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Current Use of EHRs among Missouri Long-Term and Post-Acute Care Organizations

Survey Results

Missouri Health Information Technology Assistance Center
DEPARTMENT OF HEALTH MANAGEMENT AND INFORMATICS

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Current Use of EHRs among Missouri Long-Term and Post-Acute Care Organizations

EXECUTIVE SUMMARY

OVERVIEW OF LONG-TERM AND POST-ACUTE CARE

The Missouri Health Information Technology Assistance Center (MO HIT AC) and the Department of Health Management and Informatics (HMI), School of Medicine, University of Missouri conducted the study. The project examined the extent of electronic health record (EHR) and health information exchange (HIE) adoption and use in long-term and post-acute care (LTPAC) organizations in Missouri through a brief survey. The telephone survey was conducted by the Health Behavior Risk Research Center (HBRRC) in HMI. The types of agencies and organizations included in the survey were adult day care centers, outpatient physical therapy (PT) and rehabilitation clinics, home health agencies, hospices, and long-term care facilities (skilled nursing homes, intermediate care facilities, and residential care facilities).

Based on the telephone information obtained from the directories of the various LTPAC providers, a random sample of each of the types of providers was contacted by telephone and asked to participate in a brief survey. Providers in each type of organization were contacted until responses were received from about 20% of the organizations, and when time allowed additional providers were contacted to increase the response rate. The survey was conducted between May 1 and June 5, 2016.

RESULTS

The results of the project are detailed in the attached report. A summary of the findings is presented here.

- Of the 122 adult day care centers, 28 responded to the survey (23.0%)
- Of the 49 outpatient PT and rehabilitation clinics, 9 responded to the survey (18.4%)
- Of the 185 home health agencies, 48 responded (25.9%)
- Of the 111 hospices, 35 responded (31.5%)
- Of the 1,153 long-term care facilities, 248 responded (21.5%)
- Adult day care centers that have an EHR, 10.7%
- Outpatient PT and rehabilitation clinics that have an EHR, 77.8%
- Home health agencies that have an EHR, 89.6%
- Hospices that have an EHR, 74.3%
- Long-term care facilities that have an EHR, 45.6%
- Adult day care centers that have an EHR and are using a HIE, 100.0%
- Outpatient PT and rehabilitation clinics that have an EHR and are using a HIE, 14.3%

- Home health agencies that have an EHR and are using a HIE, 44.2%
- Hospices that have an EHR and are using a HIE, 15.4%
- Long-term care facilities that have an EHR and are using a HIE, 33.6%
- Primary reasons for using HIE is sharing patient information with primary care, receiving lab results, direct message of continuity of care document (CCD), and care transitions with other facilities
- Major challenges with EHRs include cost of EHRs (acquisition, implementation, and maintenance) and inadequate knowledge/training of staff
- The large number of different EHRs in use will make achieving interoperability difficult

OPPORTUNITIES

Successful deployment and use of EHRs by Missouri long-term and post-acute care providers present opportunities for many benefits, which include:

- Improved quality of care for the population of Missouri, especially for underserved and disadvantaged citizens of Missouri
- Reduced overall costs of providing health care
- Reduced Medicaid costs
- Improved public health reporting
- Improved collaboration and coordination among health care providers, government, community organizations, and other health care participants

RECOMMENDATIONS

Based on the results of the survey, the following are suggested recommendations:

- Statewide deployment of EHRs to long-term and post-acute care providers in Missouri should be a priority
- Use the successful deployment program of the MO HIT AC, modified to reduce costs and increase information sharing by deploying a limited number of EHRs in regions, limiting on-site work, and using remote education and support whenever possible.

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REPORT ON SURVEY RESULTS

OVERVIEW OF LONG-TERM AND POST-ACUTE CARE

Traditionally, the health care system has been segmented into two major segments: acute care and ambulatory care. However, as pressure is mounting to move to person-centric longitudinal health care and remove the current silos of health care delivery, a third segment of long-term and post-acute care (LTPAC) is being included to define better the full spectrum of care. This focus on the full continuum of care needed by individuals encourages the provision of care to the individual in the best care setting for the acuity level needed, at the right time, and at the lowest cost. In order for the continuum to be successfully integrated, however, sharing of information about the individual across the different providers is crucial.

In this report, the long-term and post-acute care spectrum discussed includes adult day care services, outpatient physical therapy and outpatient rehabilitation services, home health services, hospices, and nursing home care. This report does not include other important post-acute care components of the continuum of care spectrum, such as assisted living facilities, long-term acute care hospitals, inpatient rehabilitation services, medication management, or the program of all-inclusive care for the elderly (PACE).

