

Interoperability among U.S. Non-federal Acute Care Hospitals in 2015

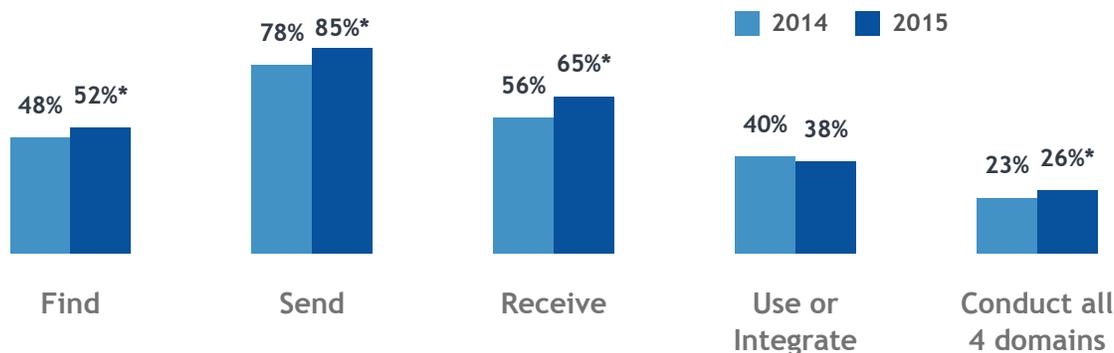
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Interoperability of health information is a national priority. In the Medicare Access and CHIP Reauthorization Act of 2015 (MACRA), Congress declared it a national objective to achieve widespread exchange of health information through interoperable certified electronic health record (EHR) technology nationwide by December 31, 2018 (1). The *Connecting Health and Care for the Nation: A Shared Nationwide Interoperability Roadmap* (Roadmap) described the policy and technical actions needed to enable nationwide interoperability. It also identified four key domains of interoperability as electronically sending, receiving, finding, and integrating or using key clinical information (2). This brief presents the most recent estimates on the state of interoperable exchange activity among U.S. non-federal acute care hospitals, including whether hospitals have key patient information electronically available from sources outside their system; whether this information is subsequently used for clinical decisions; and barriers to the exchange and use of that information.

The percent of hospitals electronically sending, receiving, and finding key clinical information grew significantly between 2014 and 2015

Figure 1: Percent of U.S. non-federal acute care hospitals that electronically find patient health information, and send, receive, and use patient summary of care records from sources outside their health system, 2014-2015



NOTE: See the [Appendix Table<#appendix>](#) for more definitions of find, send, receive and use/integrate.

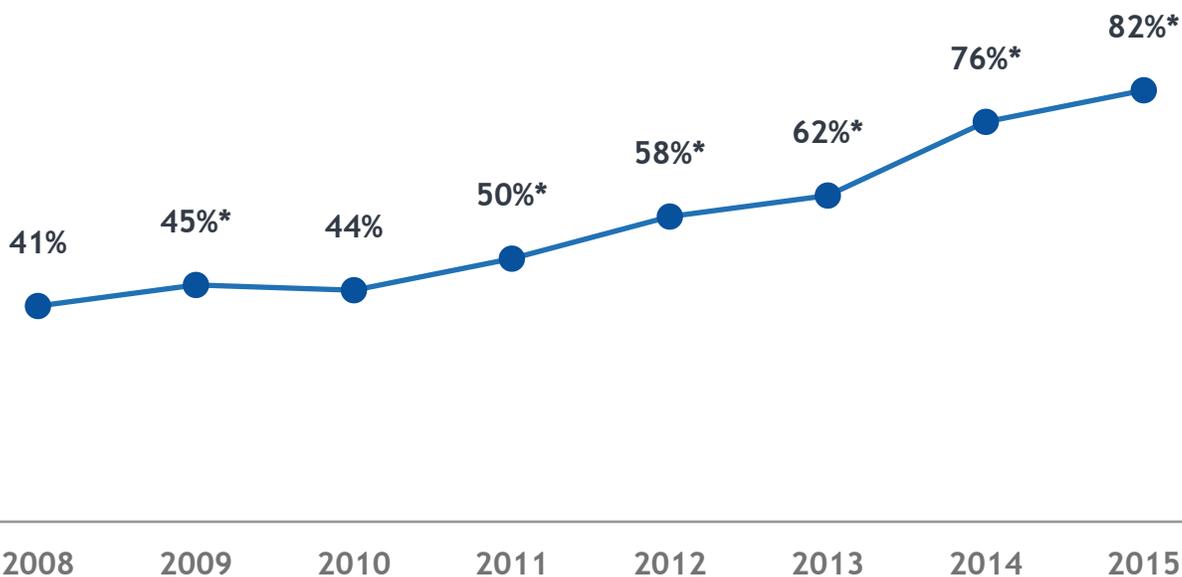
*Significantly different from previous year ($p < 0.05$).

