ORIGINAL RESEARCH

Health Coaching: A Preliminary Report on the Effects in Traumatic Brain Injury/Polytrauma Patients

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Abstract

Background: Failure to adhere to treatment recommendations has significant impact on the health outcomes of the individual and health care systems. Health coaching is a promising care model that has gained interest in the medical field. This study focused on the impact of health coaching on health behaviors that may have direct impact on successful patient outcomes.

Primary Study Objective: The objective of this study was to assess the impact of health coaching administered through the Polytrauma Integrative Medicine Initiative (PIMI).

Methods/Design: This study was a quasiexperimental cohort study.

Setting: This study occurred at a specialized polytrauma rehabilitation center.

Participants: Participants were divided into 3 cohorts: (1) 33 patients who served through PIMI enrollment, (2) 22 patients who declined PIMI, and (3) a control cohort of 30 random patients who were not referred to PIMI. Patients were primarily male active duty or veteran military personnel.

Intervention: The intervention consisted of personalized health coaching by trained, certified personnel.

Primary Outcome Measures: Outcome measures included the following (1) Self-assessment: utilizing the Personal Health Inventory (PHI) at enrollment and at 3 mo; (2) treatment adherence: the percentage of scheduled appointments fulfilled by patients; and (3) post hoc analysis: for no-show and cancellation rates; 2-tailed paired *t* tests for PHI data and post hoc within groups; 2-tailed independent samples *t* tests for treatment adherence percentages and post hoc between groups.

Results: There was no significant difference in treatment adherence rates between the 3 cohorts (all $P > .45$). PIMI patients had significantly higher cancellation rates than no-show rates for both clinical, 20.8%/5%, and coaching appointments, 17.3%/7.5%, ($P < .05$). PIMI patients had significantly lower no-show rates, 5%, than control patients, 15.8% ($P = .007$). PHI data suggest PIMI patients believe they are making improvements in many areas of health coaching focus.

Conclusion: Low cohort numbers are a concern. There was no difference for treatment adherence rates for health coaching compared with no health coaching. Select variables such as cancellation and no-show appointment rates may better capture the impact of health coaching on patient behavior and clinical resource utilization.

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The burden of chronic disease on health care systems has been well documented in past decades.[1,2] Failure to adhere to treatment recommendations has a significant impact on the health outcomes of the individual and health care systems. This highlights the need for enhanced health care models to go beyond the traditional care delivery to incorporate behavioral science as a factor in motivating behavior change. Health coaching is one such promising care model that has gained interest in the medical field.[1]

Several studies have documented the impact of health coaching for improvements of functional health outcomes in health care. A 10-month randomized controlled trial demonstrated that patients who underwent health coaching had a significantly reduced risk of developing coronary heart disease.[3] Another clinical trial of 28 patients examined the impact of health coaching on type 2 diabetes. Patients who received 6 months of health coaching showed a statistically significant improvement in outcomes related to A_{1c} and increased adherence to medication and exercise plans than the control group.[4] A 2010 systematic review of quantitative and qualitative methodologies found that 6 of 15 studies demonstrated significant improvements in nutrition, physical activity, weight and diabetes management, or medication adherence after a health coaching intervention.[5]

Although these studies serve to establish health coaching as a viable and valued tool in specific areas of health care, several factors limit their generalizability to other treatments or medical disciplines. Specifically, these studies largely focused on counseling for cardiovascular disease and diabetes, utilized health coaches from varied professional backgrounds and educations, and did not employ standardized training of health coaches. In addition, the use of various definitions of *health coaching*, beyond the generally accepted patient-centered and patient-driven process that empowers a client to "achieve self-determined goals related to health and wellness,"[6] make cross-study comparisons difficult. These limitations bring into question the relevance of health coaching to the multidisciplinary rehabilitation field where adherence to prescribed clinical treatment recommendations is critical to successful rehabilitation outcomes.

