Nursing Home Provider Perceptions of Telemedicine for Providing Specialty Consults

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Abstract

Background: Nursing homes (NHs) provide care to a complex patient population and face the ongoing challenge of meeting resident needs for specialty care. A NH telemedicine care model could improve access to remote specialty providers.

Introduction: Little is known about provider interest in telemedicine for specialty consults in the NH setting. The goal of this study was to survey a national sample of NH physicians and advanced practice providers to document their views on telemedicine for providing specialty consults in the NH.

Materials and Methods: We surveyed physician and advanced practice providers who attended the 2016 AMDA—The Society for Post-Acute and Long-Term Care Medicine Annual Conference about their likelihood of referral to and perceptions of a telemedicine program for providing specialty consults in the NH.

Results: We received surveys from 524 of the 1,274 conference attendees for a 41.1% response rate. Respondents expressed confidence in the ability of telemedicine to fill existing service gaps and provide appropriate, timelier care. Providers showed the highest level of interest in telemedicine for dermatology, geriatric psychiatry, and infectious disease. Only 13% of respondents indicated that telemedicine was available for use in one of their facilities.

Discussion: There appears to be unmet demand for telemedicine in NHs for providing specialty consults to residents.

Conclusions: The responses of NH providers suggest support for the concept of telemedicine as a modality of care that can be used to offer specialty consults to NH residents.

Keywords: telemedicine, nursing homes, specialty care, consults, survey

Introduction

More than 1.3 million residents live in more than 15,000 nursing homes (NHs) in the United States, and they have very limited access to specialty care for a variety of reasons. Some of the barriers to providing specialty care in NHs include physician and facility capacity or interest, reimbursement, geographic access, and lack of awareness of demand or need for such services. These hurdles are particularly prominent in rural NHs,^{1,2} and may be associated with more transfers out of the facility for care that could otherwise be provided on-site. Telemedicine would seem a promising potential solution to this access problem, which has both clinically and economically adverse implications. By allowing remote consults with functionality that more closely mirrors face-to-face consults, telemedicine could allow remote consultations by specialist providers not typically available on-site to many NHs.

The literature documents successful telemedicine interventions in NHs for a variety of specialty needs, including dermatology, palliative care, and psychiatry.^{3–6} However, NHs have lagged in the adoption of telemedicine compared with other clinical settings, even with mounting evidence supporting the feasibility of introducing and sustaining telemedicine programs to improve access to and quality of care. However, recent data from NHs in states that are focusing on strategies to reduce acute changes of condition that lead to potentially avoidable hospitalizations suggest that nearly 40% are using telemedicine.⁷ Telemedicine could ultimately be thought of as a platform supporting a package of interventions, providing access to multiple different clinical services and various medical specialties that could provide acute and/or chronic care.^{8,9}

This concept of telemedicine as a modality of care distinguishes between the decision to implement telemedicine

technology and the choice of services to offer through this platform. Identifying the “right” complement of medical specialties and services to include is critical for realizing the widely touted clinical and economic gains of telemedicine. Ultimately, NH providers are key innovators in high-value use of telemedicine in their clinical setting, so understanding the clinician perspective regarding the role of and need for telemedicine in NHs is essential for appropriately targeting telemedicine. Although the literature recognizes the importance of involving providers in health information technology deployments,^{10,11} little is known about provider perceptions of the most valuable clinical applications of telemedicine in NHs. The purpose of this study is to quantify the specific types of medical specialists that NH providers (physicians and advance practice providers) most likely would request or find useful and their attitudes regarding specialty care delivered through telemedicine. This study complements a previous survey we conducted to understand providers’ desired attributes of telemedicine in NHs for a specific application, managing acute changes of condition.¹²

Materials and Methods

PARTICIPANTS

The survey was made available to all 1,274 attendees of the 39th annual AMDA—Society for Post-Acute and Long-Term Care Medicine Annual Conference—held in March 2016 in Orlando, Florida. We chose to target physicians and advanced practice providers because of their responsibility for managing the medical care of NH residents and requesting all specialty consults based on medical necessity.