SOURCE: ONC/American Hospital Association (AHA), AHA Annual Survey Information Technology Supplement

- There were significant increases across 3 out of the 4 domains comprising interoperability, including rates of hospitals conducting all 4 domains.
- Rates of integrating information did not significantly change between 2014 and 2015; about 4 in 10 hospitals had the capability to integrate data into their EHRs without manual entry.

The percent of non-federal acute care hospitals that exchanged key types of information significantly increased

Figure 2: The percent of non-federal acute care hospitals that electronically exchanged laboratory results, radiology reports, clinical care summaries, or medication lists with ambulatory care providers or hospitals outside their organization, 2008-2015



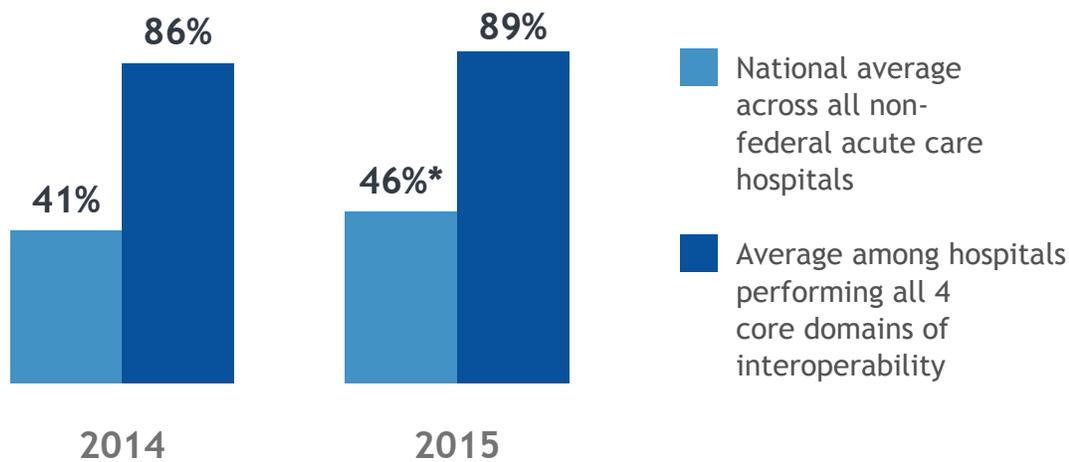
NOTE: *Significantly different from previous year ($p < 0.05$). Exchange was assessed using survey questions asking respondents whether their hospital electronically exchanged or shared the following four types of clinical information: radiology reports, laboratory results, clinical care summaries, and medication lists

SOURCE: ONC/American Hospital Association (AHA), AHA Annual Survey Information Technology Supplement

- Hospitals' rates of electronically exchanging laboratory results, radiology reports, clinical care summaries, or medication lists with ambulatory care providers or hospitals outside their organization doubled since 2008, when 41 percent of all hospital electronically exchanged health information with outside providers.
- Hospitals' rates of electronically exchanging laboratory results, radiology reports, clinical care summaries, or medication lists with ambulatory care providers or hospitals outside their organization have significantly increased annually since 2011.

About half of hospitals had necessary patient information electronically available from providers or sources outside their systems at the point of care

Figure 3: Percent of U.S. non-federal acute care hospitals whose providers have electronically available necessary clinical information from outside providers or sources across all non-federal acute care hospitals and those that engaged in all 4 core domains of interoperability, 2014-2015



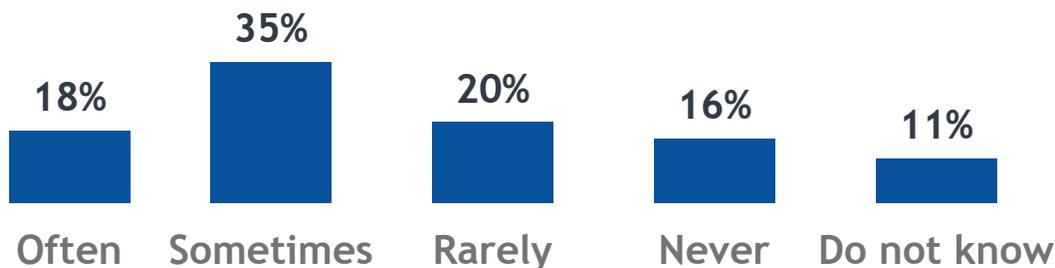
NOTE: Four core domains of interoperability consist of find, send, receive, and integrate or use. *Significantly different from previous year ($p < 0.05$)

