Electronic Health Record Adoption and Interoperability among U.S. Skilled Nursing Facilities in 2016

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The use of electronic health records (EHR) can facilitate the exchange of patient health information during transitions of care between acute-care and skilled nursing facilities. Long-term care and post-acute care (LTPAC) providers, including skilled nursing facilities (SNFs), were not eligible to participate in the Medicare and Medicaid Incentive Programs. However, LTPAC providers are increasingly reported as major exchange partners of providers that were eligible to participate in this program (1). Also, the "Connecting Health and Care for the Nation: A Shared Nationwide Interoperability Roadmap" (the Roadmap) aims to propel the adoption and use of EHRs in LTPAC settings (2). The Roadmap defines the four key domains of interoperability as electronically sending, receiving, finding, and integrating or using key clinical information from outside sources.

This brief presents key measures on EHR adoption and interoperability from a 2016 nationally representative sample of SNFs. It also describes variation in EHR adoption and interoperability by SNF characteristics and examines the extent to which these facilities have information electronically available at the point of care.

HIGHLIGHTS

- A majority (64%) of SNFs used an EHR in 2016.
- Almost one-fifth (18%) of SNFs used both an EHR and a state or regional health information organization (HIO).
- Three out of 10 SNFs electronically exchanged (i.e., sent or received) key clinical health information.
- SNFs that used an EHR and an HIO could send, receive, find, and integrate patient health information at higher rates than those facilities that used an EHR alone.
- Nearly two-thirds (62%) of SNFs had information electronically available from outside sources at the point of care.
- SNFs that used an EHR and an HIO had patient health information available from outside sources at the point of care at higher rates than those facilities that used an EHR alone.

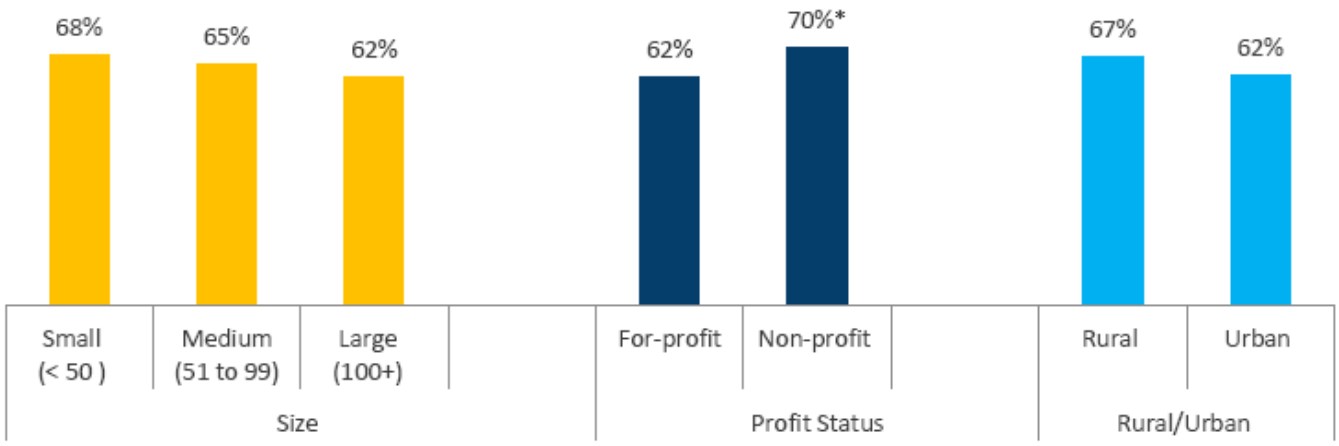
A majority of SNFs (64%) used an EHR in 2016.

Figure 1: Percent of SNFs that used an EHR, 2016

SOURCE: 2016 QuintilesIMS/SK&A Nursing Home Census- EHR Supplement, n=813. See Definitions for EHR description.

SNF rates of EHR adoption did not significantly differ by facility size or rural/urban geographic location.