To test the viability of health coaching in a specialized rehabilitation population, the VA Office of Patient Centered Care and Cultural Transformation (OPCC&CT) and the VA Rehabilitation and Prosthetic Service allocated resources in 2012 to implement a pilot program to assess the impact of health coaching for veterans utilizing the Polytrauma System of Care (PSC). Three polytrauma sites: Palo Alto, California; Richmond, Virginia; and San Antonio, Texas, were designated in the rollout of a 3-year pilot program, termed the Polytrauma Integrative Medicine Initiative (PIMI). Briefly, the PSC sites are multitiered lifetime treatment programs established in 2005 to address the rehabilitation needs of those with multiple systemic injuries, of which traumatic brain injury (TBI) is often the primary diagnosis driving rehabilitation and management. There are 3 principal levels of PSC infrastructure serving a significant number of patients nationally: (1) the Polytrauma Rehabilitation Center, serving in-patients through acute comprehensive interdisciplinary rehabilitation who experienced severe injuries to more than 1 organ system, often including brain injury; (2) the Polytrauma Transitional Rehabilitation Program, serving patients in a residential setting with a focus on successful community reintegration, with specialized training to support return to work, school, or meaningful activities; and (3) the Polytrauma Network Site (PNS), to serve outpatient needs by providing polytrauma and mild TBI assessment, treatment, and ongoing assistance with community reintegration. The PNS also serves as an anchor to broader outreach programs such as the Community-Based Outpatient Clinics and Telehealth support. At our site, the outpatient PNS Clinic was designated to pilot the PIMI program in 2012.

The overall goal of the PIMI program is to enhance patient-centered care by integrating standardized health coaching within an interdisciplinary rehabilitation team. An integrative health coach (IHC) participates in interdisciplinary team activities to help facilitate and promote healthy behaviors in various domains of health for the veteran population with TBI. The IHC focuses on the veteran's vision, values, and health goals. The IHC meets the veteran where they are to help guide and support the veteran to achieve self-determined goals. The PIMI program uses the Personal Health Inventory (PHI) to assess patient performance and satisfaction in meeting identified goals.[7] The targeted patient population differs from previous studies on health coaching, which have largely focused on persons with cardiovascular risk factors and diabetes mellitus. In addition, the PIMI program standardized health coach training and definition of *health coaching* to minimize those biases and limitations as established in the literature.

The purpose of this report is to evaluate the impact of this pilot PIMI program at the Palo Alto site. We sought to fully evaluate the program with a specific metric of interest within the designated programs, treatment adherence. Within the rehabilitation field, the clinical appointments are the prescribed therapeutic sessions needed to facilitate the patients' recovery. Rehabilitation services include physical therapy, occupational therapy, speech therapy, recreational therapy, and neuropsychological therapy, among others. We chose treatment adherence as a functional outcome variable because it is best reflective of health behaviors that have direct impact on a rehabilitation patient's successful outcomes, the rate of clinical treatment recommendations fulfilled. We therefore propose to (1) examine treatment adherence in patients who were offered and received IHC intervention (IHC+) compared with those who were offered and declined to participate in IHC (IHC-) and a control group of PNS patients (CPNS); and (2) evaluate patient satisfaction by analyzing changes in PHI ratings at 3 months for patients who received IHC interventions. Our a priori assumption is for a positive impact of health coaching on clinical treatment adherence and PHI.

Methods

The patient cohort reported here consisted of PNS patients served from initial PIMI enrollment in June 2013 through May 2014, at which time recruitment procedures for the PIMI program changed. Potential patients who

might benefit from the PIMI program were identified by the PNS interdisciplinary team and discussed with the PNS attending physician who submitted appropriate referrals. Patients identified and considered for the program included those requiring assistance in setting appropriate health and wellness related goals, those having difficulty following PNS interdisciplinary treatment recommendations, and those having difficulty making progress toward their treatment goals. Patients were contacted for recruitment by an IHC following referral. Patients had to opt-in to the PIMI program. Thus, 2 cohorts of referred patients were identified, those referred who received IHC sessions (IHC+) and those referred who declined to receive IHC sessions (IHC-). A third cohort, defined as those PNS patients who were not referred to the PIMI program, served as the control (CPNS) group.

The IHCs received standardized training and were certified by Duke University Integrative Medicine. IHCs participate in a foundation course consisting of 3 onsite learning modules delivered in the course of several months; each module consists of 25 to 30 hours and completion of approximately 2 to 3 hours of distance learning each week. In addition to the foundation course, the certification course is distance learning delivered via the Web and teleconferencing in a 6-month period. IHCs receive individual supervision for 9 coaching sessions, complete 100 hours of professional coaching, and complete both an oral and written exam.[8]

The IHC partners with the veteran to support the development of a personal health plan. The IHC collected standardized baseline information from all participants during their initial PIMI coaching session. Patients completed a self-assessment utilizing the PHI, 19th revision,[7] developed by the OPCC&CT to help veterans and clinicians work together and establish a dialog to facilitate development of a personal health plan. The PHI focuses on what is important to the veteran and included rating scales for the following: physical, mental/emotional, life, working the body, recharge, food and drink, personal development, family, friends and coworkers, spirit and soul, surroundings, power of the mind, professional care and prevention, professional care, and intervention. These were identified as key areas of self-care that contribute to living a healthy life. Each participant identified both a current assessment and a desired score in these areas. Coaching sessions were done at the convenience of the participant. The frequency of coaching intervention was dependent on the needs of the participant. Patient goal attainment was assessed with a questionnaire using the 13 PHI ratings administered by the health coach during follow-up coaching sessions at 3 months.

