Title
Availability of Palliative Care in Long-Term Acute Care Hospitals

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ABSTRACT

Objective: To determine the availability of palliative care programs in long-term acute care hospitals (LTACHs)

Design: Cross-sectional analysis using the 2016 American Hospital Association (AHA) Annual Survey

Setting and Participants: LTACHs in the United States

Method: We used descriptive analyses to compare the prevalence of palliative care programs in LTACHs across the United States in 2016. For LTACHs without a program, we also examined palliative care physician capacity in regions where those LTACHs resided to evaluate if expertise existed in those regions.

Results: One-third (36.5%) of 405 LTACHs (50.6% response rate) self-reported having a palliative care program. Among LTACHs without palliative care, 42.4% were in regions with the highest palliative care physician capacity nationwide.

Conclusions and Implications: LTACHs care for patients with serious and prolonged illnesses, many of whom would benefit from palliative care. Despite this, our study finds that specialty palliative care is limited in LTACHs. The limited palliative care availability in LTACHs is mismatched with the needs of this seriously ill population. Greater focus on increasing palliative care in LTACHs is essential and may be feasible as 40% of LTACHs without a palliative care program were located in regions with the highest palliative care physician capacity.

22 **INTRODUCTION**

23 Long-term acute care hospitals (LTACHs) care for patients with complex and severe
24 illness requiring extended inpatient care following a short-stay acute care hospitalization.[1] The
25 Centers for Medicare and Medicaid Services (CMS) defines an LTACH as a hospital with an
26 average inpatient length-of-stay (LOS) of greater than 25 days.[2] LTACHs care for patients with a
27 variety of care needs, including prolonged mechanical ventilation, complex wound care, dialysis,
28 and rehabilitation.[3–5] Patients transferred to LTACHs have prognoses similar to patients with
29 metastatic cancer or other end-stage illness, with a median survival of only 8 months, and spend
30 the majority of their remaining life in an inpatient setting.[6]

31 Palliative care is specialized medical care for people with serious illness.[7] Palliative care
32 is associated with improved quality of life,[8–11] better symptom control,[8–11] and decreased length-
33 of-stay and readmissions, leading to reduced costs.[8,12] Many patients in LTACHs have a serious
34 illness and are thus eligible to receive specialty palliative care.[6,13,14]

35 Availability of palliative care has increased in the US, with 75% of acute care hospitals
36 with 50 or more beds having a palliative care program in 2016.[15] However, it is not known
37 whether LTACH patients have access to palliative care. Therefore, we examined the availability
38 of palliative care in LTACHs in the US. Because we hypothesized that the prevalence would be
39 low, we also examined palliative care physician capacity of regions in the US where LTACHs
40 without a palliative care program resided to examine if such expertise is potentially available to
41 these LTACHs.

42 **METHODS**

43 **Design and Data Sources**

44 We analyzed the 2016 American Hospital Association (AHA) Annual Survey of
45 Hospitals to examine the availability of self-reported palliative care programs and related
46 services (e.g. geriatric care and hospice) for LTACHs. For LTACHs without a palliative care
47 program, we examined palliative care physician capacity in the hospital referral regions (HRRs)
48 where these LTACHs resided using data from the 2016 Profile of Active Hospice and Palliative
49 Medicine Physicians.[16]

50 **Secondary Analysis**

51 Because the AHA Survey had a 50% non-response rate for LTACHs and lacked
52 information on staffing composition, we conducted a secondary analysis examining palliative
53 care availability and staffing (physicians, nurses, social workers, chaplains) in California
54 LTACHs using the 2016 Hospital Utilization Report from the California Office of Statewide
55 Health Planning and Development (OSHPD), which included legislatively mandated, self-
56 reported data and had a 100% response rate among California LTACHs.