Figure 2: EHR adoption rates by SNF characteristics, 2016

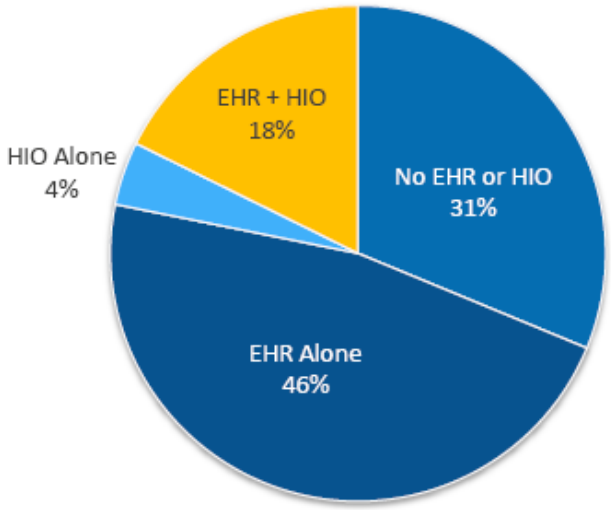


SOURCE: 2016 QuintilesIMS /SK&A Nursing Home Census- EHR Supplement, n=813
Notes: Size refers to number of licensed beds; referent category is "Small" * Difference is statistically significant at $p<0.05$.

- ★ Almost seven out of 10 (68%) small SNFs used an EHR to manage patients' health records.
- ★ More non-profit SNFs (70%) used EHRs than for-profit facilities (62%).

Almost two in 10 SNFs used both an EHR and an HIO.

Figure 3: Percent of SNFs using EHRs or HIOs, 2016

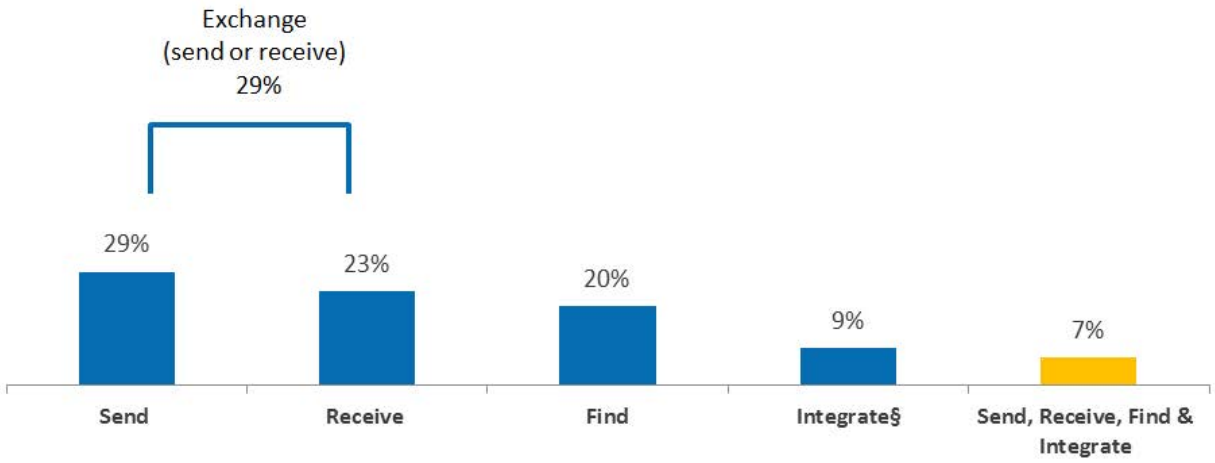


SOURCE: 2016 QuintilesIMS /SK&A Nursing Home Census- EHR supplement, n=813
Notes: See Definitions for HIO description.

- ★ One-third (31%) of SNFs did not use an EHR or an HIO.
- ★ Almost half (46%) of the SNFs used only an EHR.
- ★ Only four percent of SNFs used an HIO alone.

Three out of 10 SNFs exchanged (sent or received) patient health information with outside organizations.

Figure 4: Percent of SNFs reporting the ability to electronically send, receive, find, and integrate patient health information, 2016



SOURCE: 2016 QuintilesIMS /SK&A Nursing Home Census- EHR supplement, n=813
Notes: "Exchange" is defined as "send or receive" and does not include: fax, e-fax or MDS (Minimum Data Set) quality reporting. §See Appendix for specific question asked.

- ★ One in five SNFs found patient health information from outside their facility, for example via web portals, through remote access to another facility, or through a HIO.
- ★ Almost one in 10 (9%) SNFs reported that their staff was easily able to integrate patient health information into their EHR without manual entry or scanning.
- ★ Only seven percent of SNFs were able to simultaneously engage in the four domains of interoperability (i.e., send, receive, find, and integrate patient health information).

SNFs that used an EHR and an HIO engaged in the four domains of interoperability at substantially higher rates than SNFs that used an EHR alone.