Adult Day Care Services

Adult day care services are professional care settings where older, frail adults, adults with dementia, or adults with disabilities receive individualized services from an interdisciplinary team for some part of the day. An adult day care center provides a coordinated program of therapeutic, social, personal care, and some health services in a community-based group setting for adults who need supervised care in a safe place outside their home during the day. Adult day care centers are designed to meet the physical, emotional, and social needs of participants and caregivers, with social activities involving interaction with other participants in planned activities appropriate for their conditions. The individualized, person-centered care enables staff to meet increasingly complex needs of the participants. Typically, adult day center operate during normal business hours five days a week, although some may provide extended evening and weekend hours, offering caregivers respite from the demanding responsibilities of caregiving. By providing services to these adults during the day, it allows many caregivers to remain in the workforce and delays nursing home placement for the recipients.[1]

In 2014, there were 4,800 adult day services centers in the United States, serving more than 282,000 participants. Of these centers, 44% were investor-owned (for-profit) facilities, and 56% were tax-exempt (not-for-profit) facilities. Similar percentages of tax-exempt (43%) and investor-owned (41%) centers were affiliated with chains in 2014. During the preceding 12 months, 15% of tax-exempt centers and 12% of investor-owned centers had at least one participant stop using the center because of costs. Among tax-exempt centers, 41% of their revenue was from Medicaid, an additional 29% of revenue was from other government sources, 21% was from private sources, and 9% was from other sources. Among investor-owned centers, 65% of their revenue was from Medicaid, an additional 16% from other government sources, 13% was from private sources, and 6% was from other sources.[2]

Investor-owned centers offered disease-specific programming for participants at a higher percent than did tax-exempt centers. These differences for specific diseases were as follows: participants with diabetes (72% versus 58%), cardiovascular disease (67% versus 52%), and depression (61% versus 49%). A similar percentage of investor-owned centers (70%) and tax-exempt centers (68%) offered disease-specific programs for Alzheimer's disease and other dementia.[3]

Outpatient Rehabilitation Services

Outpatient therapy and rehabilitation services focus on maintenance and remediation of an individual's ability to move and perform functional daily life activities. Rehabilitation services typically involves such things as prescription or assistance with specific exercises, manual therapy and manipulation, mechanical devices, and other interventions to improve the physical functioning of the individual. The goal is to assist individuals develop, maintain, and restore maximum movement, strength, and functional ability throughout the lifespan of the individual. On an outpatient basis, where the individual does not require inpatient services, rehabilitative therapy is provided for impairments caused by such conditions as orthopedic conditions, neuromuscular/neurovascular disorders, stroke, brain injury, spinal cord injury, cardiac disorders, and complex medical problems. Locations of such services include outpatient physical therapy (PT) and outpatient rehabilitation clinics.

Home Health Care

Home health care includes a wide range of medical, therapeutic, and nonmedical services that are provided in the residence of the individual after an illness or injury. The goal of home health care is to treat an illness or injury to assist the individual regain independence and become as self-sufficient as possible. In 2014, there were 12,400

home health agencies in the United States, and these agencies served about 4,934,600 patients during 2013. Of these agencies, 80% were investor-owned organizations. On average, a home health agency served 427 patients in 2013. Of the patients served by home health, about 83% of them were aged 65 or older.[4]

Hospice Care

Hospice care, also called end-of-life or palliative care, is different from most other health care services. Hospice is medical care provided by a team of health professionals to individuals to maintain or improve quality of life whose illness, disease, or condition is unlikely to be cured; it focuses on caring, not curing. Individualized services are provided to address physical, emotional, and spiritual pain that often accompanies terminal illness; the goal of the care is to assist individuals who are dying have peace, comfort, and dignity. Hospice care also offers practical support and respite for caregiver(s) during the illness and grief support after the illness. Hospice care is provided to the individual in the location where the patient is currently residing, which may be the patient's own private residence or that of a family member, a hospital, an assisted living center, a freestanding hospice center, or a nursing home. A hospice patient is expected to live six months or less.[5] In 2014, there were 4,000 hospices in the United States, and they provided services to 1,340,700 patients during 2013. About 60% of hospice agencies in 2014 were investor-owned, 26% were tax-exempt, and 14% were government and other owned. An average hospice agency served 355 patients during the year. Over 94% of hospice patients were aged 65 or older, with over 47% of hospice patients aged 85 or older.[6]

Long-Term Care Facilities

Long-term care facilities (also called skilled nursing homes, intermediate care facilities, and residential care facilities) provide a wide range of services, both medical and personal care, to individuals who are no longer able to manage independently in the community. *Residential care facilities* provide room and board, housekeeping, supervision, and personal care assistance with basic activities of daily living, such as hygiene, dressing, eating, and walking. These facilities do not provide nursing care, although they usually centrally store and distribute medications for residents to self-administer. *Intermediate care facilities* are health-related facilities designed to provide custodial care to individuals who are unable to care for themselves because of mental or physical infirmity. The government does not consider these to be a medical facility, but rather a custodial facility, although they are required to have a RN director of nursing and a licensed nurse on duty at least 8 hours a day. *Skilled nursing facilities* provides 24-hour skilled nursing care for acute or chronic conditions and additional assistance for daily activities of living. These facilities are usually the highest level of care for individuals outside a hospital. In addition

to the custodial and activities of daily living services provided by other long-term care facilities, these organizations provide a high level of medical care.

