Electronic Capabilities for Patient Engagement among U.S. Non-Federal Acute Care Hospitals: 2012-2015

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Providing patients with the ability to engage with their health care provider electronically can lead to better communication, care, and outcomes for patients as well as lower costs (1). Federal programs, plans, and tools are available to guide health care clinicians and patients toward greater patient engagement (2) (3). The Shared Nationwide Interoperability Roadmap calls on health care providers to enable patients to electronically view, download, and transmit their health information to a destination of the patient's choice (4). The Medicare and Medicaid Electronic Health Record (EHR) Incentive Programs required participating hospitals and health care professionals to enable patients with online access to view, download, and transmit their health information (5). This brief describes trends in hospitals' capability to engage patients with their health information electronically from 2012 to 2015.

HIGHLIGHTS

- Since 2013, there has been a significant increase in the percent of hospitals that provide patients the ability to electronically view, download, and transmit their health information.
- As of 2015, disparities exist in the adoption of view, download, and transmit functionalities between large hospitals and other types of hospitals (e.g., medium, small and Critical Access Hospitals).
- The number and variety of patient engagement functionalities offered by hospitals continued to increase significantly in 2015.

The percent of hospitals that enable patients to electronically view, download, and transmit their health information grew almost 7-fold between 2013 and 2015.

Figure 1: Percent of non-federal acute care hospitals that provide patients with the capability to electronically view, download, and transmit their health information, 2012-2015.
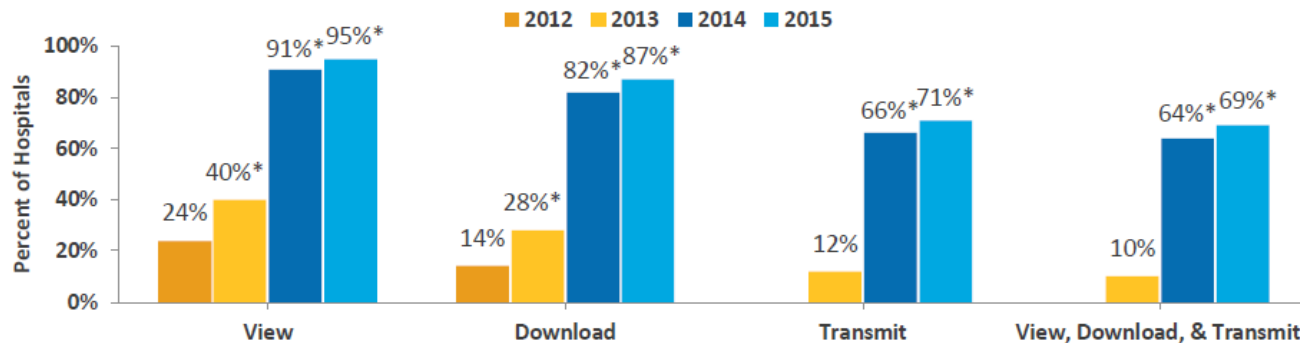

SOURCE: ONC/American Hospital Association (AHA), AHA Annual Survey Information Technology Supplement: 2012 – 2015.
NOTE: *Significantly different from previous year (p < 0.05). Data regarding "Transmit" and "View, Download, and Transmit" were not collected in 2012.

★ In 2015, 7 out of 10 (69%) hospitals provided their patients with the ability to view, download, and transmit their health information electronically.

Critical Access, medium, and small hospitals lag behind large hospitals in possessing electronic view, download, and transmit capabilities for their patients.