Patient data for treatment adherence analysis and demographics were extracted through chart review by a licensed clinical social worker and a registered nurse. Treatment appointments were tabulated for clinical sessions scheduled by each treating discipline, the number of cancelled sessions (CAs) and the number of no shows (NSs). Due to the low number of appointments for some disciplines, data were collapsed across disciplines, resulting in singular values for the 3 important variables of scheduled, CA and NS clinical appointments for each patient. Again, low numbers of CA and NS appointments prompted us to collapse the 2 variables for the first analysis of treatment adherence.

For the clinical treatment adherence measure, rates were calculated as 1 minus the percentage of total NS and CA clinical appointments divided by the total of scheduled clinical appointments. IHC nonclinical (PIMI) appointments were assessed separately because only the IHC+ patients had those appointments. Two-tailed independent samples *t* tests were performed on the resulting treatment adherence percentages between IHC+, IHC-, and CPNS groups using Microsoft Excel's built-in function (Microsoft, Redmond, WA, USA).

Examination of the treatment adherence analysis prompted a post hoc analysis of between- and within-group CA/NS rates. These post hoc measures were calculated as the individual percentages for CA (CA/scheduled) and NS (NS/scheduled) for clinical (IHC+c) and PIMI (IHC+p) appointments. We performed 2-tailed independent sample *t* tests on percentages and included only patients with 1 or more appointments using Microsoft Excel's built-in function.

Personal Health Inventory

The Center of Innovation on Disability and Rehabilitation Research (Gainesville, FL, USA) performed 2-tailed paired *t* tests to analyze the PHI data. IHC+ patient goal attainment was assessed by comparing PHI at 3 months with their baseline PHI using SPSS, version 21 (IBM Corp, Armonk, NY, USA). They also performed appropriate statistical tests on the demographic factors of the 3 cohorts: for age, a 1-way ANOVA with Bonferroni-corrected post hoc tests, and for the remaining categorical variables χ^2 tests, using Fisher's exact test whenever the data did not meet assumptions for χ^2 (any tables with expected cell counts <5). Alpha was set at .05 for significance testing (in the case of Bonferroni post hoc corrections, $\alpha = .05$ is the family wise error rate across all possible pairwise comparisons).

Results

Demographics

Of the 416 patients served by the PNS during the report interval, 55 were referred to the PIMI program. Of those, 33 opted to take advantage of the IHC provided by the PIMI program (IHC+) and 22 declined (IHC-). To maintain similar sized comparison groups, 30 PNS patients not referred to the PIMI program were randomly selected to constitute the control cohort (CPNS). Demographics for the 3 cohorts are presented in Table 1.

Table 1. PIMI Demographic Summary for IHC+, IHC-, and CPNS Cohorts[a]