SURVEY DEVELOPMENT

We designed a paper survey to document NH provider perceptions and expected use of telemedicine for specialty consults (Supplementary Data; Supplementary Data are available online at www.liebertpub.com/tmj). The survey was modified from a previous survey conducted by the coauthors at the prior year’s annual meeting of AMDA, and included four components. First, the purpose of the survey was described and telemedicine was defined. Second, respondents were asked about the likelihood of ordering telemedicine consults for 26 American Board of Medical Specialties, as well as ancillary and nonmedical specialties that may provide care in NHs. Third, respondents were presented with a series of statements aimed to capture perceived benefits and concerns (perceptions) about the use of telemedicine for specialty consults in NHs. Finally, we collected demographic and occupational information. The survey asked respondents to indicate their likelihood to refer to telemedicine with a 5-point

Likert scale ranging from “extremely likely” to “extremely unlikely,” with lower numbers indicating higher likelihood. Respondents reported their perceptions about referring to telemedicine for specialty care, indicating level of agreement with a series of statements using through a 7-point Likert scale, ranging from “strongly agree” to “strongly disagree,” with lower numbers indicating stronger agreement. We beta-tested the survey before the AMDA annual conference with five providers.

SURVEY DISTRIBUTION

The study was approved by the University of Pittsburgh’s Institutional Review Board before being distributed by the AMDA Foundation during the 2016 conference. A copy of the survey was placed in each of the conference attendees bags and additional copies were made available at a central location for the duration of the conference. As an incentive for participation, the first 500 respondents returning completed surveys received a complimentary copy of the *Synopsis of Federal Regulations in the Nursing Facility: Implications for Attending Physicians and Medical Directors* (market value \$40), as well as \$10 donation made in their name to the Foundation for Post-Acute and Long-Term Care Medicine.

DATA ANALYSIS

Completed surveys were entered into a Microsoft Excel (Microsoft, Redmond, WA) spreadsheet for analysis, with dual data entry to ensure accuracy. Responses were summarized using frequencies and percentages, with statistical analysis conducted in Stata SE 11.2 (StataCorp LLC, College Station, TX).

Results

SURVEY RESPONDENTS

Each of the 1,274 attendees who registered and checked in at the AMDA 2016 conference had the opportunity to complete the survey. We received 524 completed surveys, for a 41.1% response rate. We excluded seven surveys, one on account of illegibility and the other six because respondents did not self-identify as a physician or advanced practice provider. We identified missing data in 73 of the returned surveys, but there was no identifiable pattern of omitted responses. A total of 517 completed provider surveys were included in our final analysis.

Approximately 90% of respondents were physicians, 93% of whom completed residencies in family medicine or internal medicine, and 40% of whom had geriatric medicine fellowship training (Table 1). At the time of the survey, almost all respondents (96%) spent clinical time providing care in the NH

Table 1. Provider and Practice Characteristics of Survey Respondents

CHARACTERISTIC	N	%
Gender		
Male	278	54
Profession		
Physician	464	90
Degree		
MD	401	86
Residency training		
Internal medicine	250	54
Family medicine	194	42
Fellowship training		
Geriatrics fellowship	192	41
CMD certification	289	62
Advanced practice provider	53	10
Degree		
Certified registered nurse practitioner	43	81
Residency training		
Adult nurse practitioner	14	26
Family nurse practitioner	16	30
Geriatric nurse practitioner	13	25
No. of years practicing medicine		
1–5	74	14
6–10	48	9
11–15	77	15
16–20	65	13
21–25	77	15
>25	163	32
Percentage of clinical time in the NH		
<10	34	7
10–25	117	23
26–50	85	16
51–75	82	16
>75	181	35

Table 1. continued

CHARACTERISTIC	N	%
No. of NHs where clinical care is provided		
0	20	4
1	142	27
2–5	277	54
>5	73	14
Have or use TM in a NH	67	13

NH, nursing home; TM, telemedicine.

setting, with approximately half of respondents spending more than half of their clinical time in this endeavor. Only 13% of respondents indicated that telemedicine was available for use in one of their facilities.