Figure 2: Percent of non-federal acute care hospitals that provide their patients with the ability to electronically view, download, and transmit their health information by hospital type, 2015.
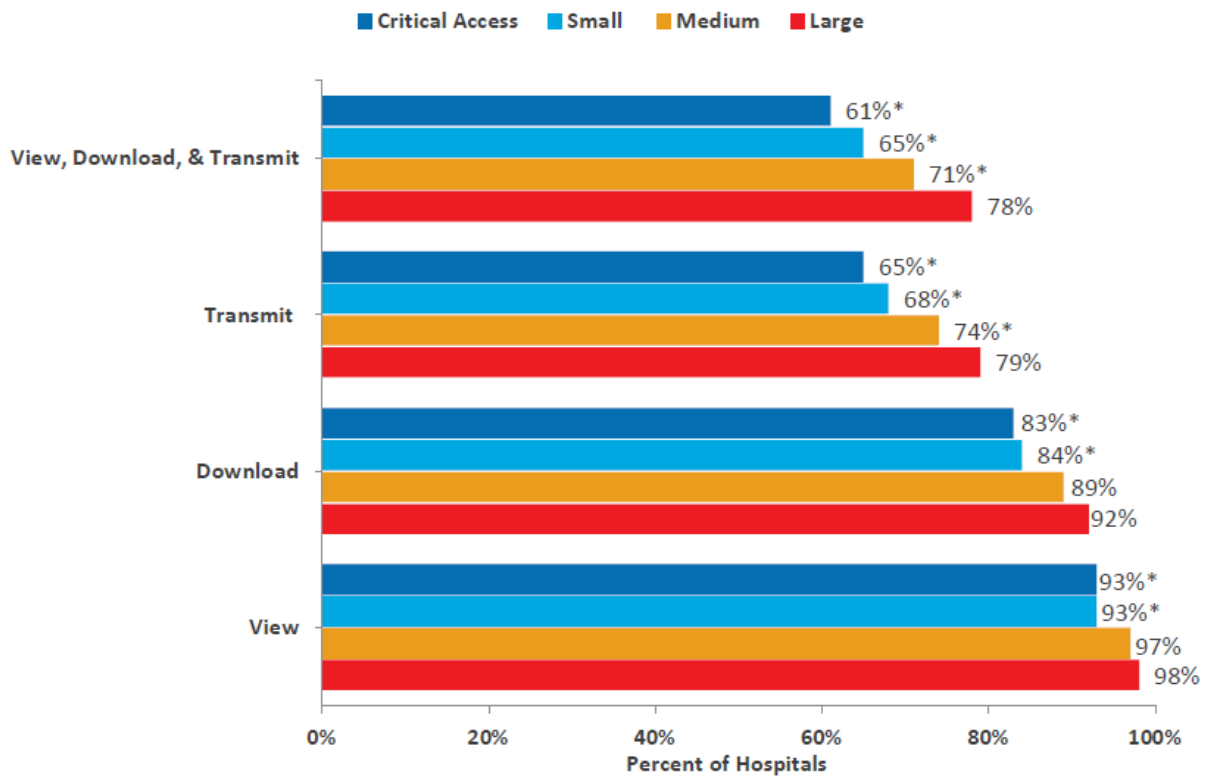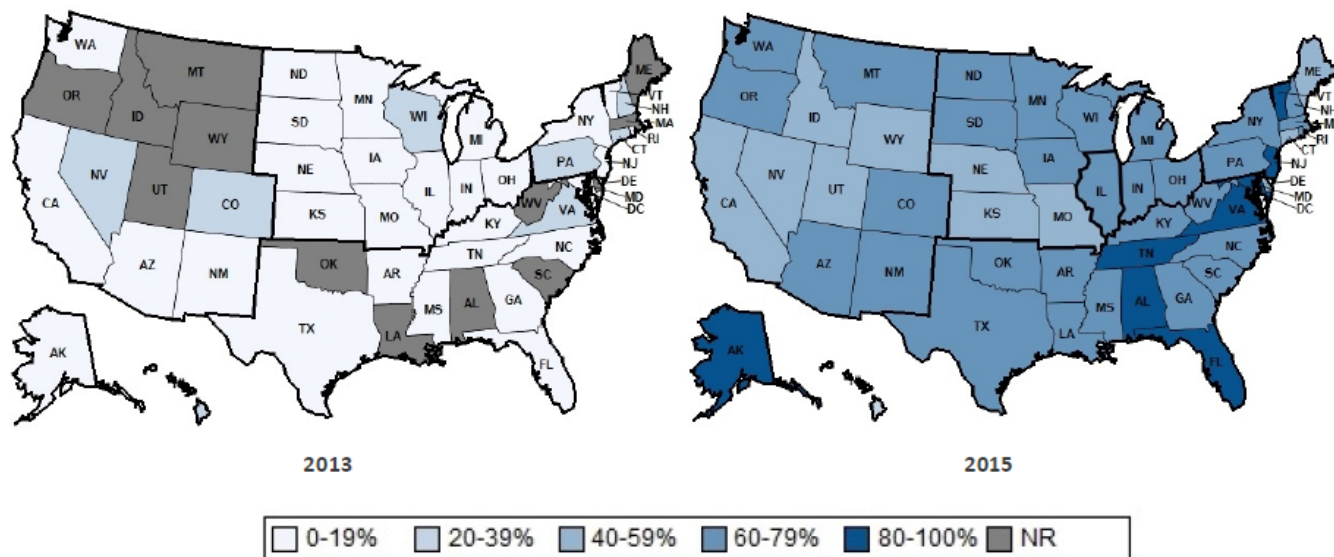

SOURCE: ONC/AHA, AHA Annual Survey Information Technology Supplement: 2015.
NOTES: *Significantly different from large hospitals (p < 0.05). Hospital size is based on the number of beds: large=400 or more; medium=between 399 and 100; and small=less than 100. Critical Access is a special designation for certain small hospitals by the CMS.