Variable	IHC+	IHC-	CPNS
	n = 33	**n = 22**	**n = 30**
Age, M (SD)	43.7 (12.9); range: 29 to 72	39.5 (11.6); range: 24 to 62	35.8 (13.0); range: 22 to 70
Gender			
Male	26 (78.8%)	20 (90.9%)	26 (86.7%)
Female	7 (21.2%)	2 (9.1%)	4 (13.3%)
Marital Status			
Never married	6 (18.2%)	2 (9.1%)	7 (22.3%)
Living with SO	1 (3.0%)	0 (0.0%)	0 (0.0%)
Married	13 (39.4%)	12 (54.5%)	14 (46.7%)
Separated	1 (3.0%)	1 (4.5%)	1 (3.3%)
Divorced	12 (36.4%)	7 (31.8%)	8 (26.7%)
Widowed	0 (0.0%)	0 (0.0%)	0 (0.0%)
Race	**n = 31**	**n = 20**	**n = 24**
American Indian/Pacific Islander	1 (3.2%)	1 (5.0%)	2 (8.3%)
Asian	3 (9.7%)	5 (25.0%)	3 (12.5%)
Black	2 (6.5%)	3 (15.0%)	2 (8.3%)
Hispanic	5 (16.1%)	3 (15.0%)	0 (0.0%)
White	17 (54.8%)	8 (40.0%)	17 (70.8%)
Mixed Race	3 (9.7%)	0 (0.0%)	0 (0.0%)
SC Injured			
No	5 (15.2%)	3 (13.6%)	1 (3.3%)
Yes	28 (84.8%)	19 (86.4%)	29 (96.7%)
Period of Service			
OEF/OIF/OND	19 (57.6%)	16 (72.7%)	25 (83.3%)
Gulf	2 (6.1%)	3 (13.6%)	2 (6.7%)
Post-Vietnam	4 (12.1%)	1 (4.5%)	0 (0.0%)
Vietnam	5 (15.2%)	1 (4.5%)	3 (10.0%)
Other (includes multiple)	3 (9.1%)	1 (4.5%)	0 (0.0%)
Education	**n = 33**	**n = 22**	**n = 27**
Less than high school	1 (3.0%)	0 (0.0%)	0 (0.0%)
High school/GED	11 (33.3%)	6 (26.8%)	9 (33.3%)
1+ y of college, no degree	5 (15.2%)	5 (23.8%)	10 (37.0%)
Associate's degree	5 (15.2%)	3 (14.3%)	1 (3.7%)
Bachelor's degree	9 (27.3%)	4 (19.0%)	0 (0.0%)
Master's degree	2 (6.1%)	3 (14.3%)	4 (14.8%)
Professional/doctorate	0 (0.0%)	0 (0.0%)	1 (3.7%)
Vocational/technical	0 (0.0%)	0 (0.0%)	2 (7.4%)
Employed	**n = 33**	**n = 22**	**n = 29**
Yes (%)	7 (21.2%)	5 (22.7%)	14 (48.3%)
% Full-time	42.9%	40.0%	64.3%
In School	**n = 33**	**n = 22**	**n = 29**
Yes (%)	11 (33.3%)	5 (22.7%)	11 (37.9%)
Full-time	54.5%	20.0%	45.5%
Service Branch			
1. Air Force	3 (9.1%)	2 (9.1%)	1 (3.3%)
2. Army	21 (63.6%)	16 (72.7%)	20 (66.7%)
3. Marines	6 (18.2%)	3 (13.6%)	5 (16.7%)
4. Navy	3 (9.1%)	0 (0.0%)	4 (13.3%)
5. Other (includes multiple services)	0 (0.0%)	1 (4.5%)	0 (0.0%)

[a] $P < .05$.

Abbreviations: PIMI, Polytrauma Integrative Medicine Initiative; IHC+, patients with both PIMI and clinical treatment appointments; IHC-, patients who refused PIMI appointments; CPNS, control group of PNS patients; SD, standard deviation; SO, significant other; OEF/OIF/OND, Operation Enduring Freedom/Operation Iraqi Freedom/Operation New Dawn; GED, General Education Development.

For age, there was a marginally significant difference between the 3 cohorts, $F_{2,82} = 3.05$, $P = .05$. Bonferroni-corrected post hoc comparisons indicated that IHC+ patients were significantly older, 43.7 years (SD, 12.9), than those in the CPNS cohort, 35.8 years (SD, 13.0), with $P < .05$. The IHC- cohort did not differ significantly in age, 39.5 years (SD, 11.6) from either of the other 2 cohorts. Fisher's exact test showed a significant association between cohort and education ($P < .05$). However, none of the standardized residuals in the contingency table were significant; in other words, no one cell on the cohort × education contingency table stood out as having an unexpectedly high/low frequency. Fisher's exact test also showed a significant association between cohort and employment ($P < .05$). The CPNS cohort's percentage of employment, 48.3%, was more than double the employment percentage in the other 2 cohorts (21.2% for IHC+, and 22.7% for IHC-). There was no significant difference between cohorts for gender, marital status, race, service-connected injury, period of service, service branch, or school enrollment (all $P > .17$, Fisher's exact test).

