

Telehealth Advance Care Planning Cost Effectiveness

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Abstract

Objective: A telehealth advance care planning (ACP) program was evaluated for efficacy in enrolling members, creating advance directives (AD), decreasing utilization, and lowering medical cost during a two-year period.

Study Design: 7,089 members from multiple insurance products were identified as high-cost/ high-risk members for referral to a telehealth ACP vendor. Members not enrolled created the comparison group of 6,775 members.

Methods: Members were enrolled in 2020. The enrollment process was tracked for participation in ACP discussions and creation of AD. Cost savings and utilization were analyzed for calendar year 2020 and 2021 comparing the enrolled and comparison groups.

Results: Of the 314 members enrolled, 60.8% identified their preferences, and 20.4% generated an AD or a Provider Order for Life Sustaining Treatment (POLST). The enrolled group was 65.9% Medicaid, 7.3% commercial, 23.2% Medicare Advantage, 2.6% Medicare/ Medicaid Special Needs, and 1.0% other. The total medical cost for members enrolled in the ACP program was 33.3% lower than the control group in calendar years 2020-2021. The savings were mostly from a decrease in in-patient utilization. Emergency room visits were 10.2% higher in the intervention group.

Conclusion: Despite generating ACP documents in only 20.4% of those enrolled in a telehealth ACP program, a significant decrease in total medical cost (33.3%) was seen in 314 high-cost/ high-risk patients in 2020-2021 compared to controls. This would suggest that telehealth ACP can be accomplished, and cost savings appear to be more likely driven by the ACP conversation than by the completion of documents.

Keywords: Advance care planning; Advance directive; Health care savings; POLST

Introduction

Multiple studies of cost savings from advance care planning vary in their conclusions as well as in the design of the study. A review of seven studies [1] showed cost savings in six studies [2-7] and no savings in one [8]. However, the authors conclude that “The studies... in this review allow only preliminary conclusions regarding the cost implications of ACP because of poorly designed and heterogeneous interventions and incomplete cost assessments.” [1]. Other studies support cost savings from ACP [9-10] while other studies do not find significant cost savings [11-13]. Conclusions about cost savings vary: “cost savings due to changes in practice at the end of life

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are not likely to be substantial” [14], “Little evidence supports the hypothesis that advance care directives reduce resource use by hospitalized patients” [15], “Despite the intrinsic logic of advance care planning, the evidence suggests it does not have the desired effect.” [16]. Explanations as to why ACP cost savings studies vary in their conclusions. “ACP is complex and trial characteristics were heterogenous” [17], “only preliminary conclusions can be made owing to poorly defined and heterogeneous interventions”, and “there are no clear, widely accepted guidelines on how to implement ACP” [18]. Similar disparities are seen in studies of the use of ACP in nursing homes. Studies may show cost reductions [6] or decreased utilization [19], while other studies may not [20-21]. Even studies using POLST orders have varying results with some showing savings [22], while other studies of the POLST do not show decreased utilization [23]. Even POLSTs with limitations on interventions may not show decreased utilization or in-patient cost [24-25].

The current study is a retrospective controlled study in California, focused on high-cost and high-risk adults, across multiple insurance products, employing a telehealth approach, using an advance directive and or POLST for documentation, in an out-patient setting, and measuring health care cost as the outcome.

Materials and Methods

Health Net LLC of California, a California health maintenance organization, identified 7,089 members as high-cost and high-risk members using Impact Pro© (I Pro©) risk stratification tool, Charlson Index, and claims data. These members were referred to a telehealth based advance care planning vendor with instructions to enroll members up to a maximum of 300 commercial, 300 Medicare, and 300 Medicaid members in the calendar year 2020. Patients were initially contacted through printed mail which referenced the partnership of the vendor with Health Net LLC of California. The program uses education, documentation, and goal setting to influence care. The vendor utilizes physicians, nurses, and social workers to contact members for potential enrollment in an advance care planning program that included an explanation of the process, the options for choices in interventions, and the documents available. The process included the members making choices for end of life (EOL) interventions, generating documents, signing the document, and distributing the documents as directed by the member. Caregivers, family, and significant others were welcome to join the telehealth sessions at the discretion of the member or Power of Attorney for Health Care. Periodic follow ups were done after signing. Copies of the ACP documents were available online and were distributed according to the member’s wishes. Members understood that all aspects of the program were voluntary and ACP documents could be revoked.

Health Net analyzed all medical costs including pharmacy and behavioral health for calendar years 2020 and 2021. Cost was further evaluated for in-patient acute care and emergency room visits.

Statistical Analysis

The enrolled population was compared with the control population (Table 1) for various cohorts including age group, race/ ethnicity, sex, line of business and diagnosis. The result of that analysis indicates that the enrolled and control population are comparable among those demographic and clinical characteristics with higher R-Value (>0.90), which is statistically significant ($p > 0.05$). A chi-square test of independence was performed to examine the relation age group and ACP enrollment. The relation between these variables was significant, Chi-SQR=32.3982, $p = .00001$. (Table 1) Cost data was analyzed using a two-tail analysis for a significant difference.