57 **Palliative Care Availability in LTACHs**

58 The AHA Annual Survey defined a palliative care program as "an organized program
59 providing specialized medical care, drugs or therapies for the management of acute or chronic
60 pain and/or the control of symptoms administered by specially trained physicians and other
61 clinicians; and supportive care services, such as counseling on advanced directives, spiritual
62 care, and social services, to patients with advanced diseases and their families."[17] The AHA
63 Survey also asked respondents to specify whether this service was provided or owned by the
64 hospital, by an affiliated health system, or offered through a joint venture or contract with an
65 outside entity. The California OSHPD survey defined a palliative care program as "an
66 interdisciplinary team that sees patients, identifies needs, makes treatment recommendations,

67 facilitates patient and/or family decision-making, and/or directly provides palliative care for
68 patients with serious illness or their families."[18]

69 **Statistical Analyses**

70 We used descriptive analyses to characterize LTACHs with and without a palliative care
71 program, including ownership, structure, bed size, patient volume, geographic location,
72 availability of palliative care related services, and source of palliative care program if applicable.

73 For LTACHs without a palliative care program, we created a heat map of palliative care
74 physician capacity, defined as the number of these physicians per 100,000 people in the HRR in
75 which these LTACHs are located, using HRR boundary data from the Dartmouth Atlas.[19]
76 Regional palliative care physician capacity was categorized into deciles based on capacity for all
77 306 HRRs in the US.

78 Analyses were conducted in Stata, version 16 (AHA data), Microsoft Excel (OSHPD),
79 and RStudio, version 1.2.5033 (heat map). The study was exempt from institutional review board
80 review.

81 **RESULTS**

82 ***National Analysis***

83 Of the 405 LTACHs in the US in 2016, 205 (50.6%) responded to the AHA Annual
84 Survey. Among respondents, 73 (35.6%) self-reported having a palliative care program (**Table**
85 **1**). Compared to LTACHs that reported having a palliative care program, LTACHs without a
86 palliative care program were more commonly for-profit (79.5% vs 45.2%), part of a multi-
87 hospital system (88.6% vs 79.5%), smaller (94.7% had <100 beds vs 82.2%), and located in the
88 Midwest (18.9% vs 11.0%) or South (70.5% vs 64.4%), but were otherwise similar in admission

89 volume, total inpatient days, location (freestanding vs. hospital-within-hospital), and
90 metropolitan status. About half (52.1%) of LTACHs with a palliative care program nationwide
91 offered chaplaincy services, 8.2% had a hospice program, and 12.3% offered geriatric care,
92 which were all more prevalent in LTACHs with a palliative care program than in LTACHs
93 without. In nearly half of LTACHs with a palliative care program, that service was provided by
94 the LTACH directly, in 28.8% it was provided by the affiliated health system, and in 23.3% it
95 was provided by a joint venture with an outside entity. Non-respondent LTACHs were more
96 commonly for-profit (86.5%) and located in the Midwest (29.5%) and West (20.0%) but were
97 otherwise similar to LTACHs that reported having a palliative care program.

98 ***Regional Palliative Care Physician Capacity***

99 The 132 LTACHs without a palliative care program were located in 85 unique HRRs
100 (**Figure 1**). Palliative care physician capacity for these HRRs ranged from 0 to almost 40
101 physicians per 100,000 people, with a median of 12.7 physicians (interquartile range (IQR), 8.0-
102 17.3). Palliative care physician capacity for the 85 HRRs was similar to the 221 other HRRs
103 (median of 12.7 versus 12.0 physicians per 100,000 people, p=0.66). Of the 132 LTACHs
104 without a palliative care program, 27 (20.4%) resided in HRRs in the lowest 3 deciles of
105 palliative care physician capacity nationwide (<8.8 physicians), 49 (37.1%) resided in HRRs in
106 the middle 4 deciles, (8.8-16.3 physicians), and 56 (42.4%) resided in HRRs in the highest 3
107 deciles (16.3-55.1 physicians).

108 ***Secondary Analysis***

109 Of the 24 California LTACHs, only 1 (4.2%) self-reported having a palliative care
110 program in OSHPD, which consisted of one palliative care social worker and one chaplain. Six

111 LTACHs in California also responded to the AHA survey, 4 of which self-reported having a
112 palliative care program.