SOURCE: ONC/American Hospital Association (AHA), AHA Annual Survey Information Technology Supplement

- The proportion of hospitals that reported necessary clinical information was electronically available from outside sources or providers grew significantly between 2014 and 2015.
- In 2015, about 9 out of 10 hospitals that engaged in all 4 core domains of interoperability had necessary clinical information from outside sources or providers available at the point of care.
- In both 2014 and 2015, hospitals that conducted all four domains related to interoperable exchange were about twice as likely to have necessary clinical information electronically available from outside providers or sources at the point of care as the national average.

About half of hospitals reported their providers used patient health information received electronically from outside providers when treating their patients

Figure 4: Percent of U.S. non-federal acute care hospitals that report their providers use patient health information received electronically from providers or sources outside their health system when treating their patients, 2015



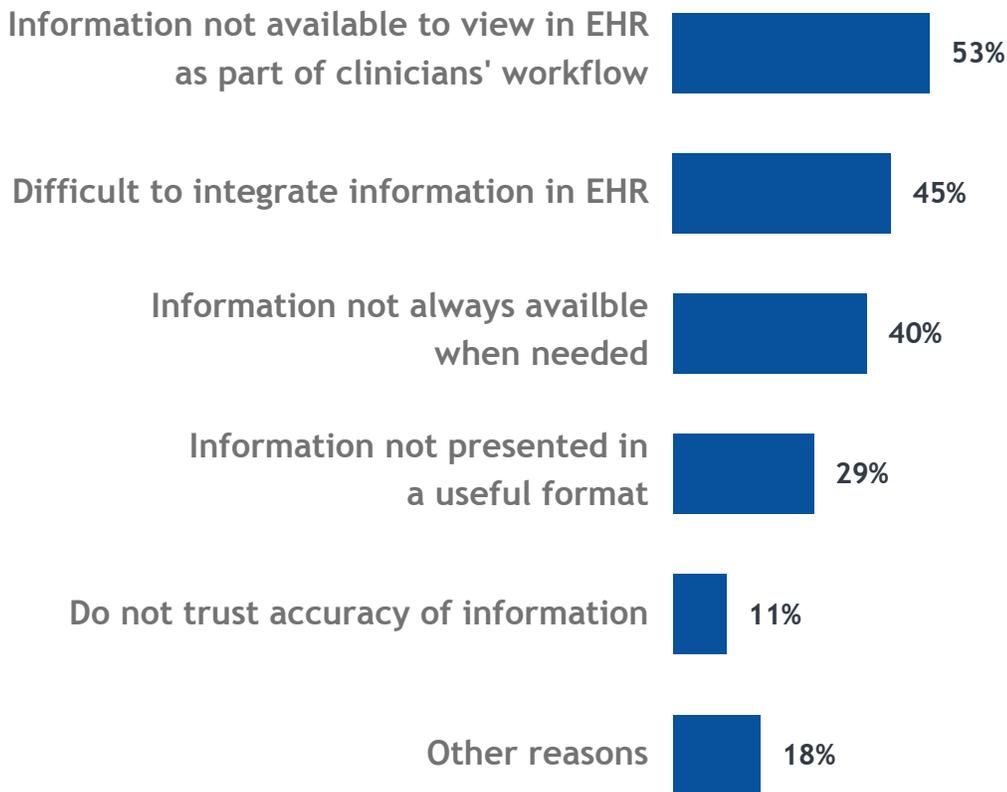
SOURCE: ONC/American Hospital Association (AHA), AHA Annual Survey Information Technology Supplement

- About one-third of hospitals (36%) reported their providers rarely or never use patient health information received electronically from outside their hospital system when treating their patients.

- Less than one-fifth of hospitals reported their providers often use patient health information received electronically from outside their hospital system when treating their patients.
- About one-third of hospitals reported their providers sometimes use patient health information received electronically from outside their hospital system when treating their patients.

The most common reason for not using patient health information received electronically from outside providers is that the information is not available to view within the EHR

Figure 5: Reasons for rarely or never using patient health information received electronically from providers or sources outside their health system when treating their patients as reported by U.S. non-federal acute care hospitals, 2015



NOTES: See the [Appendix Table<#appendix>](#) for more details regarding the survey items.