Results

Of the 314 members enrolled, 39.2% disenrolled prior to completing their preferences. Of the 191 members (60.8%) who completed their preferences, 36 (11.4%) generated a living will only, 14 (4.5%) generated a POLST only, and 14 (4.5%) generated a living will and a POLST. Therefore, a total of 64 unique members (20.4%) generated an ACP document. Only 9 of the 14 members generating a POLST document actually signed the document (Table 2).

The length of stay in the enrollee group was 19.9 months in the program while what would have been the length of stay in the control group was 21.6 months. The two-year decrease in total medical per member per month (PMPM) cost was \$951.20 (30.3%) in the enrollee group compared to the control group. The in-patient cost decrease of \$709.60 PMPM was the main driver of the total decrease. Decreases were seen in the admits per thousand members, the bed days per thousand members, and the length of stay over the two-year period. Emergency room visits per thousand members for two years increased by 10.2% in the enrolled group compared to the controls (Table 3).

The enrollee median PMPM cost decreased by 40.2% in year one and 61.3% in year two. The mean PMPM cost decrease was 31.0% in year one and 35.7% in year two (Table 4).

Discussion

The current study does show significant cost savings from a telehealth advance care planning program for high-cost and/or high-risk patients. This study focuses on cost although other outcomes have been considered in other studies, such as utilization and quality of life [17]. Telephonic ACP sessions have been successfully used previously [10, 17]. Some studies have focused on end of life but trying to prospectively

Table 1: Statistical analysis of the intervention group compared to the control group. The results of this analysis indicates that the enrolled and control population are comparable among those demographic and clinical characteristics with higher R-Value (>0.90), which is statistically significant (p>0.05).

	Member Count		% Of Member		Significant at p < .05		
	Control	Enrolled	Control	Enrolled	R-Value	R ²	P-Value
LOB					0.9515	0.9054	0.012728
MEDICAID	4,704	207	69%	66%			
COMMERCIAL	1,309	23	19%	7%			
MEDICARE_ADVANTAGE	740	73	11%	23%			
MEDICARE_SNP	21	8	0%	3%			
OTHER	1	3	0%	1%			
					R-Value	R ²	P-Value
Diagnosis					0.9094	0.827	<.00001
Chronic kidney disease	818	26	12%	8%			
Septicemia (except in labor)	357	22	5%	7%			
Malignant Neoplasm	558	21	8%	7%			
Diabetes mellitus with complications	207	14	3%	4%			
Osteoarthritis	133	11	2%	4%			
Complication of device; implant or graft	111	10	2%	3%			
Abdominal pain	62	9	1%	3%			
Hypertension with complications and secondary hypertension	187	9	3%	3%			
(blank)	116	7	2%	2%			
Complications of surgical procedures or medical care	55	7	1%	2%			
Spondylosis; intervertebral disc disorders; other back problems	130	7	2%	2%			
Chronic ulcer of skin	18	5	0%	2%			
Other nervous system disorders	143	5	2%	2%			
Skin and subcutaneous tissue infections	78	5	1%	2%			
Viral infection (Including COVID)	138	5	2%	2%			
Other and unspecified benign neoplasm	28	5	0%	2%			

	Member Count		% Of Member		Significant at p < .05		
	Control	Enrolled	Control	Enrolled	R-Value	R ²	P-Value
Age Group					0.9212	0.8486	0.000418
<=40	702	53	10%	17%			
41-65	3,037	166	45%	53%			
66-80	1,866	66	28%	21%			
80+	1,170	29	17%	9%			
					R-Value	R ²	P-Value
By Race/Ethnicity					0.9458	0.8945	0.000116
Hispanic or Latino	2,443	132	36%	42%			
White	2,267	81	33%	26%			
Asian	719	14	11%	4%			
African American	641	32	9%	10%			
American Indian or Alaska Native	48	1	1%	0%			
Native Hawaiian and other Pacific Islander	27	2	0%	1%			
Multi Race	4	1	0%	0%			
Other Race	62	4	1%	1%			
Unknown	564	47	8%	15%			
					R-Value	R ²	P-Value
By Gender					0.8938	0.7989	0.002761
FEMALE	3,686	171	54%	54%			
MALE	3,089	143	46%	46%			

Table 2: Intervention group completion of documents.

OUTCOME	NUMBER	PERCENT
Enrolled	314	100%
Disenrolled	123	39.2%
Enrolled & Completed Preferences	191	60.8%
Completed Living Will Only	36	11.4%
Generated POLST Only	14	4.5%
Completed LW & Generated POLST	14	4.5%
Unique patients signing LW and/or POLST	64	20.4%
Signed by patient POLST	9	2.9%
Co-signed by provider POLST	8	2.5%

Table 3: Mean PMPM cost and two-year utilization data comparing the intervention group to the control group.