SPECIALTIES FOR TELEMEDICINE CONSULTS

As shown in *Table 2*, respondents indicated they would be most likely to use telemedicine for dermatology consults (mean 1.55 ± 0.78), followed closely by consults for geriatric psychiatry (mean 1.67 ± 1.00). Infectious diseases (mean 1.96 ± 1.03), cardiology (mean 2.06 ± 1.06), and neurology (mean 1.07 ± 1.06) were the next most likely consults to be requested through telemedicine. Respondents were least likely to use telemedicine to request consults related to obstetrics and gynecology (mean 3.81 ± 1.19), plastic surgery (mean 3.57 ± 1.23), and critical care medicine (mean 3.42 ± 1.34).

PERCEPTIONS OF TELEMEDICINE FOR SPECIALTY CONSULTS

With regard to providers' attitudes or perceptions about the usefulness of telemedicine for specialty consults, *Table 3* illustrates that they strongly agree that "specialty telemedicine may fill an existing service gap" (mean 1.80 ± 0.98), that "specialty telemedicine may improve timeliness of appropriate resident care" (mean 1.86 ± 0.94), and that "subspecialty telemedicine may improve access to appropriate resident care" (mean 1.92 ± 0.88). Respondents reported the least agreement with the statements that "specialty telemedicine may jeopardize resident privacy" (mean 4.98 ± 1.58), "subspecialty telemedicine may reduce resident care effectiveness" (mean 4.82 ± 1.40), and "subspecialty telemedicine takes too much information technology expertise to implement" (mean 4.52 ± 1.62).

Discussion

This is the first study to report a nationally representative sample of physicians' and advanced practice providers'

Table 2. Survey Results for Likelihood of Referral to Telemedicine for Specialty Consults

	STATEMENT	MEAN	SD
1	Dermatology	1.55	0.78
2	Psychiatry, geriatric	1.67	1.00
3	Infectious disease	1.96	1.03
4	Neurology	2.06	1.06
5	Cardiology	2.07	1.06
6	Psychiatry, general	2.11	1.22
7	Nephrology	2.20	1.06
8	Pain medicine	2.31	1.22
9	Hematology and oncology	2.34	1.05
10	Hospice and palliative medicine	2.38	1.40
11	Pulmonology	2.41	1.07
12	Endocrinology, diabetes, and metabolism	2.41	1.11
13	Rheumatology	2.42	1.06
14	Urology	2.56	1.14
15	Gastroenterology	2.58	1.10
16	Physical medicine and rehabilitation	2.62	1.33
17	Podiatry	2.66	1.37
18	Dentistry	2.71	1.35
19	Ophthalmology	2.75	1.24
20	Otolaryngology	2.83	1.11
21	Sleep medicine	2.95	1.18
22	Geriatric medicine	2.96	1.52
23	Allergy and immunology	3.17	1.24
24	Critical care medicine	3.42	1.34
25	Surgery, plastic	3.57	1.23
26	Obstetrics and gynecology	3.81	1.19

Responses correspond to a 5-point Likert scale, ranging from "extremely likely" to "extremely unlikely," with lower numbers indicating higher likelihood.
SD, standard deviation.

interest in and perceptions of using telemedicine to provide specialty consults in the NH setting. Our findings indicate a significant interest in telemedicine for a variety of specialties, with expressed confidence in the ability of telemedicine to fill existing service gaps and provide appropriate care in a timelier manner. Respondents indicated the highest level of interest in telemedicine for dermatology and geriatric psychology, specialties that have already seen promising telemedicine initiatives in NHs.^{3,13–17} Similarly, the high level of

agreement with the potential for telemedicine to improve the services offered and timeliness of care resonates with the recommendations from organizations such as the National Academy of Medicine around the use of telemedicine to improve access to care.¹⁸ Overall, our results mirror those found on surveys about telemedicine use in other settings that providers seem to overwhelmingly endorse the potential clinical benefits of this technology.^{19,20}