In 2014, there were 15,600 nursing homes in the United States, and there were 1,369,700 residents in nursing homes. Of the residents in nursing homes, almost 85% were aged 65 or older and almost 42% of residents were aged 85 or older. About two-thirds of the residents in nursing homes were female, and about 76% of residents in nursing homes were non-Hispanic white individuals. Medicaid was the payer source of almost 63% of residents in nursing homes.[7]

Benefits of Health Information Technology in LTPAC

Health information technology (HIT) has been shown to offer a number of opportunities to improve the quality, safety, and effectiveness in the delivery of health care services.[8,9] Health information technology can also be used to help providers manage the health of the population they serve. It is recognized, however, that implementing, maintaining, and optimizing HIT presents a number of challenges for facilities, especially given the limited resources and technology expertise in many of these facilities. The limited sharing of important medical information by long-term and post-acute care facilities with other health care providers presents an obstacle to care coordination and improved population health.

A major way that health information technology can be used to improve quality of care is by avoiding duplication of tests and medical errors, especially with electronic prescribing of medications.[10] Many patients receive health care services from multiple health care providers, especially when the patients have multiple chronic conditions. HIT can be used to ensure efficient, coordinated, and secure exchange of information by enabling instant access to patient information, providing disease surveillance, and allowing coordination of care across different providers. In addition, decision support systems within HIT systems can provide health care professionals with the most current information about the conditions they are treating, enabling them to incorporate new treatments and therapies as they become available. HIT also enables patients to become more engaged in their health care, allowing them to track health conditions and access provider visit notes and test results.

Missouri LTPAC Facilities

In Missouri, as in other states, establishing and sustaining a health care system that provides services to its population across the continuum of care is a challenge. The July 1, 2015 population in Missouri was estimated to be 6,083,762. In Missouri, 16% of the population is 65 or older, compared to 15% in the United States. In Missouri, 81% of the

population is white, compared to 62% nationally, with only 4% Hispanic compared to 18% nationally. Both Missouri and the US has 12% of its population Black. The median annual household income in Missouri was $56,630 compared to $53,657 in the US.[11]

In terms of health status, Missouri, overall, ranked 36 out of 50 states and the District of Columbia. However, Missouri ranked 38 in violent crime offenses per 100,000 population, 46 in public health funding, 43 in immunizations for adolescents, 38 in preventable hospitalizations, 39 in poor physical health days, 41 in cardiovascular deaths per 100,000 population, 40 in cancer deaths per 100,000, 39 in premature death years lost per 100,000 population, and 32 in infant mortality, with 6.6 deaths per 1,000 live births compared to 6.0 nationally.[12] Life expectancy at birth in Missouri is 77.5 years compared to 78.9 percent in the United States, and the life expectancy for African-Americans in Missouri is 74.2 years, compared to 74.6 years nationally. There were 15.3 firearms deaths per 100,000 population in Missouri, compared to 10.3 nationally, while the rate was 32.1 per 100,000 for Blacks, compared to 16.9 nationally.[13]

The number and type of long-term and post-acute care facilities in Missouri varied. The data about the facilities were obtained from the various directories for the organizations in 2014 and 2015. According to the listing of LTPAC facilities in Missouri, there were 122 adult day care centers, 49 outpatient physical therapy (PT) and rehabilitation (rehab) clinics, 185 home health agencies, 111 hospices, and 1,153 long-term care facilities.[14] These facilities were located throughout the state, with larger concentration in metropolitan areas than in rural communities.

STUDY METHODOLOGY

Using the Missouri Department of Health and Senior Services directories of long-term and post-acute care providers in Missouri, a total of 1,620 LTPAC providers were identified. The directories of the various LTPAC providers gave names, addresses, and telephone numbers for the organization. These listings provided the basis for the brief telephone survey that was conducted to obtain information regarding the dispersion of electronic health records (EHRs), their use, and the use of health information exchanges (HIEs) by the organizations. The project was approved by the Health Sciences Institutional Review Board.

To administer the telephone survey, the Call Center in the Health Behavior Risk Research Center (HBRRC) in the Department of Health Management and Informatics, School of Medicine, University of Missouri was used. Based on the telephone information obtained from the directories of the various LTPAC providers, a random sample of each of the types of providers was contacted by telephone and asked to participate in a brief survey.

Providers in each type of organization were contacted until responses were received from about 20% of the organizations, and when time allowed, additional providers were contacted to increase the response rate. The survey was conducted between May 1 and June 5, 2016. Appendix A provides a copy of the survey administered, the cover letter provided explaining the purpose of the survey, and the informed consent document. Since the purpose of this study was to assess the status of EHR and HIE adoption and use in LTPAC providers in Missouri, the survey was short to enhance response rates.

FINDINGS

Since the survey was only administered to each type of provider until approximately 20% of the total number of providers in that type of agency or organization responded, the determination of an overall response rate to the survey is not possible. Table 1 provides information on the number of agencies or organization in each type of LTPAC, the number of responses, and the percent responses by type of provider.

Table 1: LTPAC Providers, Responses, and Percent Responses

Type of LTPAC	Number of Agencies	Number of Responses	Percent Responses
Adult Day Care	122	28	23.0
Outpatient PT and Rehab	49	9	18.4
Home Health	185	48	25.9
Hospice	111	35	31.5
Long-term Care	1,153	248	21.5
Total	1,620	368	22.7

The LTPAC providers were asked if their facility was part of a multi-site organization. As the data in Table 2 indicate, there was substantial variation among the types of LTPAC providers in terms of their being part of multi-site organizations. Adult day care centers had the lowest percentage of providers being part of multi-site organizations, at 17.9%, and hospice providers had the highest percent, at 68.6%. Long-term care facilities had the next highest percent of providers being part of multi-site organizations, at 60.1%. The remaining types of providers had at least 50% being part of multi-site organizations.