	Control	Enrolled	Delta (absolute decrease)	Delta (% decrease)	Statistical Analysis (Two-tail statistical significance)		
	(mean)	(mean)	Control - Enroll	Delta/Control	P Value Confidence level 95%	SD Control	SD Intervention
Member	6775	314					
LOS (months)	21.6	19.9	(1.7)	(7.90%)			
PMPM cost overall	\$2,852.40	\$1,901.20	(\$951.20)	(33.3%)	2020: p=0.0142 2021: p=0.0205	\$73,683	\$49,675
PMPM cost IP \$	\$1,997.20	\$1,287.60	(\$709.60)	(35.5%)			
PMPM cost ED \$	\$74.10	\$76.00	\$1.90	2.6%			
ADM/K	907.1	752.7	(154.4)	(17.0%)			
BD/K	6,865.0	4,751.5	(2,114)	(30.8%)			
LOS days	7.57	6.31	(1.26)	(16.8%)			
Re-Adm % 30 days	25.4%	22.8%	(2.6%)	(10.2%)			
ED/K	1,625.40	1,790.40	165	10.2%			

Table 4: Median and the mean PMPM Cost Data for 2020 and 2021 for a high-cost high-risk population enrolled in 2020.

	CONTROL	Enrolled	Delta (absolute decrease) Control - Enroll	Delta% Delta/Control
Overall PMPM Cost 2020 (median)	\$1,127.67	\$674.04	(\$453.63)	(40.2%)
Overall PMPM Cost 2021 (median)	\$366.46	\$141.75	(\$224.71)	(61.3%)
	CONTROL	Enrolled	Delta (absolute decrease) Control - Enroll	Delta% Delta/Control
Overall PMPM Cost 2020 (mean)	\$3,362.30	\$2,320.60	(\$1,041.70)	(31.0%)
Overall PMPM Cost 2021 (mean)	\$2,206.10	\$1,419.60	(\$786.50)	(35.7%)

focus on end of life is difficult since end of life unpredictable [14]. Total cost may reflect the quantity of life-sustaining interventions being provided or simply different kinds of medical care being provided [14].

Most striking in this study is that the savings were significant despite only 60.8% of the enrollees completing their preferences for interventions and only 20.4% generating an advance care planning document. The savings were greater in calendar year one, the year in which they were enrolled, compared to calendar year two, the year after enrollment. This supports the suggestion that the conversation itself

has a greater effect on cost savings than the generation of a document alone [26].

The success of advance care planning depends on multiple elements of the total process. Advance Directives (AD) are not always adhered to by doctors in clinical practice. Reasons may include inability to verify that a “proper” AD discussion had occurred, whether the patient fully understood the consequences of their decisions, AD was outdated, or the need for confirmation of the validity of the document [27]. Preferences may change over time. Over a 1 year follow up, preferences for CPR or mechanical ventilation

changed in 38.3% of the patients. The most common causes of changing preferences included health status, mobility, anxiety, depression, and marital status [28]. Memory of what preferences were chosen may fade over time. Interviews with proxies showed that only 5% had a recall period greater than 2 years [29]. Documents may not be distributed to all parties involved or documents may not be honored even if presented to current providers. [30-31]. Preferences for life-sustaining treatment are different when patients are healthy as opposed to when they are ill (prior to, soon after, and several months after a hospitalization) [32]. Advance Directives (AD) completed within 3 months of death or greater than two years before death will reflect preferences for more aggressive care [29].

Stage of illness, mental status, and surrogate/family concordance may all play a role in the outcomes from advance care planning. Patient designated and next-of-kin surrogates incorrectly predicted patients' end-of-life treatment preferences in 32% of the cases. Two studies have shown that patient designation of decision makers does not appear to improve surrogate accuracy. Three other studies were unclear on the impact of patient designation on surrogate accuracy, and two other studies had shown that prior discussions did improve surrogate accuracy. Further limitation is that studies are based on hypothetical scenarios [33]. Timing of completing advance directives also affects choices. Factors include overall health status, mild-moderate chronic diseases, and advanced life-threatening illness with a risk of imminent death [34].

The current study does support the proposition that ACP does result in total medical cost savings. However, this support is specific to a high-cost high risk population in a relatively younger population, predominately Medicaid patients, in an out-patient setting. Other factors such as physician behavior, timing of ACP relative to hospitalization, death, or exacerbation of chronic illness were not evaluated. The data does confirm that the savings are predominately from lower in-patient utilization. The current study does support the use of telehealth. The current study does suggest that the ACP discussion may play a larger role than the documents alone. Future studies do need to address all variables in the heterogeneity of ACP to compare outcomes with existing literature.

Conclusion

Despite only generating advance care planning (ACP) documents in 20.4% of those enrolled in a telehealth ACP program in 2020, a significant decrease in total medical cost of 33.3% was seen in 314 high cost and high-risk patients followed in 2020-2021 compared to a control group of 6,775 patients also identified as high-cost and high-risk and followed over the same period. This would suggest that telehealth advance care planning can be accomplished, and

cost savings appear to be more likely driven by the ACP conversation more than by the completion of documents. A larger volume study would be required to confirm this.

Conflicts of Interest

None. All authors have no financial nor personal conflicts of interest.

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