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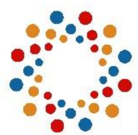

OPEN ACCESS

Published: May 31, 2024

Citation: Adamczyk MA, Butterworth S, et al., 2024. Assuring the Quality of Patient Experience and Outcomes in All-Virtual Nurse Telehealth Programs: A Case Report Illustration, Medical Research Archives, [online] 12(5). https://doi.org/10.18103/mra.v12i5.5418

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DOI
https://doi.org/10.18103/mra.v12i5.5418

ISSN: 2375-1924

CASE REPORT

Assuring the Quality of Patient Experience and Outcomes in All-Virtual Nurse Telehealth Programs: A Case Report Illustration

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ABSTRACT

There are many approaches to evaluating patient-centered care used by health systems in acute care environments. Yet a growing proportion of care is happening in remote ways, using telehealth methods for chronic care management programs or health coaching for 'patients' living in the community, often rarely seen through in-person visits. The typical means of assuring patient-centered approaches may be overlooked or inappropriate for assessing the patient experience in telehealth or online venues. The ***HealthyLifetime™*** is a community-based, virtual nurse health coaching program for adults with one or more chronic diseases or risk factors. Our quality assurance program will be described, including an assessment of nurse competency using our six strategies, patient-centeredness and personalized approach to coaching, the quality and completeness of core program activities, and patient outcomes and satisfaction with the program. We use a patient case study to describe the program's phases and quality assurance process. While patient satisfaction is an indicator of experience, the quality of the nurse-patient communication dynamic as it relates to the patient's evolving behavior change and outcome achievement is a critical factor. We developed and validated natural language analysis methods, the Nurse Health Coaching Assessment, to assess the nurse's use of our six strategies and the patient's cognitive-behavioral responses – the Indicators of Health Behavior Change – which, combined, assess the quality of nurse-patient communication dynamic. The case illustrates how the program's total quality assurance approach impacts the nurse's notes, core program elements, and patient outcomes. Additionally, we discuss the cost and value of the program.

Introduction

Telehealth has dramatically expanded globally since the onset of the COVID-19 pandemic and remains an integral part of healthcare programming in the U.S., Europe, and elsewhere.[1 2-5] While several studies have reported patient and clinician general satisfaction with telehealth practices during the pandemic, many of these reports conclude that the convenience and continuity of access to health care likely influenced these scores. [6,7] Others have reported improved clinical outcomes and access to long-term follow-up by health professionals.[2] The need to create infrastructure to ensure quality outcomes in telehealth programs has been emphasized as the expansion of such programming will likely continue.[8] This report aims to describe the quality assurance program developed for our all-virtual ***HealthyLifetime™*** program, which addresses quality assurance infrastructure and processes with an emphasis on patient-driven goals and progress measures, which are the program's core values. As stated by the Institute of Medicine (U.S.) Committee to Design a Strategy for Quality Review and Assurance in Medicare Report, the goal of quality assurance is to "build confidence and faith in the quality of the health care being rendered."[9]

THE ***Healthylifetime™*** PROGRAM

Unlike clinical in-person programs, which converted to telehealth to prevent infection and retain continuity of care during the COVID-19 pandemic, our ***HealthyLifetime™*** program is virtual by design. It is an 8-week all-virtual nurse health coaching program to maintain health and independence for older adults living in the community.[10] It is adjunctive to medical care practice, and our electronic platform that houses our participant medical and health information is interoperable with other electronic health records. We created a comprehensive quality assurance methodology to assess the patient experience, the quality of nursing care, and the program's outcomes. Our methods, presented through a case study approach, will illustrate elements to be considered in designs for other virtual telehealth programming. Thus the case study process and results *are illustrative of our methods only* and are not interpretable as representative of our program's effectiveness.

The case study will include information about an individual participant, providing a perspective of the person's experience in the program and the strategies enacted by the NHC to empower and guide the client to reach their goals. Since the primary focus of the program is on participant-driven goals and cognitive-behavioral changes that affect clinical outcomes, understanding this perspective is an important process step of our quality assurance program. The case information provided in a 'story narrative' is the format used in weekly meetings among the staff and supervising nurses. While most payers emphasize evaluation of the care experience, often this is accomplished through consumers' satisfaction with providers and services. Done well, self-reported patient experiences are valuable and correlate with positive clinical outcomes.[11] However, telehealth-delivered programs have the unique opportunity to capture real-time patient/provider interactions through video recordings of visits and provider process notes, which can *enhance the interpretation* of how and why documented clinical outcomes are achieved.[12,13]

The case study will also include the training and mentoring for the nurse health coaches (NHC), along with how her competencies were assessed and professional development nurtured. Lastly, program outcomes linked to this individual's goals will be discussed. Using individual and cohort information is essential to understanding why and how the program influences outcomes and what aspects require improvement.

QUALITY ASSURANCE METHODS

Our quality assurance program (QAP) includes the following elements: training nurses in the ***HealthyLifetime™*** nurse health coaching strategies,[14] weekly core/clinical sessions, structured audits of the nurse's competency in using these strategies with program participants, audits of nursing notes for completion and quality, and audits of the program participants' improvement scores in cognitive/behavioral and surveyed outcomes.