Table 1: Interoperability domains (send, receive, find, integrate) by SNFs characteristics, 2016

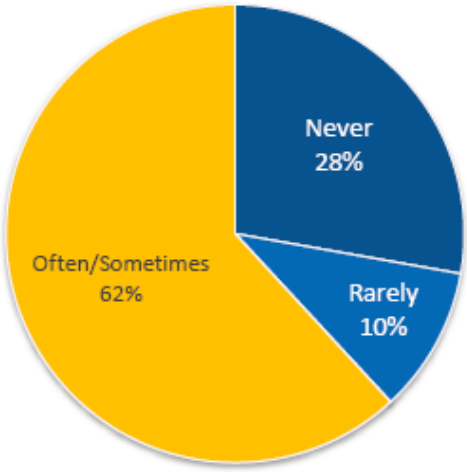
Characteristics	Number of SNFs	Send	Receive	Find	Integrate§	Exchange (Send or Receive)
Size (No. Licensed Beds)						
Small- Less than 50	128	28%	23%	24%	7%	31%
Medium- 51 to 99	283	27%	23%	19%	6%	28%
Large- 100+	402	29%	24%	19%	12%*	30%
Profit Status						
For profit	579	26%	22%	19%	8%	27%
Non-profit	224	35%*	27%	22%	12%	36%*
Rural‡/Urban						
Rural	281	30%	25%	19%	7%	31%
Urban	532	28%	23%	20%	11%*	28%
Methods of Exchange						
No EHR or HIO	249	11%	8%	2%	1%	12%
EHR Alone	374	30%*	22%*	5%	6%*	30%*
EHR + HIO	141	55%*^	50%*^	80%*^	35%*^	55%*^

SOURCE: 2016 QuintilesIMS /SK&A Nursing Home Census – EHR supplement, n=813
Notes:
Methods of Exchange: HIO Alone category omitted due to small sample size.
‡ Rural: located in a non-Metropolitan Statistical Area.
§ See Appendix for survey question.
* Difference between previous sub-category is statistically significant ($p<0.05$)
^ Difference between first and third sub-category is statistically significant ($p<0.05$)

- ★ Large SNFs were able to integrate (without manual entry or scanning) patient health information electronically received into their respective EHRs at a higher rate (12%) than medium-sized (6%) SNFs.
- ★ Non-profit SNFs exchanged key clinical information at higher rates (36%) than for-profit facilities (27%).
- ★ SNFs located in urban areas were able to integrate patient health information at a higher rate than those located in rural areas (11% vs. 7%).
- ★ SNFs using an EHR alone were able to send, receive, and integrate at higher rates than those facilities that did not use an HIO or an EHR.

Over half (62%) of SNFs had clinical information from outside encounters electronically available at the point of care.

Figure 5: Frequency with which SNFs reported having clinical information from outside encounters electronically available at the point of care, 2016

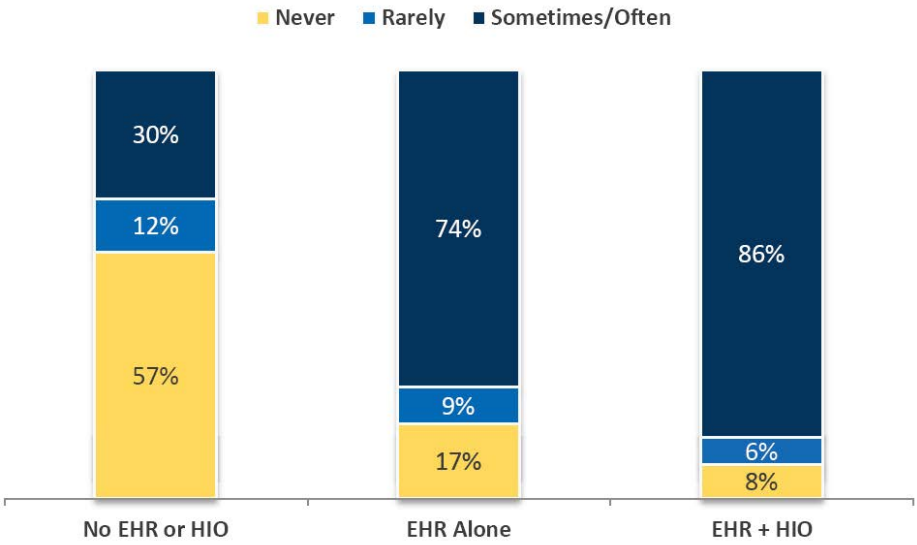


SOURCE: 2016 QuintilesIMS /SK&A Nursing Home Census - EHR supplement, n=813
NOTES: Electronically available does not include scanned or PDF documents.