★ Large and medium hospitals provide patients with the capability to electronically view and download health information at significantly higher rates than small hospitals and Critical Access Hospitals (CAHs).

★ The capability to view electronic health information was the most prevalent among each hospital type. In contrast, hospitals were least likely to offer the capability to electronically transmit health information.

Since 2013, the number of states where a majority of hospitals possess view, download, and transmit capabilities dramatically increased.

Figure 3: State percent of non-federal acute care hospitals with the capability for their patients to view, download, and transmit their health information, 2013 and 2015.

2013   2015

0-19%   20-39%   40-59%   60-79%   80-100%   NR

SOURCE: ONC/AHA, AHA Annual Survey Information Technology Supplement: 2013-2015.
NOTES: Estimates for states shaded gray did not meet the standards for reliability (NR=not reliable). See the Table A for a complete list of this measure by each state for years 2013 and 2015.

★ By 2015, all states had 40% or more of their hospitals with the electronic capability for patients to view, download, and transmit; whereas, in 2013 no states had 40% or more of their hospitals with view, download, and transmit capabilities.

★ In 2015, nine states had 80% or more of their hospitals that possessed view, download, and transmit capabilities. Of those nine states, six states (Alaska, Florida, Maryland, New Jersey, Tennessee, and Vermont) had less than 20% in 2013.

The percent of hospitals offering additional types of patient engagement capabilities increased significantly between 2014 and 2015.