A notable divergence in our results is the marked enthusiasm for telemedicine for specialty consults in NHs juxtaposed with the few respondents who actually had access to telemedicine in their facilities. This underscores that clinician enthusiasm is not sufficient to motivate adoption of telemedicine. Previous research suggests that the misalignment between the costs and benefits of health information by different stakeholders (e.g., providers vs. NHs) likely contributes to lower rates of telemedicine adoption.²¹ Specifically, it speaks to the fact that physicians and advanced practice providers are not usually the primary decision-makers when it comes to purchasing clinical goods and services such as telemedicine in NHs, despite their apparent latent demand for these services. Additional barriers to telemedicine adoption in NHs include those related to physician and advanced practice provider reimbursement, and licensure. There have been improvements in these areas with an increasing number of Medicare-reimbursable telehealth services,²² telehealth payment parity laws,²³ and states participating in the Interstate Medical Licensure Compact.

In addition, CMS has developed demonstration programs through the CMS Innovation Center, such as the Initiative to Reduce Avoidable Hospitalizations Among Nursing Facility Residents,²⁴ and alternative payment models such as the Next Generation Accountable Care Organization (ACO) Model are testing additional flexibility in the use and reimbursement of telemedicine. In addition, legislation has been introduced in both houses of Congress that would lift a number of current restrictions on telemedicine utilization, including the Creating Opportunities Now for Necessary and Effective Care Technologies (CONNECT) for Health Act²⁵ and the more recently introduced Evidence-Based Telehealth Expansion Act.²⁶ To further increase awareness and engagement of telemedicine, our research group has adopted and developed academic detailing materials and approaches that (1) define and describe the incidence, cost, and consequences of common problems that lead to potentially avoidable hospitalizations of NH residents, (2) discuss the potential benefits of using telemedicine to address these problems, and (3) express when and how to submit and appropriately bill for telemedicine services. Further work is needed to validate the utility of telemedicine,

Table 3. Survey Results for Perceptions of Telemedicine

	STATEMENT	MEAN	SD
1	Subspecialty telemedicine may fill an existing service gap	1.80	0.98
2	Subspecialty telemedicine may improve timeliness of appropriate resident care	1.86	0.94
3	Subspecialty telemedicine may improve access to appropriate resident care	1.92	0.88
4	Subspecialty telemedicine may help avoid resident transfers to the ED/hospital	2.18	1.17
5	Subspecialty telemedicine may improve the overall quality of resident care in the NH	2.29	1.12
6	Subspecialty telemedicine may help avoid a face-to-face visit by the subspecialist	2.35	1.18
7	Subspecialty telemedicine may improve the overall resource utilization in NH	2.36	1.11
8	Subspecialty telemedicine may increase overall efficiency	2.42	1.10
9	Subspecialty telemedicine may improve the overall resident experience in the NH	2.49	1.07
10	Subspecialty telemedicine may help improve service productivity of medical staff.	2.54	1.30
11	Subspecialty telemedicine when coupled with order sets may reduce the variability of care	2.93	1.29
12	Subspecialty telemedicine may not be as accurate or complete as a face-to-face visit	3.04	1.47
13	Subspecialty telemedicine may be too expensive to implement and use	3.70	1.53
14	Subspecialty telemedicine may have unintended negative consequences	3.78	1.52
15	Subspecialty telemedicine may be depersonalizing	4.15	1.69
16	Subspecialty telemedicine may hinder APP-resident relationships	4.40	1.45
17	Subspecialty telemedicine may hinder physician-resident relationships	4.45	1.59
18	Subspecialty telemedicine takes too much information technology expertise to implement	4.52	1.62
19	Subspecialty telemedicine may reduce resident care effectiveness	4.82	1.40
20	Subspecialty telemedicine may jeopardize resident privacy	4.98	1.58

Responses correspond to a 7-point Likert scale, ranging from "strongly agree" to "strongly disagree," with lower numbers indicating more importance.

assessing whether and to what extent the anticipated benefits are realized.