SOURCE: ONC/American Hospital Association (AHA), AHA Annual Survey Information Technology Supplement

- Among hospitals that rarely or never used patient health information electronically received from outside their hospital system, 45% indicated that they experienced difficulty integrating the information in the EHR and 40% indicated the information was not always available when needed.
- Not trusting accuracy of information was the least common reason for hospitals not using information electronically received from outside their hospital system when treating their patients.

Lack of exchange partners' capabilities to receive data remained the most frequently identified barrier to interoperability

Table 1: Percent of U.S. non-federal acute care hospitals that experienced the issues when trying to electronically send, receive, or find health information to/from other care settings or organizations, 2014-2015

Type of barrier	Barrier
Technical	Exchange partners' EHR system lacks capability to receive data
Technical	Exchange partners' lack EHR or other system to receive data
Technical	Difficult to find providers' addresses
Technical	Experience greater challenges exchanging across different vendor platforms.
Technical	Difficult to match or identify patients
Operational	Cumbersome workflow to send from EHR system
Operational	Many recipients of care summaries report that the information is not useful
Financial	Additional costs to exchange with outside providers or settings
Technical	Lack capability to electronically receive data from outside sources
Technical	Lack capability to electronically send data to outside sources
Operational	Don't typically share patient data with outside providers

NOTES: See the [Appendix Table<#appendix>](#) for more details regarding the survey items. *Significantly different from previous year ($p < 0.05$). NA or not applicable because item was not asked in 2014.

SOURCE: ONC/American Hospital Association (AHA), AHA Annual Survey Information Technology Supplement

- About half (46%) of hospitals reported experiencing greater challenges exchanging data across different vendor platforms and difficulty finding providers' addresses (49%) in 2015.
- Between 2014 and 2015, the percent of hospitals reporting difficulty with patient matching significantly increased by nine percentage points, higher than any other barrier.
- In 2015, significantly fewer hospitals reported exchange partners' lacking EHR systems or systems without the capability to receive data as barriers to interoperable exchange.
- About 3 in 10 hospitals reported that recipients of summary of care records they send were of limited utility.
- Significantly fewer hospitals reported lacking the capability to send or receive data, or not typically sharing patient health information with outside providers.

Summary

National rates of hospitals' electronically sending, receiving and finding information to and from providers or sources outside their hospital system significantly increased between 2014 and 2015. A substantial majority of hospitals were electronically sending and receiving summary of care records, and a little over half of hospitals were electronically finding information from outside sources. The percent of non-federal acute care hospitals that exchanged key types of

information also significantly increased. However, the number of hospitals integrating data from outside sources without manual entry did not significantly change between 2014 and 2015. More hospitals reported that they had health information available electronically from outside sources at the point of care. About half of non-federal acute care hospitals nationwide had the necessary clinical information available electronically from outside providers or sources when treating their patients.

About one-quarter of hospitals engaged in all 4 core domains of interoperability in 2015; this increased by a few percentage points since 2014. Findings from both 2014 and 2015 demonstrate the benefits of engaging in all four core domains of interoperability. Hospitals that engaged in all four core interoperability domains had necessary patient information electronically available from outside sources and providers, about twice the national average.

The percent of hospitals reporting they did not possess the technical capability to electronically send or receive information significantly decreased. This aligns with the significant increases in the percent of hospitals engaged in sending summary of care records electronically. However, a high proportion of hospitals' exchange partners continue to lack the technical capabilities to receive data electronically. There was also a significant increase in the percent of hospitals having difficulties with patient matching, higher than other barriers reported by hospitals. The Roadmap seeks to address this issue (2).

Overall, about half of hospitals reported that their providers often or sometimes used information electronically received from outside their hospital system when treating their patients. About one-third rarely or never used such information. The most common reason for not using such information related to the inability to access the information from within their EHR, whether that was due to clinical workflow or inability to integrate data from outside sources into their EHR.

Continued increases in the interoperable exchange and use of health information from outside sources along with the availability of information are important to the success of care transformation efforts nationwide, which will likely expand with the implementation of the MACRA (3, 4). However, there is still significant progress to be made to improve the use of exchanged information and to address barriers to interoperability.

Definitions

Non-federal acute care hospital: Includes acute care general medical and surgical, general children's, 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.

Integrate: Whether the EHR integrates summary of care record received electronically (not eFax) from providers or sources outside your hospital system/organization without the need for manual entry.

Find: Whether providers at your hospital query electronically for patients' health information (e.g., medications, outside encounters) from sources outside of your organization or hospital

system.

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 56.15%. 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.

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.