★ About three out of 10 (28%) SNFs reported that they never have clinical information from outside encounters electronically available the point of care in 2016.

Nine in 10 (86%) SNFs that used EHRs and HIOs had patient health information electronically available from outside sources at the point of care.

Figure 6: The frequency of clinical information from outside encounters electronically available at the point of care by EHR and HIO use, 2016



SOURCE: 2016 QuintilesIMS /SK&A Nursing Home Census - EHR supplement, n=813
NOTES: "HIO Alone" category omitted due to small sample size. The category "No EHR or HIO" does not add to 100% due to rounding.

- ★ The majority (69%) of SNFs that did not use an EHR or an HIO reported that they never or rarely had patient health information electronically available from outside sources at the point of care.
- ★ Almost three-quarters (74%) of SNFs that used an EHR alone had patient health information from outside sources electronically available at the point of care.

Summary

SNF patients may have complex chronic care needs that result in frequent transitions between their homes, acute, post-acute, and long-term care settings (3). Patient care coordination and continuity of care are paramount in this setting where transitions of care are common (4, 5). Thus, EHR adoption and interoperability of SNFs' health information systems is critical to facilitating transitions of care (6).

In 2016, 64% of SNFs used EHRs to manage patient health information. The adoption rates of EHRs significantly varied by profit status. More (70%) non-profit SNFs used an EHR compared to for-profit facilities (62%). There were no significant differences in EHR adoption rates by rural and urban location, nor by bed size. The use of HIOs varied across facilities. Almost half (46%) of SNFs used an EHR alone. However, about a fifth of SNFs (18%) reported using both an EHR and HIO.

Three out of ten SNFs electronically exchanged (sent or received) patient health information. Twenty percent of SNFs found patients' health information from sources outside their facility through various means such as web-portals, remote access to another facility, or an HIO. Nine percent of SNFs reported that their staff was able to easily integrate patient health information from outside sources into their EHR, that is, without scanning or manual entry. However, only seven percent of the facilities reported the ability to engage in all four interoperability domains.

The ability of SNFs to send, receive, find, and integrate varied by their characteristics. For example, large SNFs integrated patient health information from outside sources at a higher rate (12%) than medium-sized SNFs (6%). Non-profit SNFs electronically exchanged patient health information at a higher rate (36%) than for-profit facilities (27%). Moreover, SNFs using both an EHR and an HIO reported significantly higher levels of interoperability across all domains than those facilities that did not use an EHR or HIO.

Overall, 62% of SNFs reported having clinical information from outside encounters electronically available at the point of care. For SNFs with both an EHR and an HIO, 86% had patient health information electronically available at the point of care. This is a 39% increase over the average.

EHR adoption rates among SNFs lag compared to acute care settings as do rates of engagement in the different interoperability domains (7). Consistent with hospitals and office-based physicians, SNFs are more likely to electronically send and receive patient health information than to find and integrate electronic health information (2). The EHR adoption lag in SNFs may be in part due to their ineligibility to receive financial incentives to adopt and use EHRs under the Centers for Medicare and Medicaid Services' EHR incentive programs. Researchers have identified barriers to EHR adoption across long-term and post-acute care settings, the most salient of which is the initial cost of EHR adoption, followed by user perceptions, and implementation problems among others (8, 9).

In spite of barriers, SNFs' EHR adoption is higher than those of other long-term and post-acute care service providers such as adult day service centers (10). Drivers of EHR adoption for SNFs may be due to the EHR and health information exchange investments made by hospitals (8, 11). The Improving Medicare Post-Acute Care Transformation Act of 2014 and efforts like the State Medicaid Directors Letter #16-003 are additional levers to facilitate interoperability among SNFs (12, 13, 14). Our findings suggest that factors like HIO participation are also important to advancing interoperability among SNFs. Future research on the adoption and use of EHRs and other health IT (e.g. tele-health) among LTPAC providers, including hospice providers, home health agencies, and home and community-based services providers, is necessary to identify and address barriers that hinder the coordination and continuity of care for patients in these settings.

Definitions

Electronic Health Record (EHR): An Electronic Health Record (EHR) is an electronic version of a patient's medical history that is maintained by the provider over time, and may include all of the key clinical data relevant to that person's care under a particular provider, including demographics, progress notes, problems, medications, vital signs, past medical history, immunizations, laboratory data and radiology reports.