The results of this survey complement our findings in our prior survey of NH provider perceptions of telemedicine for managing acute changes of condition associated with potentially avoidable hospitalizations. This earlier effort identified similar confidence in the potential of such an intervention to fill service gaps and improve timeliness of care. Collectively, these findings suggest that NH providers may have very specific technical specifications for a telemedicine intervention, endorse its clinical value, and would use this technology for helping NH residents more easily access a variety of specialists. The ability to leverage telemedicine across a variety of specialty care needs improves the economic model of this technology. A distinguishing characteristic of health information technology, such as telemedicine, is its relatively high fixed costs relative to the variable operating costs. These fixed costs, largely attributed to implementation,

are often cited as a barrier to technology adoption.^{27,28} One option is to spread these initial costs across a wider array of potential benefits by deploying the technology for multiple specialties, leveraging the linked clinical and economic fortunes of telemedicine. This is especially true in the NH setting, which has largely been excluded from federal policy efforts to increase technology adoption in healthcare, most prominently with legislation such as the Health Information Technology for Economic and Clinical Health Act.²⁹

The structure of this survey implicitly frames telemedicine as a modality for delivering care rather than a stand-alone intervention. The responses flesh out this interpretation, highlighting applications that are more likely to be used (e.g., dermatology and geriatric psychiatry) than others and thus would serve as more clinically appealing targets for establishing telemedicine programs and expanding existing programs. This "modality" mindset echoes the ongoing policy discussions in the telemedicine arena, which reflect an increasingly held view that this technology offers a different way of delivering the same care, as opposed to being an additional type of

care. For example, the CONNECT for Health Act,²⁴ introduced in the U.S. Senate with bipartisan support, would waive a number of current Medicare restrictions on the use of telemedicine and attempt to treat it more as an alternative to an in-person visit.

Beyond legislation currently under consideration, the last couple of years have seen an increase in Medicare-sanctioned opportunities for NHs to adopt and use telemedicine. For example, the Next Generation ACO Model³⁰ includes a telemedicine waiver lifting the restrictions typically imposed by Medicare on the use of telemedicine. Bundled payment models, such as the Bundled Payments for Care Improvement effort,³¹ also waive some of the current telemedicine restrictions. These initiatives create incentives for value-added telemedicine use, and our findings suggest that providers generally both see the value of telemedicine and have identified specific applications that they would be more likely to use.

A limitation of this study is that the sample is taken from physician and advanced practice provider attendees at a

national conference. The convenience nature of this sample means that it may not be representative of the entire population of NH physicians and advanced practice providers, especially given that the majority of respondents were medical directors. However, our findings are broadly consistent with previous descriptive work on the characteristics of NH medical directors, and providers more broadly.^{27,28} In addition, although our findings are based on the responses of >500 physicians and advanced practice providers, it is still relatively small compared with the entire population of providers in the >15,000 NHs nationwide. In addition, we had relatively few responses from advanced practice providers, who were not as well represented at the conference.

Finally, our survey captures provider perceptions of the clinical value of offering specialty consults in the NH through telemedicine. However, our survey did not speak of the financial value of these applications of telemedicine. Although clinical efficiencies would likely also generate economic efficiencies, other considerations such as capital investments and reimbursement would also determine the financial viability of offering specialty consults in the NH through telemedicine. To that end, this study does not capture the views of NHs, which are ultimately responsible for the adoption decision, and thus serve as a limiting factor in terms of broader use to telemedicine in NHs, but have been characterized elsewhere.³²

Conclusion

Our survey of providers at the 2016 AMDA annual conference aimed to capture NH provider willingness to refer residents to telemedicine specialty providers and overall perceptions of telemedicine for providing these services. Our findings suggest strong interest in using telemedicine for providing consults to NH residents, with telemedicine consults for dermatology and geriatric psychiatry generating the most enthusiasm. Respondents expressed strong agreement that specialty consults through telemedicine would improve timeliness of and access to appropriate care, and fill existing gaps in care delivery. Collectively, the responses suggest support for the concept of telemedicine as a modality of care that can be used to offer specialty consults to NH residents, improving care delivery across the specialty spectrum. With enthusiasm for the potential clinical benefits now documented, further exploration is needed of the economics of specialty teleconsults in NHs, as well as the impact of such an approach on patients, providers, and facilities.

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