Table 2: LTPAC Providers, Responses, and Percent Responses

Type of LTPAC	Number of Respondents	Number in Multi-Site Organizations	Percent of Responses
Adult Day Care	28	5	17.9
Outpatient PT and Rehab	9	5	55.6
Home Health	48	24	50.0
Hospice	35	24	68.6
Long-term Care	248	149	60.1
Total	368	207	56.3

The LTPAC providers were asked if their organization had an electronic health record (EHR). Table 3 provides data by type of LTPAC provider in terms of the number of respondents indicating they had an electronic health record. As can be seen by the data in Table 3, very few (10.7%) Adult Day Care Centers currently have an EHR, and less than half of long-term care facilities (45.6%) have an EHR. Home health agencies show the highest percent with an EHR (89.6%) and about three-fourths of hospices (74.3%) and outpatient PT and rehab clinics (77.8%) have an EHR.

Table 3: LTPAC Providers with an EHR			
Type of LTPAC	**Number of Respondents**	**Number with an EHR**	**Percent with an EHR**
Adult Day Care	28	3	10.7
Outpatient PT and Rehab	9	7	77.8
Home Health	48	43	89.6
Hospice	35	26	74.3
Long-term Care	248	113	45.6
Total	368	192	52.2

When LTPACs who were part of an organization with multiple locations or sites were asked if all sites were using the same EHR, the responses across type of LTPAC indicated fairly consistent use of the same EHR across sites. Home health agencies had the greatest inconsistency, with only 62.5% of the agencies using the same EHR, while 91.6% of long-term care facilities were using the same EHR. Table 4 provides data for this query.

Table 4: Multi-Site LTPAC Providers with Same EHR				
Type of LTPAC	**Number of Multi-Site Respondents**	**Number with an EHR**	**# with Same EHR**	**% with Same EHR**
Adult Day Care	5	3	2	66.7
Outpatient PT and Rehab	5	5	5	100.0
Home Health	24	24	15	62.5
Hospice	24	19	16	84.2
Long-term Care	149	83	76	91.6
Total	207	134	114	85.1

There was substantial variation in the EHRs being used by the different providers. Of the 3 Adult Day Care Centers indicating they were using an EHR, none of the centers were using the same EHR. The same was true for the 5 Outpatient PT and Rehab clinics indicating the EHR being used. There were 26 different EHRs being used by the 43 home health agencies with EHRs, and there were 14 different EHRs being used by the 26 hospices with EHRs. Of the 113 long-term care facilities with EHRs, there were 29 different EHRs being used. The most common EHRs among home health agencies were Home Base, with 6 agencies using it, and Kinnser and McKesson, with 5 using each of these products. The most common EHRs among hospices were Home Base and McKesson, with 4 hospices using each of them. Among long-term care facilities, the most

common EHRs in use were Point Click Care, with 35 users, and MatrixCare, with 19 users. There were 31 different EHRs being used by the 83 long-term care facilities with EHRs. This wide variance in the EHR being used makes connecting and sharing information difficult due to lack of interoperability among the different EHR products. Table B1 in the Appendix B provides the detailed breakdown on the different EHRs being used by each type of provider.

As explained in the survey, a health information exchange (HIE) is the mobilization of healthcare information electronically across organizations. HIE may also refer to the organization that facilitates the exchange of information electronically. When asked if their organization or agency was using a health information exchange, the number of positive responses was low. For those that were using an HIE, they were asked which HIE was used. Missouri Health Connection (MHC) is the state wide HIE in Missouri, and the Lewis and Clark information exchange (LACIE) and Tiger Institute are two regional HIE. In addition to these three HIEs, several of the multi-site providers indicated they were able to use their EHR to exchange information with other sites. Table 5 provides information on HIE use among the different types of providers.

Table 5: LTPAC Providers with an EHR Using an HIE

Type of LTPAC	Number with EHR	Using an HIE		HIE Being Used				
		#	%	MHC	LACIE	TIGER	EHR	UNK
Adult Day Care	3	3	100.0	1	0	0	2	0
Outpatient PT and Rehab	7	1	14.3	0	0	0	0	1
Home Health	43	19	44.2	1	1	1	12	4
Hospice	26	4	15.4	1	0	0	3	0
Long-term Care	113	38	33.6	5	0	1	22	10
Total	192	65	33.9	8	1	2	39	15

Table 6 provides information on the types of activities for which the LTPACs were using a health information exchange. Respondents were asked to indicate all activities for which a HIE was used, so the total number of uses in Table 6 are larger than the number of respondents using an HIE. As the data indicate, sharing patient information with primary care was the activity used most often, especially among home health agencies and long-term care facilities. The second most often used activity was receiving lab results in long-term care facilities. Long-term care facilities also used the HIE for sharing care transition information with other facilities.