Figure 4: Electronic capabilities offered by non-federal acute care hospitals to their patients (excluding view, download, and transmit), 2013-2015.
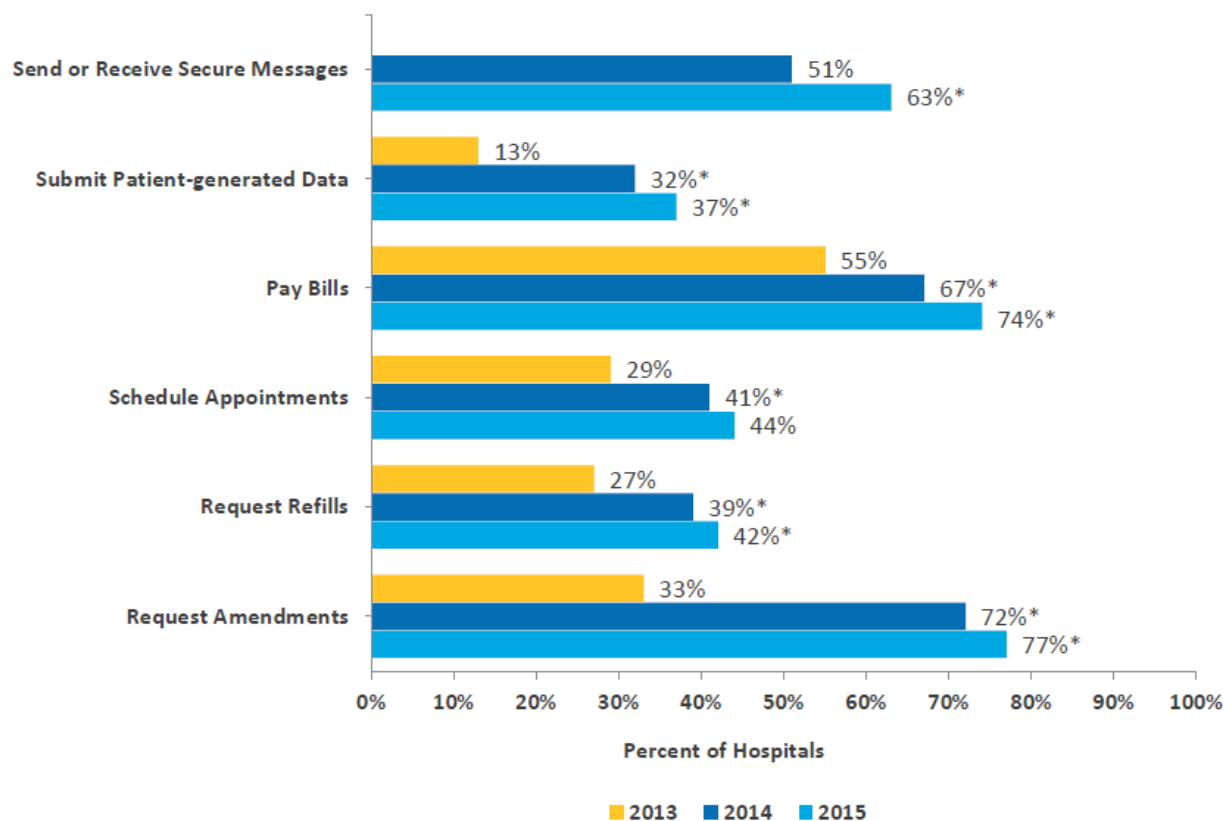
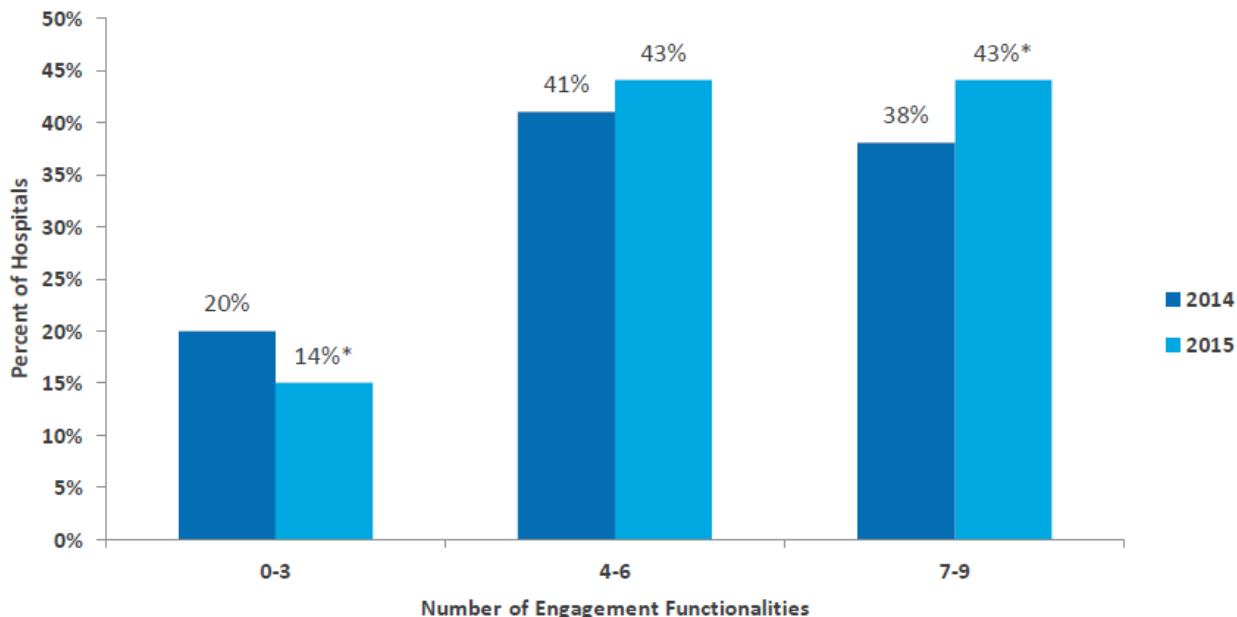SOURCE: ONC/AHA, AHA Annual Survey Information Technology Supplements: 2013-2015.
NOTES: Questions regarding secure messaging were not asked in 2013.
*Significantly different from previous year (p < 0.05).

★ In 2015, more than three quarters of hospitals (77%) enabled patients to request an amendment to their health data, and offered patients the ability to electronically pay their bills (74%).

★ Over one-third of hospitals (37%) enabled patients to submit patient-generated data in 2015; this has grown almost 3-fold since 2013.

★ In 2015, 4 out of 10 hospitals allowed patients to request prescription refills (42%), schedule appointments online (44%), or submit their data electronically (37%).

★ Between 2014 and 2015, the percent of hospitals offering patients the ability to electronically send or receive secure messages increased by almost one-quarter (24%).

Nine in ten hospitals possess four or more electronic patient engagement capabilities.