Treatment Adherence

Treatment adherence refers to the total percentage of scheduled clinical appointments fulfilled by a patient. Treatment adherence rates for the IHC+ cohort ranged from 30% to 100%, with a mean of 73.09%. For the IHC- cohort, the range was 22% to 100%, with a mean of 72.5%, and for the CPNS cohort, the range was 33% to 100%, with a mean of 71.56%. There was no significant difference in treatment adherence rates between any of the 3 cohorts (all $P > .45$). Incidentally, we observed a tendency ($P = .09$, paired, 1-tailed) for the IHC+ patients to have a lower treatment adherence rate for their PIMI appointments (IHC+p, 72.02%) than their clinical appointments (IHC+c, 75.61%) for those who had both types of appointments.

Post Hoc Measures

Post hoc measures are for the individual percentage rates for CA and NS appointments.

Table 2. Within-groups Data

	IHC+c	IHC+p	IHC-	CPNS
Total (n)	33	33	22	30
Total (n) w/appts	26	33	12	29
Mean appts	44.3	21.5	25.1	9.97
Median appts	20	16	17	10.5
% NS	7.5 (n = 14)	5.0 (n = 12)	9.3 (n = 8)	15.8 (n = 18)
% CA	17.3 (n = 20)	20.8 (n = 28)	18.5 (n = 9)	13.7 (n = 18)
***P* values (NS-CA)**	.0034[a]	.0001[a]	.201	.668

[a]$P < .05$.

Abbreviations: IHC+c, IHC+ patients with clinical treatment appointments; IHC+p, IHC+ patients with PIMI appointments only; IHC-, patients who refused PIMI appointments; CPNS, control cohort from PNS; CA, cancelled appointment; NS, no show.

Table 3. Between-groups *P* Values

***P* Values**	**IHC+p**	**IHC-**	**CPNS**
NS			
IHC+c NS	.426	.683	.052
IHC+p NS		.304	.007[a]
IHC- NS			.197
CA			
IHC+c CA	.339	.614	.323
IHC+p CA		.908	.057
IHC- CA			.39

[a]$P < .05$.

Abbreviations: IHC+c, IHC+ patients with clinical treatment appointments; IHC+p, IHC+ patients with PIMI appointments only; IHC-, patients who refused PIMI appointments; CPNS, control cohort from PNS; CA, cancelled appointment; NS, no show.

Within Groups. IHC+ patients had significantly higher CA rates than NS rates for both clinical (IHC+c) and coaching (IHC+p) appointments ($P < .05$). IHC- and CPNS patients did not have significant differences in CA and NS rates (Table 2).

Between Groups. There was a significant difference for NS rates with IHC+p patients having lower rates, 5%, than CPNS patients, 15.8% ($P = .007$). There was a nearly significant difference for NS rates with IHC+c patients having lower rates, 7.5%, than CPNS patients, 15.8% ($P = .052$). There was a tendency for IHC+p patients to have greater CA rates, 20.8%, than CPNS patients, 13.7% ($P = .057$). There were no other significant differences for NS or CA rates between any of the 3 IHC groups nor between IHC- and CPNS patients (Table 3).

PHI data are presented in Table 4. Eighteen patients who received a 3-month follow-up reported significantly improved scores in 7 of 13 ratings including the last 2 related to treatment adherence.

Table 4. 3-Month Follow-up Changes in PHI 13 Ratings (n = 18)

Domain	**Baseline Score Mean (SD)**	**Follow-up Score Mean (SD)**	***P* Value**
Physical Scale[a a]	4.81 (2.45)	6.39 (1.46)	.0205[a]
Mental/Emotional Scale[a]	5.33 (2.89)	6.67 (1.71)	.0223[a]
Life Scale	5.39 (2.62)	6.67 (1.97)	.0513
Working the Body[a]	4.94 (1.76)	6.44 (1.95)	.0171[a]
Recharge	4.78 (2.37)	5.06 (2.01)	.5623
Food and Drink	5.41 (2.78)	6.44 (1.62)	.2126
Personal Development[a]	5.44 (2.09)	7.61 (1.72)	.0001[a]
Family, Friends, and Coworkers	5.39 (3.15)	6.61 (2.17)	.0585
Spirit and Soul	6.06 (2.80)	6.83 (2.75)	.1539
Surroundings	5.83 (2.64)	6.94 (2.75)	.1763
Power of the Mind[a]	5.39 (2.64)	7.17 (2.55)	.0010[a]
Professional Care, Prevention[a]	7.50 (2.01)	9.28 (0.96)	.0018[a]
Professional Care, Intervention[a]	7.33 (1.94)	8.94 (1.35)	.0075[a]

[a]$P < .05$.

Abbreviations: PHI, Personal Health Inventory; SD, standard deviation.