The other activities identified by the providers for which health information exchanges were being used included: doctors' updating, current medication list access, meeting meaningful use criteria, contract therapy services included so all their records go to facility of patient, demographics, medication lists, allergies, access to physician records, getting referral information and past records, Medicaid and individual support plans with other

agencies, exchange information from referral sources, physician signatures and orders signed, verification of medication list, auditing, and pharmacy. Exchanging information with referral sources and verifying medication lists seemed to be the two items that occurred most often in the "other" category.

Table 6: LTPAC Providers Use of HIE Activities

Activity	Adult Day Care	Outpt PT & Rehab	Home Health	Hospice	LTC	Total
Direct Message of continuity of care document (CCD)	0	1	2	0	12	14
Sharing patient information with primary care	4	1	9	4	22	40
Public health and other reporting	0	1	0	0	3	4
Receiving lab results	0	0	4	0	12	16
Care transitions with other facilities	0	1	3	1	8	13
Care alerts with other facilities	0	1	1	0	5	7
VA Blue Button	0	0	0	0	2	2
Other	5	1	10	2	13	31

Providers who had an EHR but were not currently using a health information exchange were asked the reason for not using a HIE. The following reasons were given by the providers (the number in parentheses is the number of providers giving that answer).

Adult Day Care: Cost (2), don't know (2) don't need (4), facility too small (1), overwhelming (1), lack technical support (1), new facility (1), none (4)

Outpatient PT & Rehab: Corporate policy issues (1), connectivity (1), lack technical support and training (1), none (1)

Home Health: Cost (4), community acceptance (1), connectivity (6), don't need (1), overwhelming (1), lack technical support (2), none (7), physicians won't use (3), software issues (10)

Hospice: Billing issues (1), cost (1), community acceptance (2), connectivity (2), liability (3), none (11), software issues (11)

Long-Term Care: Cost (4), corporate policy issues (7), community acceptance (1), connectivity (10), don't know (7), don't need (5), facility too small (8), liability (1), overwhelming (3), lack technical support and training (16), none (43), physicians won't use (3), and software issues (15).

As these responses indicate, lack of technical support and training is an important reason as to why the providers are not using a health information exchange. Other important reasons were software issues, connectivity issues, and corporate policy issues. Also

listed as an important issue was the view that their facility was too small for it to be important to be connected. Cost was indicated a number of different times.

Those providers with an EHR but not currently using a health information exchange were asked if they planned to use a HIE in the future. The responses from the different types of providers are below:

Adult Day Care: Yes (6), No (11), Don't know/Not sure (5)
Outpatient PT & Rehab: Yes (3), No (3), Don't know/Not sure (2)
Home Health: Yes (16), No (5), Don't know/Not sure (8)
Hospice: Yes (15), No (5), Don't know/Not sure (11)
Long-Term Care: Yes (99), No (33), Don't know/Not sure (78)

As the data show, many of the providers plan on using an HIE in the future, although a number of them are unsure about it. For those providers responding that they were planning on using a HIE in the future, Table 7 lists the activities that were indicated as possible uses. The respondents were asked to indicate all activities for which a HIE might be used, so the total number of uses in Table 7 are larger than the number of respondents who are currently not using an HIE but are planning on doing so in the future.

Table 7: LTPAC Providers Potential Use of HIE Activities

Activity	Adult Day Care	Outpt PT & Rehab	Home Health	Hospice	LTC	Total
Direct message of continuity of care document (CCD)	0	2	6	5	47	60
Sharing patient information with primary care	3	3	10	11	64	91
Public health and other reporting	0	1	3	2	21	27
Receiving lab results	1	1	3	4	43	52
Care transitions with other facilities	1	2	7	5	24	39
Care alerts with other facilities	1	1	5	6	21	34
VA Blue Button	0	1	0	1	12	14
Other	3	0	3	3	27	36

Overall, sharing patient information with primary care received the highest number (91) of potential users, with using a HIE for direct message of continuity of care documents (CCD) coming in second, with 60 potential users, followed closely with receiving lab results (52). In the other category, reconciling medications, getting referral information, and gaining access to patient past records were potential uses cited most often.

The providers were then asked which types of health care organizations in their community they would like to coordinate care with electronically. Again, they were asked to check all types of health care organizations that apply, and so the total number of responses in Table 8 is much higher than the number of respondents in each type of health care provider agency or organization surveyed. In the survey, long-term care facilities were divided into intermediate care facilities and skilled nursing facilities, and so these two could be summed to better reflect the long-term care facilities designation in the respondents. As the data indicate, the respondents appear to have a greater desire to coordinate the care they provide with hospitals (246), followed by primary care providers (191), and then by pharmacies (120) and laboratories (90).