113 **DISCUSSION**

114 In this national study, one-third (35.6%) of LTACHs self-reported having a palliative
115 care program. However, palliative care availability in LTACHs may be lower for several
116 reasons. First, nearly 50% of LTACHs did not respond to the AHA Annual Survey. Non-
117 respondent LTACHs were overwhelmingly for-profit, which per our analysis and other studies of
118 acute care hospitals are less likely to offer palliative care.[20,21] Furthermore, our secondary
119 analysis of California LTACHs from the same time period, which had a 100% response rate,
120 indicated only 1 of 24 LTACHs had a palliative care program, which consisted of only a single
121 social worker and chaplain. Second, the AHA survey may overestimate palliative care
122 availability even among respondents. For the six California LTACHs participating in both
123 surveys, four self-reported having a palliative care program in the AHA survey but only one in
124 the OSHPD data. The reason for this discrepancy is unclear, but may be due to California's
125 legislative mandate to report corresponding palliative care staffing data, which is not included in
126 the AHA survey, or because of differing definitions used in each survey.

127 LTACHs patients most closely resemble patients in step-down units or ICUs in acute-
128 care hospitals regarding their care needs and meet most commonly recognized definitions of
129 serious illness for which specialty palliative care is recommended.[13,14,22] Despite this, specialty
130 palliative care is much more available in acute care hospitals of at least 50 beds than LTACHs of
131 similar size (75% vs 39%). Acute care hospitals with less than 50 beds had similarly limited
132 availability compared to LTACHs of similar size (36% vs 33%), but these hospitals do not care
133 for as many patients with complex and prolonged illness as LTACHs.[16]

134 Establishing and maintaining a palliative care program is not without its challenges.[20]
135 One potential barrier is scarcity of expertise. However, over 40% of LTACHs without palliative
136 care resided in regions with among the highest palliative care physician capacity in the country
137 (**Figure 1).** These LTACHs may have greater opportunity to employ or contract with a palliative
138 care physician to establish and direct a program. However, some HRRs are large and palliative
139 care physicians may be unable to provide in-person palliative care due to travel distance.
140 Directly employing or contracting with a palliative care physician will be more challenging in
141 regions with more limited palliative care physician capacity. Additionally, palliative care
142 programs require other interdisciplinary team members such as nurses and social workers for
143 which expertise may also be scarce. Thus, creative models of delivering palliative care in
144 LTACHs may be required. For example, social workers, nurses, or physicians can be trained to
145 deliver primary palliative care.[23,24] Primary palliative care has been defined as "palliative care
146 that is delivered by health care professionals who are not palliative care specialists, such as
147 primary care clinicians; physicians who are disease-oriented specialists (such as oncologists and
148 cardiologists); and nurses, social workers, pharmacists, chaplains, and others who care for this
149 population but are not certified in palliative care."[25] Additionally, given the prolonged length of
150 stays, LTACHs may only need palliative care staffing once or twice per week. Moreover, during
151 the COVID-19 pandemic, there was a significant rise in telemedicine, including for palliative
152 care, which suggests the potential for tele-palliative care models in LTACHs.[26]
153 Given that palliative care may shorten hospitalizations,[8,12] another potential barrier is
154 policies that tie reimbursement to LOS. LTACHs must maintain an average LOS of over 25
155 days.[27] Reimbursement for patients with shorter-than-average LOS are subject to a short-stay-

156 outlier (SSO) adjustment which is a considerably lower payment than for patients whose LOS
157 exceeds the SSO threshold.[28] Omitting patients who opt for hospice care from LOS requirement
158 under §412.23(e)(2) and fully reimbursing LTACHs for patients who desire premature discharge
159 for hospice care even if their LOS is less than the SSO threshold could align incentives, promote
160 patient and caregiver preferences, and encourage development of palliative care in LTACHs
161 without concern for loss of revenue.[29,30] Conversely, once the SSO threshold has been reached,
162 extending the stay only increases costs for facilities since LTACHs are reimbursed a bundled
163 payment by Medicare.[28] Thus, implementing palliative care may significantly reduce costs for
164 LTACHs if, after a trial of continued intensive life-prolonging and curative care, patients and
165 caregivers decide to change their goals and pursue comfort focused care.