Discussion

The purpose of this report was to evaluate the preliminary impact of the PIMI initiative among our PNS outpatients. The PIMI program at our site is a patient-centered approach to health care with a focus on behavior change through mindful awareness and self-care interventions. As a pilot program initiated in 2012, the PIMI program faced substantial hurdles to implementation before patient enrollment and continued evaluation and revision. Challenges included logistic and administrative activities such as creating new clinics, templates, implementing the referral process, staff recruitment, and training. There was also a lack of knowledge about health coaching from clinical staff, skepticism about the value of health coaching, and concerns about redundancy of services in an interdisciplinary model that required educational activities to help garner acceptance. Given these challenges, our site enrolled its first patient during fiscal year 2013, quarter 3.

One of the goals of the PIMI program is to improve positive health outcomes. Health coaches develop partnerships with their patients and work in collaboration with the existing treatment teams to develop individualized wellness plans to help support patients' overall adherence

to treatment recommendations. Therefore, we set out to assess the efficacy of health coaching in this domain by assessing the treatment adherence rates of 3 cohorts of patients served in our PNS clinic in the year following enrollment of the first PIMI patient. The cohorts were composed of PNS patients referred to the PIMI program who accepted health coaching (IHC+), or declined health coaching (IHC-), and a third control cohort of PNS patients not referred to the PIMI program (CPNS).

We hypothesized that there would be a positive impact of health coaching on treatment adherence and PHI. We found no significant difference in treatment adherence rates between the 3 groups when measured as the percentage of scheduled appointments fulfilled by patients. We observed a tendency for IHC+ patients to have a lower treatment adherence rate for their PIMI appointments than their clinical appointments.

These findings prompted a post hoc analysis of individual CA and NS rates. The within-groups analysis found IHC+ patients had significantly higher CA rates than NS rates for both clinical and PIMI appointments. IHC- and CPNS patients did not have significant differences in CA and NS rates. The between-groups analysis found a significant difference for lower NS rates for IHC+p patients compared with CPNS patients. There were trends for lower NS rates for IHC+c patients than CPNS patients and for a higher CA rate for IHC+p patients than CPNS patients. These findings may be skewed by the low number of IHC- patients and appointments, but they suggest a potential positive behavioral effect for health coaching. Given that NS appointments represent lost provider time and CA appointments offer the opportunity to recover provider time, the positive effect of health coaching on CA versus NS rates represent a potential positive impact of health coaching on scheduling hospital resources and strategic planning.

The PIMI program uses the self-report PHI as its efficacy assessment instrument at initial enrollment and after 3 months of health coaching. Results from this data suggest that IHC+ patients believe they are making significant improvements in many of the identified areas of health coaching focus, including the 2 related to treatment adherence, professional care: prevention and intervention. This seems to be in contrast to our findings of no significant difference in treatment adherence rates between treatment groups. Results based on the PHI instrument must be viewed with caution, as it was not designed as a research instrument and has not been evaluated for validity or reliability. As a self-report measure it is also susceptible to subjective bias and performance demands. In addition, the 3-month follow-up instrument varied in format from the initial PHI form and again has not been validated in any way. However, we do not discount the benefit of perceived gain to the subjective wellbeing of patients. This perceived gain in patient satisfaction may represent an additional positive impact of health coaching.

There were some significant differences in demographic factors for the 3 PNS cohorts including age, education, and employment. Given that our primary analysis of treatment adherence rates found no indication of positive impact for health coaching between the groups, any potential relationship between demographic factors and treatment adherence rates need to be examined carefully in a larger cohort.

We temper these observations with the acknowledgment that this is a preliminary report of a relatively small sample and from a period during which implementation and revision of new services may skew the results. Future analyses will focus on the much larger cohort from the subsequent period, where PIMI program protocols are more stable and all PNS patients were offered health coaching.

Conclusions

Although health coaching has shown positive impact in several specific areas of health care such as diabetic A_{1c} management, weight management, and medication compliance, we did not find significantly increased treatment adherence rates for PNS patients receiving health coaching compared with PNS patients who received no health coaching. It is important to focus on select variables such as CA versus NS appointments to fully capture the impact of any programs such as health coaching on patient behavior and clinical resource utilization. Our report on PHI and treatment adherence provides an example of the potential pitfalls of objective versus subjective data collection instruments, especially self-report subjective bias and potential performance demands. Although subjective input may be valuable, we believe the PIMI program would benefit from development of objective measures of efficacy to assess its future internal programmatic success.

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