Table 8: Type of Health Care Organization with which to Coordinate Care

Type of Organization	Adult Day Care	Outpt. PT & Rehab	Home Health	Hospice	LTC	Total
Other LTPAC facilities	2	2	7	6	51	68
Behavioral health professionals	0	2	2	1	34	39
Community health centers	1	2	4	3	28	38
Department of Corrections	0	0	0	1	10	11
Department of Mental Health	2	0	2	1	33	38
Diagnostic centers	1	0	2	2	31	36
Dialysis centers	2	0	2	1	29	34
Home health agencies	3	2	6	4	48	63
Hospice services	1	0	4	4	43	52
Hospitals	9	5	30	25	177	246
Independent living organizations	3	1	3	3	27	37
Intermediate care facilities	2	1	3	4	29	39
Laboratories	1	0	7	5	77	90
Medicaid	6	0	3	6	47	62
Pharmacies	1	0	11	13	95	120
Primary care providers	14	5	25	15	132	191
Rehabilitation hospitals	5	2	4	2	50	63
Rehabilitation outpatient facilities	4	3	5	2	38	52
Rural health clinics	2	1	5	4	31	43
Specialty providers	1	0	6	3	46	56
Other	8	2	19	17	46	92
Don't know/not sure	0	1	1	1	14	17
Total	68	29	151	123	1,116	1,487

Types of providers listed in the "other" category included assisted living facilities, dental records, dieticians, durable medical equipment companies, the Department of Health, Medicare, and the National Hospice Association. Several providers listed in the "other" category could have been included in the list provided, such as physician offices could have been split between primary care physicians and specialty providers, and mental health providers could have been included under behavior health.

The final question asked the providers what current challenges they were having with being able to use an EHR in their agency or organization. Again, they were asked to check all challenges that applied to their agency or organization, so the total number of responses is higher than the number of respondents to the survey. Table 9 provides the responses received from the surveyed providers. A number of respondents referred to costs in the "other" category, and didn't differentiate between the costs for hardware, software, continued maintenance, or implementation services. Time constraints were also mentioned as a cost of the system. Several respondents also expressed concern about finding the right system that would meet their needs, especially for the smaller agencies or organizations.

Table 9: Challenges to Using an EHR

Challenge	Adult Day Care	Outpt. PT & Rehab	Home Health	Hospice	LTC	Total
Concerns about privacy issues	3	0	2	3	17	25
Concerns about security issues	2	1	2	1	18	24
Current workflow and processes	2	1	6	5	22	36
Funding for hardware	3	3	10	5	32	53
Funding for software	4	2	12	5	33	56
Funding for continued maintenance cost of system	4	3	12	5	30	54
Funding for implementation services	3	2	9	4	34	52
Inadequate knowledge/training about selection of software	4	0	5	1	34	44
Internal staffing challenges to manage implementation	2	1	6	4	38	51
Internal staff attitude with effective use	3	0	1	3	25	32
Lack of continued training on the system	1	0	2	4	40	47
Lack of technical support	1	2	5	2	29	39
Leadership does not see value, return on investment	0	0	2	0	11	13
Loss of productivity during initial use	0	0	1	2	14	17
Other	16	5	33	22	135	211
Don't know/not sure	4	0	2	0	17	23
Total	52	20	110	66	529	777

SUMMARY

This study was conducted to identify the current use of electronic health records (EHRs) among long-term and post-acute care providers in Missouri. The goal was to gain a better understanding of what further assistance is needed for long-term and post-acute care providers in Missouri to use EHRs effectively for improved quality and coordination. A survey was conducted between May 1 and June 5, 2016 with 368 of the 1,620 long-term

and post-acute care provider agencies and organizations in Missouri (22.7%). Based on the telephone information obtained from the directories of the various LTPAC providers, a random sample of each of the types of providers was contacted by telephone and asked to participate in a brief survey. Providers in each type of organization were contacted until about responses were received from about 20% of the organizations, and when time allowed, additional providers were contacted to increase the response rate.

As the report shows, very few Adult Day Care Centers (10.7%) currently have an EHR, and less than half of long-term care facilities (45.6%) have an EHR. Home health agencies show the highest percent with an EHR (89.6%), and about three-fourths of hospices (74.3%) and outpatient PT and rehab clinics (77.8%) have an EHR. Overall, 52.2% of the LTPAC providers currently have an EHR.

There was substantial variation in the EHRs being used by the different providers. Of the 3 Adult Day Care Centers indicating they were using an EHR, none of the centers were using the same EHR. The same was true for the 5 Outpatient PT and Rehab clinics indicating the EHR being used. There were 26 different EHRs being used by the 43 home health agencies with EHRs, and there were 14 different EHRs being used by the 26 hospices with EHRs. Of the 113 long-term care facilities with EHRs, there were 29 different EHRs being used.

Only about one-third of the LTPAC providers that currently had an EHR were using a health information exchange (HIE), and the majority of those that were exchanging information was doing so through their vendor rather than through a regional or statewide health information exchange organization. Those providers with an EHR but not currently using a health information exchange were asked if they planned to use a HIE in the future, and only 46.3% indicated yes, with another 34.7% indicating they didn't know or weren't sure.

The cost of EHRs was a major challenge identified by LTPAC providers, with funding for the acquisition, implementation, and maintenance raising very similar levels of concern. Other major challenges included the lack of training and knowledge to be able to use the EHR effectively.

If the health care system is going to continue to evolve into a coordinated continuum of care for the patients in the system, then it is imperative that all types of providers along the continuum of care be able to exchange information about the patients being served. Without an electronic health record, and the ability to exchange information across the electronic health records, true coordination of care cannot occur.