166 This study has certain limitations. First, we used prevalence of palliative care programs
167 and palliative care staffing to estimate availability of specialty palliative care, but palliative care
168 could have been provided through primary palliative care, which we would not have captured.
169 Further research is needed to better understand the burden of unmet palliative care needs in this
170 population, and how it may differ among LTACHs. Second, we relied on self-reported data,
171 which we anticipate would overestimate the true prevalence of palliative care programs in
172 LTACHs. Third, the national data did not have detailed information regarding the staffing
173 composition of palliative care programs. However, in our analysis of 24 California LTACHs,
174 zero California LTACHs self-reported employing a single palliative care physician. Finally, we
175 report data from 2016, so palliative care availability may have changed.

176 **Conclusions and Implications**

177 Despite caring for patients with serious illnesses with poor prognoses, only a minority of
178 LTACHs in the US have a palliative care program. Over 40% of LTACHs without a palliative

179 care program reside in regions with among the highest palliative care physician capacity in the
180 country, which suggests the availability of local expertise to develop or staff a program. Training
181 staff to provide primary palliative care and tele-palliative care models could also address
182 potential shortage of palliative care expertise in LTACHs. Ensuring the availability of these
183 services has the potential to improve LTACH patient and caregiver satisfaction, quality of life,
184 and end-of-life experiences, while decreasing burdensome care.

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263 **FIGURE LEGEND**

264 **Figure 1. Palliative Care Physician Capacity for the 85 Hospital Referral Regions with at least 1**

265 **LTACH that Did Not Report Having a Palliative Care Program.**

266 Deciles are defined according to palliative care physician capacity across all 306 HRRs in the United

267 States, in order to provide a national benchmark of palliative care physician capacity for the 85 HRRs

268 containing at least 1 LTACH without a palliative care program. HRRs shaded in dark gray represent

269 HRRs that did not include an LTACH without a palliative care program.

Table 1. Characteristics of LTACHs with and without a Palliative Care Program Nationwide

Characteristic	Has a PC Program (n=73)	No PC Program (n=132)	p-value	Non-respondents (n=200)
Ownership			<0.001	
For-profit, investor-owned	33 (45.2%)	105 (79.5%)		173 (86.5%)
Not-for-profit	34 (46.6%)	25 (18.9%)		21 (10.5%)
Government, nonfederal	6 (8.2%)	2 (1.5%)		6 (3.0%)
Part of a multi-hospital system	58 (79.5%)	117 (88.6%)	0.08	29 (14.5%)
Bed size			0.02	
6-49 beds	38 (52.1%)	78 (59.1%)		105 (52.5%)
50-99 beds	22 (30.1%)	47 (35.6%)		64 (32.0%)
≥ 100 beds	13 (17.8%)	7 (5.3%)		31 (15.5%)
Total admissions, median (IQR)	363 (262-582)	383 (305-549)	0.79	550 (369-922)
Total Inpatient days, median (IQR)	10,667 (6,958-17,297)	10,500 (8,172-14,171)	0.91	9,142 (6,184-16,256)
Metropolitan location	69 (94.5%)	120 (90.9%)	0.36	194 (97.0%)
Region			0.04	
Northeast	9 (12.3%)	8 (6.1%)		24 (12.0%)
Midwest	8 (11.0%)	25 (18.9%)		59 (29.5%)
South	47 (64.4%)	93 (70.5%)		77 (38.5%)
West	9 (12.3%)	6 (4.6%)		40 (20.0%)
Location			0.47	
Freestanding	42 (57.5%)	69 (52.3%)		-
Hospital-within-Hospital	31 (42.5%)	63 (47.7%)		-
Programs/services provided by hospital				
Hospice program	6 (8.2%)	0	0.001	-
Chaplaincy	38 (52.1%)	30 (22.7%)	<0.001	-
Geriatric services	9 (12.3%)	10 (7.6%)	0.26	-
Source of palliative care program				
Owned/provided by hospital	35 (48.0%)	0	n/a	-
Provided by the health system	21 (28.8%)	0	n/a	-
Contract/joint venture with outside entity	17 (23.3%)	0	n/a	-

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