72% to 94%. Capabilities related to improving quality, safety and efficiency had the highest adoption rates. (Table 1).
- ★ Hospital adoption rates for 13 Meaningful Use objectives each increased by at least 20% between 2011 and 2012. Providing patients with electronic copies of their health information and clinical quality measures grew the most, each increasing by at least 60%.
- ★ Although hospitals' capability to meet Meaningful Use objectives related to improving public and population health were lower in comparison to other domains in 2012, adoption rates for these 3 capabilities each increased by at least 30% between 2011 and 2012.

## Summary

Since the passage of the HITECH Act in 2009, there has been strong growth in non-federal acute care hospital adoption of EHR technology to meet Meaningful Use objectives. Hospitals' capability to meet Meaningful Use objectives has grown significantly since 2008. Of seven objectives examined, hospitals' adoption of CPOE for medication orders increased the most, by 167%.

As of 2012, many acute care hospitals had adopted EHR technology to meet Meaningful Use objectives. Of 24 Meaningful Use objectives examined, 16 objectives had adoption rates of at least 80% in 2012. Hospital adoption rates for each of the 14 Meaningful Use Stage 1 Core objectives ranged from 72% to 94%. Capabilities related to improving quality, safety and efficiency had the highest adoption rates.

From 2011 to 2012, hospitals' capability to meet Meaningful Use objectives also grew significantly. Hospital adoption rates for 13 Meaningful Use objectives each increased by at least 20% between 2011 and 2012. The Meaningful Use Stage 1 objectives that grew the most were providing patients with electronic copy of health information and clinical quality measures. Adoption rates for each of these objectives increased by at least 60%. Hospitals' capability to meet Meaningful Use objectives related to improving public and population health also substantially grew within the last year.

These findings indicate that acute care hospitals have made considerable progress since the passage of the HITECH Act toward the goals of improving health and health care through the use of advanced health information technology.

## Definitions

Non-federal acute care hospital: Includes acute care general medical and surgical, children's general, and cancer hospitals owned by private/not-for-profit, investor-owned/for-profit, or state/local government and located within the 50 states and District of Columbia. The inclusion of children's general and cancer hospitals makes this definition different from previous peer-reviewed research (5). However, it is more consistent with the population of hospitals eligible for federal health IT Meaningful Use incentives.

Electronic health record (EHR) technology: The Medicare and Medicaid EHR Incentive Programs provide incentive payments to physicians that demonstrate the meaningful use of certified EHR technology (1). EHR technology may comprise a complete EHR system and/or modules with computerized capabilities to meet specific Meaningful Use objectives.

Meaningful Use Objectives: Consist of 14 core objectives and 10 menu objectives. All 14 core objectives must be met in order for a hospital to attest to Meaningful Use (some hospitals may claim exclusions for some objectives). In addition, a hospital must select 5 out of 10 menu objectives, with at least one being a public health measure (exclusions may also be applicable)(1). See [table 2](#) for a description of each hospital Meaningful Use objective.

## Data Source and Methods

Data are from the American Hospital Association (AHA) Information Technology (IT) Supplement to the AHA Annual Survey. Since 2008, ONC has partnered with the AHA to measure the adoption and use of health IT in U.S. hospitals. ONC funded the 2012 AHA IT Supplement to track hospital adoption and use of EHRs and the exchange of clinical data.

The chief executive officer of each U.S. hospital was invited to participate in the survey regardless of AHA membership status. The person most knowledgeable about the hospital's health IT (typically the chief information officer) was requested to provide the information via a mail survey or secure online site. Non-respondents received follow-up mailings and phone calls to encourage response. The survey was fielded from October 2012 to the end of January 2013.

The response rate for non-federal acute care hospitals was 63%. A logistic regression model was used to predict the propensity of survey response as a function of hospital characteristics, including size, ownership, teaching status, system membership, availability of a cardiac intensive care unit, urban status, and region. Hospital-level weights were derived by the inverse of the predicted propensity.

Meaningful Use measures were derived using similar methods as Jha, et al. (6). For those measures where only implementation data was available, this analysis considered full implementation in at least one unit as having capability.

Table 2. Meaningful Use objectives and corresponding AHA survey items

Meaningful Use Objectives	Corresponding AHA survey item on specific computerized capabilities
<b>Stage 1 Core Objectives</b>	
Medication allergy lists	Record and maintain medication allergy lists
Record demographics	Record patient gender, date of birth, race, ethnicity, and preferred language for communication with providers of care
Record smoking status	Record smoking status using a standard format
Record vital signs	Vital signs (height, weight, blood pressure, BMI, growth charts)
Active medication lists	Implement medication lists in at least one unit
Clinical decision support rule	Implement clinical guidelines, clinical reminders, drug allergy alerts, drug-drug interaction alerts, or drug dosing support in at least one unit
Drug interaction checks	Implement drug allergy alerts and drug-drug interactions in at least one unit
Protect electronic health information	Conduct or review a security risk analysis and implement security updates as necessary
Electronic copy of health information	Provide patients an electronic copy of their record within 3 business days
Clinical summaries	Implement discharge summaries in at least one unit
Maintain problem lists	Implement problem lists in at least one unit
Clinical quality measures	Automatically generate hospital-specific meaningful use quality measures by extracting data from an electronic record without additional manual processes
Clinical information exchange	Electronically exchange key clinical information with providers
CPOE for medication orders	Implement CPOE for medication orders in at least one unit
<b>Stage 1 Menu/Stage 2 Objectives</b>	
Medication reconciliation	Compare a patient's inpatient and preadmission medication lists, provide an updated medication list at time of discharge, and check inpatient prescription against an internal formulary
Patient lists	Generate lists of patients by condition
Clinical lab test results	Incorporate as structured data lab results for more than 40% of patient admitted to inpatient or emergency services
Drug formulary checks	Check inpatient prescription against an internal formulary
Patient-specific education	Generating lists of patients with particular health conditions
Advanced directives	Implement advanced directives in at least one unit
Transition of care summary	Generate summary of care record for relevant transitions of care
Immunization registries	Submit electronic data to immunization registries or immunization information system per MU standards
Lab results to public health agencies	Submit electronic data on reportable lab results to public health agencies per MU standards
Syndromic surveillance	Submit electronic syndromic surveillance data to public health agencies per MU standards

NOTE: The table includes only Meaningful Use objectives for which survey data were available. Comprehensive information on the full set of Meaningful Use objectives for Stages 1 and 2 are reported elsewhere (3,4).

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## About the Authors

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