APPENDIX A: SURVEY

Dear Missouri Healthcare Provider:

Thank you for participating in the Missouri Health Information Technology Assistance Center technology landscape benchmarking study. The Missouri Health Information Technology Assistance Center is part of the University of Missouri's Department of Health Management and Informatics, and serves as the Office of the National Coordinator's state designated Regional Extension Center (REC) for Health Information Technology.

This study is being conducted to identify the current use of electronic health records (EHRs) among Missouri long-term and post-acute care (LTPAC) providers. The goal is to gain a better understanding of what further assistance is needed for LTPAC providers in Missouri to use EHRs effectively for improving quality and care coordination.

The survey is short by design, so we can gather as much feedback as possible. It should take you less than 10 minutes to participate.

Your insights are very much appreciated. The information provided will assist the Assistance Center continue to provide the services needed to advance further the adoption and effective use of EHRs in Missouri.

2015 Missouri Health Technology Benchmarking Study

An electronic health record (EHR) is a digital version of a patient's paper chart. EHRs are real-time, patient-centered records that make health information available instantly and securely to authorized users.

1. Is your facility part of a multi-site organization?
   ___Yes
   ___No

2. Does your facility currently have an EHR?
   ___Yes
   ___No (please go to question 5)

3. If you are part of an organization with multiple locations or sites, are they all using the same EHR?
   ___Yes
   ___No
   ___Don't know

4. What software application(s) are you currently using for your EHR? Include all used.
   ___ADS Data Systems - EHR
   ___AmeraCare Systems Clinical Records
   ___Answers™ Certified EHR
   ___CareVoyant EHR
   ___COMET
   ___eMAR Platform
   ___Hi-Tech Software - eMAR
   ___Home Care Clinical
   ___Home Care Software
   ___IHN Suite, Clinical Management Module
   ___MatrixCare
   ___OneMAR
   ___Optimum NetSolutions
   ___Optimus EMR
   ___Performance & Care Logistics - Homecare
   ___PioneerACMS
   ___PointClickCare EHR
   ___PowerChart LTC
   ___ResCare EHR
   ___Senior Care Software Inc
   ___Vision
   ___Other _____

Health Information Exchange (HIE) is the mobilization of healthcare information electronically across organizations. HIE may also refer to the organization that facilitates the exchange.

5. Are you currently using a health information exchange (HIE)?
   ___Yes
   ___No (please go to question 8)

6. If yes, for what are you using it? Check all that apply.
   ___Direct Message of Continuity of Care Document (**CCD**)
   ___Sharing patient information with primary care facility
   ___Public Health & Other Reporting
   ___Receiving Lab Results
   ___Care Transitions with Other Facilities
   ___Care Alerts with Other Facilities
   ___VA Blue Button
   ___Other _____

7. If yes, which HIE do you use?
   ___Missouri Health Connection
   ___LACIE (Lewis and Clark Information Exchange)
   ___Tiger Institute
   ___Other _____

8. If your facility does not currently use an HIE, why?
   _____
   _____
   _____

9. If your facility doesn't currently use an HIE, do you plan to use a health information exchange in the future?
   ___Yes
   ___No (please go to question 11)

10. If yes, for what would you like to use it? Check all that apply.
    ___Direct Message of Continuity of Care Document (**CCD**)
    ___Sharing patient information with primary care facility
    ___Public Health & Other Reporting
    ___Receiving Lab Results
    ___Care Transitions with Other Facilities
    ___Care Alerts with Other Facilities
    ___VA Blue Button
    ___Other _____

11. With which type of health care organizations in your community would you like to coordinate care electronically? Check all that apply.
___Other Long-Term or Post-Acute Care Facilities
___Behavioral Health Professionals
___Community Health Centers
___Department of Corrections
___Department of Mental Health
___Diagnostics Centers
___Dialysis Centers
___Home Health Care Agencies
___Hospice Services
___Hospitals
___Independent Living Organizations
___Intermediate Care Facilities
___Laboratories
___Medicaid
___Pharmacies
___Primary Care Providers
___Rehabilitation Hospitals
___Rehabilitation Outpatient Facilities
___Rural Health Clinics
___Specialty Providers
___Other _____

12. What are your current challenges to the use of an EHR in your facility? Check all that apply.
___Concerns about privacy issues
___Concerns about security issues
___Current workflow and processes
___Funding for hardware
___Funding for software
___Funding for continued maintenance cost of system
___Funding for implementation services
___Inadequate knowledge/training about selection of software
___Internal staffing challenges to manage implementation
___Internal staff attitude with effective use
___Lack of continued training on the system
___Lack of technical support
___Leadership does not see value, return on investment
___Loss of productivity during initial use
___Other _____

Thank you for your participation in this important survey!