References

1. See Section 106(b)(1) of the Medicare Access and CHIP Reauthorization Act of 2015 (MACRA) (Pub. L. No. 114 - 10, enacted April 16, 2015). <https://www.gpo.gov/fdsys/pkg/PLAW-114publ10/html/PLAW-114publ10.htm><<https://www.gpo.gov/fdsys/pkg/PLAW-114publ10/html/PLAW-114publ10.htm>>.
2. 'Connecting Health and Care for the Nation: A Shared Nationwide Interoperability Roadmap version 1.0,' Office of the National Coordinator for Health Information Technology. Available at <https://www.healthit.gov/policy-researchers-implementers/interoperability><<https://www.healthit.gov/policy-researchers-implementers/interoperability>>.
3. Burwell SM. Setting value-based payment goals--HHS efforts to improve U.S. health care. *N Engl J Med.* 2015 Mar 5;372(10):897-9.
4. Medicare Access and CHIP Reauthorization Act of 2015 (MACRA). (Pub. L. No. 114 - 10, enacted April 16, 2015). <https://www.gpo.gov/fdsys/pkg/PLAW-114publ10/html/PLAW-114publ10.htm><<https://www.gpo.gov/fdsys/pkg/PLAW-114publ10/html/PLAW-114publ10.htm>>.

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Appendix

Appendix Table: Survey questions assessing interoperability among hospitals

Survey Question	Response Options
When a patient transitions to or from another care setting or organization, does your hospital routinely electronically send and/or receive (NOT eFax) a summary of care record in a structured format (e.g. CCDA) with the following providers? Check all that apply.	Send Receive Don't Know <ul style="list-style-type: none"> · Other Hospitals outside your system · Ambulatory Care Providers outside your system · Long-term Care Providers (inside or outside system) · Long-term Care Providers (inside or outside system)
Does your EHR integrate any type of clinical information received electronically (not eFax) from providers or sources outside your hospital system/organization without the need for manual entry? This could be done using software to convert scanned documents into indexed, discrete data that can be integrated into EHR.	<ul style="list-style-type: none"> · Yes, routinely Yes, but not routinely No Do not know
If yes, does your EHR integrate the information contained in summary of care records received electronically (not eFax) without the need for manual entry? This could be done using software to convert scanned documents into indexed, discrete data that can be integrated into EHR.	<ul style="list-style-type: none"> · Yes, routinely Yes, but not routinely No Do not know
Do providers at your hospital query electronically for patients' health information (e.g. medications, outside encounters) from sources outside of your organization or hospital system?	<ul style="list-style-type: none"> · Yes No No, don't have capability Do not know
When a patient transitions to another care setting or organization outside your hospital system, how does your hospital routinely send and/or receive a summary of care record? Check all that apply.	Send Receive Don't Know <ul style="list-style-type: none"> · Mail or fax · eFax using EHR · Secure messaging using EHR (via DIRECT or other secure) · Provider portal (i.e., post to portal or download from portal) · Via health information exchange organization or other
Do providers at your hospital routinely have necessary clinical information available electronically (not e-Fax) from outside providers or sources when treating a patient that was seen by another health care provider/setting?	<ul style="list-style-type: none"> · Yes No Do not know
How frequently do providers at your hospital use patient health information received electronically (not e-Fax) from outside providers or sources when treating a patient?	<ul style="list-style-type: none"> · Often Sometimes Rarely Never Do not know
If rarely or never used, please indicate the reason(s) data why. Check all that apply.	<ul style="list-style-type: none"> · Information not always available when needed (e.g. not available) · Do not trust accuracy of information · Difficult to integrate information in EHR · Information not available to view in EHR as part of clinical record · Information not presented in a useful format (e.g. too much or unnecessary information) · Other
	<ul style="list-style-type: none"> · We lack the capability to electronically send patient health information to other providers or other sources

Which of the following issues has your hospital experienced when trying to electronically (not eFax) send, receive or find (query) patient health information to/from other care settings or organizations? (Check all that apply)

- We lack the capability to electronically receive patient information from outside providers or other sources
- Providers we would like to electronically send patient information do not have an EHR or other electronic system with capability to receive patient information
- Providers we would like to electronically send patient information do not have an EHR; however, it often lacks the capability to receive patient information
- Many recipients of our electronic care summaries (e.g. PDFs) are not useful
- Cumbersome workflow to send (not eFax) the information
- Difficult to match or identify the correct patient between systems
- Difficult to locate the address of the provider to send information to (no provider directory)
- We have to pay additional costs to send/receive data outside our system
- We don't typically share our patient data with care settings outside our system
- Experience greater challenges exchanging information with different vendor platforms