Health Information Organization (HIO): A group of organizations within a specific geographic (state or regional) area that share health care-related information, often via health information exchanges, according to accepted health care information technology standards (15).

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. This brief further specifies interoperability as the ability for health systems to electronically send, receive, find, and integrate or use health information with other electronic systems outside their organization.

Long-term care and post-acute care (LTPAC): Providers that provide long-term care services in settings such as skilled nursing facilities (SNFs), nursing homes (NFs) home health agencies (HHAs), inpatient rehabilitation homes (IRFs), long-term care hospitals (LTCHs), hospice, and community-based settings (e.g., group homes, assisted living facilities), among others.

Skilled Nursing Facility (SNF): Survey respondents that self-identified as a skilled nursing facility. Skilled nursing facilities traditionally provide short-term, sub-acute care for persons recuperating from a hospitalization or an acute condition. See Data Source and Methods section for more detail on sample of nursing homes.

Data Source and Methods

The data presented in this brief are from the private company, QuintilesIMS (formerly SK&A). QuintlesIMS is a provider of U.S. healthcare reference information including EHR adoption. In collaboration with ONC, QuintilesIMS fielded a 10 question telephone survey between September and November of 2016. Refer to the appendix for the subset of questions asked in the survey and presented in this brief.

One thousand facilities rendering LTPAC services were surveyed. Of the facilities surveyed, 813 self-identified as a SNF and of those, 782 (96%) were CMS Medicare-certified skilled nursing or nursing facilities. CMS certification was verified using the CMS September 2016 Provider of Services file.

Significant differences noted throughout the data brief were tested using $p < 0.05$ as the threshold.

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Acknowledgements

The authors are with the Office of the National Coordinator for Health Information Technology (ONC). The data brief was completed under the direction of Seth Pazinski, Director of the Office of Planning, Evaluation, and Analysis and Talisha Searcy, Director of Research and Evaluation for the Office of Planning, Evaluation, and Analysis. Other staff that contributed to this document include: Yuriy Pylypchuk, Vaishali Patel and Jinha Yoon, and Liz Palena-Hall from the Office of Policy at ONC.

Suggested Citation

Alvarado, C. S., Zook, K., & Henry, J. (September 2017) Electronic Health Record Adoption and Interoperability among U.S. Skilled Nursing Facilities in 2016. *ONC Data Brief, no. 39*. Office of the National Coordinator for Health Information Technology: Washington, DC.

Appendix

Appendix Table 1: Survey questions assessing EHR adoption and interoperability among skilled nursing facilities

Question Text	Response Options
Not including for accounting or billing purposes, does your facility currently **use an EHR** to manage your patients' health records?	Yes | No | Don't Know
Does your facility electronically **send** key clinical information such as labs, medications or problem lists to outside organizations on a routine basis? Electronic does not include fax, e-fax or MDS (minimum data set) quality reporting.	Yes | No | Don't Know
Does your facility electronically **receive** key clinical information such as labs medications or problem lists from outside organizations on a routine basis? (Electronic does not include fax, e-fax or MDS (minimum data set) quality reporting.	Yes | No | Don't Know
Is staff easily able to **integrate** patient health information that you electronically receive into your EHR without manual entry or scanning?	Yes | No | Don't Know
Do you or your staff electronically **search or query** for your patients' health information from sources outside your facility? This might include through a web portal, remote access to another facility or health information exchange organization, for example.	Yes | No | Don't Know
Does your facility use a state or regional health information exchange organization (HIO) to electronically send, receive, integrate or search for patient health information from outside sources?	Yes | No | Don't Know
When treating patients seen by other providers outside your facility, how often does your staff have clinical information from outside encounters electronically available at the point of care? Electronically available does not include scanned or PDF documents. Is it often, sometimes, rarely or never?	Often Sometimes Rarely Never Do not know

Appendix Table 2: Characteristics of sample of SNFs

Characteristics	SNFs	
	Frequency	Percent
Number of Skilled Nursing Facilities surveyed	813	
Licensed Beds Categorical		
Less than 50	128	16%
51 to 99	283	35%
100+	402	49%
Average No. of Beds	103	
Median No. Beds	99	
Profit Status		
For-profit	579	71%
Non-profit	224	28%
Declined	10	1%
Urban/Rural		
Rural	281	35%
Urban	532	65%
HIO participation		
Yes	174	17%
No	623	46%
Don't Know	16	1%
EHR Use		
Yes	521	64%
No	292	36%