WAIVER OF DOCUMENTATION OF CONSENT

Investigator's Name: Lanis L. Hicks, PhD
Study Title: EHR Utilization by Behavior Health Organizations and Local Public Health Departments and Rural Health Clinics and Long-Term Care and Post-Acute Care
Project #:

Dear Missouri Long-Term and Post-Acute Care Providers:

1. We would like to ask you to participate in a study that involves research.
2. Participation in the study is voluntary, and your decision not to participate will not involve any penalty or adverse outcome.
3. You can stop participating at any time. Your decision to withdraw from the study will not affect your organization in any way.
4. The purpose of this benchmarking study is to identify the current use of health information technology (Health IT) among Missouri Long-Term and Post-Acute Care (LTPAC) Providers. The goal is to gain a better understanding of what assistance is needed for LTPAC providers to use Health IT effectively for care coordination.
5. All LTPAC providers in Missouri are being asked to complete a short telephone survey about health information technology in the facility.
6. The study is being conducted by the Missouri Health Information Technology Assistance Center. The Missouri HIT Assistance Center is part of the University of Missouri's Department of Health Management and Informatics and serves as the Office of National Coordinator's state designated Regional Extension Center (REC) for health information technology to assist health care providers with the selection, implementation, and use of electronic health record (EHR) technology.
7. The survey is short by design, so we can gather as much feedback as possible. It should take you less than 10 minutes to participate.
8. There are no costs associated with your participation in the study, other than the time involved by the participant.
9. If you agree to participate in the study, you may gain insight into the extent of health information technology available among Missouri LTPAC providers. If you choose to participate, all results will be reported in an aggregate manner only.
10. An alternative is not to participate in this study.
11. If you have any questions regarding your rights as a participant in this research and/or concerns about the study, or if you feel under any pressure to enroll or to continue to participate in this study, you may contact the University of Missouri Health Sciences Institutional Review Board (which is a group of people who review the research studies to protect participants' rights) at (573) 882-3181.
12. If you have any questions or problems regarding the survey, you may contact the principal investigator, Dr. Lanis Hicks, PhD, at (573) 882-8418 or at HicksL@health.missouri.edu.

APPENDIX B: LIST OF EHRS USED BY LTPAC PROVIDERS

Table B1: EHR Used by Providers						
Name of EHR in Use	**Adult Day Care**	**Out Patient**	**Home Health**	**Hospice**	**LTC**	**Unknown Type**
Access	0	0	1	0	0	0
Acuflow	0	0	0	0	1	0
Advance	0	0	0	0	1	0
Aegis	0	0	3	0	0	0
Aht	0	0	0	0	4	0
Alice	0	0	0	0	2	0
AllScripts Homecare	0	0	2	1	0	0
American Health Tech	0	0	0	0	5	0
Answers on Demand	0	0	0	0	1	0
Appointment	0	0	1	0	0	0
Avitar	0	0	0	0	1	0
Axxess	0	0	1	0	0	0
Blue Strata	0	0	0	0	3	0
Blue Step	0	0	0	0	3	0
Brighttree	0	0	1	1	0	0
Brookdale	0	0	1	0	0	0
Care Plans	0	0	0	1	0	0
Care Logic	0	0	0	0	1	0
Cerner	0	0	1	0	0	0
Cigmacare	0	0	0	0	1	0
Cliniciant	0	1	0	0	0	0
CMS 1500	1	0	0	0	0	0
Credible	0	0	0	0	1	0
Dart Chart	0	0	0	0	1	0
Delta Encore	0	0	1	1	0	0
Devero	0	0	2	1	0	0
EClinical Works	0	0	1	0	0	0
ECM	0	0	0	0	1	0
ECP	0	0	0	0	1	0
EMar	0	0	0	0	2	0
Epic	0	0	3	2	0	0
Focura	0	0	1	0	0	0
Health Care First	0	0	1	1	0	0
Health Medics	0	0	0	0	2	0
Health Medx	0	0	0	0	0	1
Health Trust	0	0	1	0	0	0
Home Base	0	0	6	4	0	0
Home Care Software	0	0	1	1	0	0
Home Health Access	0	0	1	0	0	0
Homemedics	0	0	1	0	0	0
Horizon	0	0	0	0	0	1
Kindred Link	0	0	0	1	0	0
Kinnser	0	0	5	0	0	0
MatrixCare	1	0	0	0	19	0
Mckesson	0	0	5	4	0	0
Mds	0	0	0	0	1	0
Meditec	0	0	1	0	0	0

Table B1: EHR Used by Providers						
Name of EHR in Use	Adult Day Care	Out Patient	Home Health	Hospice	LTC	Unknown Type
Mumms	0	0	0	3	0	0
Ndoc	0	0	0	1	0	0
Optimus EMR	0	0	1	0	1	0
Nextgen	0	0	1	0	0	0
Point Click Care	0	0	0	0	35	0
Private One	0	0	0	2	0	0
Quickmar	0	0	0	0	5	0
Rehaboptimat	0	1	0	0	0	0
Riversoft	0	0	1	0	0	0
Sethworth	1	0	0	0	0	0
Sigmacare	0	0	0	0	1	0
Smart	0	1	0	0	0	0
Softcare	0	0	0	0	1	0
Speedscript	0	0	0	0	1	0
Sun Coast	0	0	0	1	0	0
Synergy	0	0	1	0	0	0
Systoc	0	0	1	0	0	0
Therapy Source	0	1	0	0	1	0
Timetrack	0	0	2	0	0	0
Unknown	0	0	0	0	2	0
Vision	0	0	0	0	2	0
Vitals	0	0	0	0	1	0
Webt	0	1	0	0	0	0
Weilkinson	0	0	0	0	1	0
Written For You	0	0	0	0	1	0
Yardi	0	0	0	0	1	0

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