Figure 5: Number of patient engagement capabilities adopted by non-federal acute care hospitals, 2014-2015.

SOURCE: ONC/AHA, AHA Annual Survey Information Technology Supplement: 2015.
NOTES: Patient engagement activities include: view, download, transmit, request amend, request refill, schedule appointment, pay bills, submit patient data, and send secure messages.
*Significantly different from previous year (p < 0.05).

★ The percent of hospitals adopting 7 to 9 patient engagement functionalities increased significantly between 2014 and 2015, by 5 percentage points.

★ In 2015, the percent of hospitals that provided 0 to 3 electronic patient engagement functionalities decreased significantly, by 6 percentage points.

Summary

Hospitals significantly increased their adoption of key patient engagement functionalities between 2012 and 2015. There was a seven-fold increase in the percent of hospitals that provided patients with the capability to electronically view, download, and transmit their health information from 2013 to 2015. The tremendous growth in hospitals' adoption of view, download, and transmit capabilities in a relatively short period of time points to the potential impact of the Medicare and Medicaid EHR Incentive Programs, and specifically to the measures related to view, download, and transmit that were required for Stage 2 of the program. In 2015, almost all hospitals (95%) offered patients the ability to electronically view their health information. Almost 9 in 10 hospitals enabled patients to download their health information. A lower percentage of hospitals—about 7 in 10—offered patients the ability to electronically transmit their health information. However, this capability also grew significantly between 2014 and 2015. The potential impact of the Medicare and Medicaid EHR Incentive Programs is also demonstrated through significant increases in hospitals' adoption of other program requirements; such as the ability of patients to electronically send or receive secure messages from their health care provider.

There is evidence of both growth and variation in hospital adoption of view, download, and transmit capabilities. In 2013, no states had 40% or more of their hospitals with these three electronic capabilities; whereas by 2015, all states had 40% or more of their hospitals with these three capabilities. Hospitals' adoption of view, download, and transmit capabilities varies by type of hospital. Large hospitals provide view, download, and transmit capabilities to patients at higher rates compared to CAHs and medium to small size hospitals. Almost 8 in 10 large hospitals have all 3 capabilities while only about 6 in 10 CAHs have all 3 capabilities.

Overall, hospitals have increased their adoption of other patient engagement functionalities. In 2015, there was a significant decrease in the percent of hospitals adopting 3 or less patient engagement functionalities while there was a corresponding significant increase in hospitals adopting 7 or more of these functionalities. However, certain "convenience" functions that enable patients to schedule appointments or refill their medications electronically lagged behind in adoption compared to those that relate to the Medicare and Medicaid EHR Incentive Programs, Health Insurance Portability and Accountability Act (HIPAA) regulations, or billing. For example, only about 4 in 10 hospitals offer patients the ability to schedule appointments or refill medications in contrast to about 3 in 4 hospitals that enable patients to electronically request amendments to their medical record or pay their bills online.

Overall, the data indicate that the adoption of patient engagement functionalities has been increasing nationwide. However, disparities exist in hospitals' adoption of such functionalities. The Office of the National Coordinator for Health Information Technology (ONC) has prioritized changing the culture around patients' access to electronic health information to advance person-centered and self-managed care (6). ONC's efforts, such as new requirements for application programming interfaces (APIs) under the ONC Health IT Certification Program and the Blue Button Initiative, are designed to foster patient engagement and access to health information by providing novel avenues for reaching patients. APIs, for example, will allow patients to access their health information in user-friendly ways, such as through "apps" on their mobile devices. Moreover, APIs can be applied to different technology platforms and are not limited to personal computers; thus, providing additional means of reaching patients that might not have access to computers. Future research that investigates divergent trends in hospital adoption of patient engagement functionalities will provide important insights on how to ensure that all patients have access to their health information and are actively engaged with their health care provider.

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.

Interoperability: The ability of a system to exchange electronic health information with and use electronic health information from other systems without special effort on the part of the user (2). This brief further specifies interoperability as the ability for health systems to electronically send, receive, find, and use health information with other electronic systems outside their organization.

Small hospital: Non-federal acute care hospitals of bed sizes of 100 or less

Large hospital: Non-federal acute care hospitals of bed sizes of 400 or more

Rural hospital: Located in a non-metropolitan statistical area.

Critical Access Hospital: Less than 25 beds and at least 35 miles away from another general or Critical Access Hospital.

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 2015 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 2015 to the end of February 2016. The response rate for non-federal acute care hospitals was 56%. 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, and availability of a cardiac intensive care unit, urban status, and region. Hospital-level weights were derived by the inverse of the predicted propensity.

Estimates considered unreliable had a relative standard error adjusted for finite populations greater than 0.49. Responses with missing values were assigned zero values. Significant differences were tested using $p < 0.05$ as the threshold.

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Appendix

Appendix Table A: Percent of non-federal acute care hospitals that provide electronic capability to view, download, and transmit heath information by U.S. state, 2013 and 2015.

State	2013 View, Download, and Transmit, %	n (N)	2015 View, Download, and Transmit, %	n (N)
United States	10%	2655(4472)	69%	2787(4400)
Alabama	NR	31(90)	89%	35(87)
Alaska	0%	6(19)	89%	9(20)
Arizona	7%	39(60)	60%	25(60)
Arkansas	10%	38(71%)	76%	35(69)
California	6%	170(328)	54%	198(320)
Colorado	29%	48(71)	73%	46(72)
Connecticut	24%	17(29)	42%	21(28)
Delaware	NR	4(6)	50%	6(6)
District of Columbia	NR	6(8)	82%	6(8)
Florida	11%	96(184)	82%	118(182)
Georgia	14%	58(134)	74%	70(129)
Hawaii	31%	12(20)	29%	7(22)
Idaho	NR	20(38)	54%	18(38)
Illinois	12%	141(178)	69%	129(177)
Indiana	11%	63(107)	71%	61(105)
Iowa	8%	75(117)	69%	95(117)
Kansas	6%	97(125)	57%	99(125)
Kentucky	6%	63(97)	70%	46(94)
Louisiana	NR	44(100)	66%	58(99)
Maine	NR	22(36)	49%	22(34)
Maryland	15%	31(45)	84%	34(45)
Massachusetts	NR	40(62)	76%	32(60)
Michigan	15%	74(128)	71%	76(128)
Minnesota	14%	127(129)	73%	124(128)

State	2013 View, Download, and Transmit, %	n (N)	2015 View, Download, and Transmit, %	n (N)
Mississippi	**17%**	**33(90)**	**76%**	**27(88)**
Missouri	3%	111(112)	54%	109(110)
Montana	NR	28(54)	63%	36(53)
Nebraska	4%	49(84)	55%	52(85)
Nevada	26%	11(29)	54%	12(29)
New Hampshire	33%	12(26)	71%	18(26)
New Jersey	17%	45(64)	83%	42(62)
New Mexico	0%	17(31)	69%	20(32)
New York	7%	115(171)	64%	119(167)
North Carolina	16%	55(108)	73%	73(105)
North Dakota	0%	14(42)	79%	20(41)
Ohio	19%	106(158)	79%	111(152)
Oklahoma	NR	57(107)	78%	42(104)
Oregon	NR	27(59)	65%	42(59)
Pennsylvania	22%	114(154)	69%	101(153)
Rhode Island	0%	8(10)	70%	7(10)
South Carolina	NR	19(58)	63%	32(60)
South Dakota	0%	23(50)	69%	27(49)
Tennessee	9%	48(115)	83%	51(109)
Texas	4%	199(343)	70%	203(331)
Utah	NR	22(44)	57%	25(44)
Vermont	0%	6(14)	83%	6(14)
Virginia	26%	42(81)	87%	53(80)
Washington	11%	36(88)	77%	50(90)
West Virginia	NR	28(49)	60%	30(48)
Wisconsin	21%	93(125)	64%	95(123)
Wyoming	NR	15(24)	57%	14(23)

NOTES: n=survey respondents; N=hospitals surveyed. NR=estimate does not meet standards for reliability (not reliable).
SOURCE: ONC/AHA, AHA Annual Survey Information Technology Supplement: 2013-2015.

Appendix Table B: Survey questions assessing hospitals' patient engagement activity.

Are patients treated in your hospital able to do the following:			
Activity	Yes	No	Do Not Know
View their health/medical information online	☐	☐	☐
Download information from their health/medical record	☐	☐	☐
Electronically transmit (send) transmission of care/referral summaries to a third party	☐	☐	☐
Request an amendment to change/update their health/medical record	☐	☐	☐
Request refills for prescriptions online	☐	☐	☐
Schedule appointments online	☐	☐	☐
Pay bills online	☐	☐	☐
Submit patient-generated data (e.g., blood glucose, weight)	☐	☐	☐
Secure messaging with providers	☐	☐	☐