Training. All nurse coaches are trained in our ***Healthylifetime™*** program elements and the six cognitive/behavioral strategies we use.[14] The communication approach used is motivational interviewing. While all the nurses have at least ten or more years of experience, are at least baccalaureate prepared [most are masters' prepared], many with national certification as nurse coaches and with years of coaching experience, all benefit from a structured course that gives in-depth theory, practice examples, and opportunity to engage with participants with mentoring before independent practice. Our training program is all-virtual, primarily asynchronous, so nurses can take it at their own pace. It also includes ongoing assessment and mentored feedback from an expert in the strategies.

Weekly Clinical Meetings for Peer-to-Peer Case Presentations. To further enhance learning

opportunities, the study coordinators and nurse coaches participate in weekly team-oriented online forums to share ongoing case studies of client sessions, engage in practice scenarios, and highlight successes. Cases are presented using the format of Table 1 and often also include a brief deidentified audio clip of a client. Colleagues offer feedback regarding effective strategies and discuss suggestions to optimize responses with alternative approaches. Various client conversation scenarios allow the coaches to identify, discuss, and practice responses as a team. Lastly, the coaches discuss “weekly wins,” which showcase various clients’ positive progress and reflect the coaches’ training and skill set that has helped guide or empower their clients.

Nurse Competency Assessment. Before completing training, we assess each nurse’s competency in our strategies. We do this by auditing a randomly selected, de-identified audio tape of a program participant. The audit is conducted by scoring the nurse’s strategic responses to the participants ‘talk’ using our validated measure, the Nurse Health Coaching Competency Assessment (NHCCA) tool. The program’s Clinical Services Manager (CSM), an expert in the strategies, evaluates the audiotape and provides feedback to the nurse. The nurse coach is expected to be at least ‘patient-centered’ after training with a score of three on a 1-5 point scale. Nurses are encouraged to review their audiotapes to do self-evaluations against the rubric of the NHCCA to gain insights into their particular approaches to missed opportunities with program participants. After the initial assessment after training, nurses meet with the CSM monthly for six months for an audio session as they gain expertise. After the post-training period, nurses review audio tapes with the CSM quarterly for maintenance. These cases are chosen to do a full presentation in our weekly meetings using our analysis method illustrated in Table 1

Nurse’s Notes. The CSM reviews a random 10% of nurses’ notes (written after each program participant encounter) to check for completion and reviews the quality of the notes. Specifically, the CSM reviews the nurse’s interpretation of the participant's stage of progress (e.g., readiness for change, level of change talk, level of insight, use of sustain talk, etc.), identifies critical process progression of the participant (see case study Table 1), and plans for the subsequent sessions. This documentation reinforces the quality assurance process so that we address participants’ actual goals/preferences, foster self-discovery, and strengthen motivation for change, which are required for ultimate goal attainment.

Table 1. Case study process progression of the participant.

NHC process flow	NHC Strategies and Client Response/Progress
Background See Figures 1 and 2 for clinical data at the start of the program (0 weeks) weeks	Cathy is a retiree and lives with her family. She has fatigue and extreme physical discomfort in her back with any standing/walking due to progressive scoliosis. When she joined **HealthyLifetime™** she could only stand/walk for five to ten minutes at a time.
Initial goals: Increase stamina/flexibility	Initially, Cathy listed her goals as increasing her stamina in standing/walking to enable her to participate in completing tasks in her home and accompany her family members on outings. During the first session, she openly shared her ambivalence toward this goal of building her physical mobility and stamina.
Process of Engagement: Revealing the client’s own values, preferences, and benefits of change.	To address the ambivalence, the NHC used core motivational interviewing skills with further exploration to evoke benefits that Cathy personally could gain with strengthening exercises (change talk). Cathy identified she could gain greater flexibility and a reduction of her joint discomfort as benefits of exercise. With the impetus of this insight, the NHC guided Cathy to express some possible next steps including exercises that were best for her. These exercises included walking outside in her neighborhood, swimming, and doing Pilates exercises. Over the next four to six weeks, her stamina increased to be able to go on family outings, preparing meals, and completing household chores. All of these activities she considered victories that attested to reaching her goal.
Concluding outcomes See Figures 1 and 2 for outcomes at the end of the program related to her goals of increased stamina to foster joint mobility and independence.	By the fourth month, Cathy acknowledged these activities added to her newly found self-efficacy and sense of agency. To sustain her motivation, Cathy noted that transitioning to indoor activities of calisthenics and Pilates allowed her to maintain her exercise routine during the winter months and maintain her stamina. Finally, Cathy shared that she was able to travel to a destination which she and her husband had always dreamed of visiting which now with improved mobility, she will have the opportunity to experience.

Participant Outcomes. The program leader reviews cohorts of participants for outcomes in cognitive/behavioral change indicators and survey outcomes. Our validated Indicators of Health Behavior Change (IHBC)[6] tool measures cognitive behavioral indicators. Survey results are measured for outcomes that change for the whole cohort and for changes unique to individuals. By measuring cohorts, which are periodic downloads of participants who have completed the program, we keep abreast of how the quality clinician performance measures described above may relate to program participant results.

Participant Satisfaction with the Nurse and the Program. Program participant satisfaction is also an important outcome measure. At the end of the program, each participant fills out a brief survey on satisfaction with the program and satisfaction with the nurse coach. Participant satisfaction scores for each of the five elements are measured on a 1-5 point scale: How satisfied are you with the program? How satisfied are you with your results? How likely would you stay with the program if it included monthly sessions with your nurse coach if offered? How likely will you recommend this program to a friend or family member? How was the useability of our online website?

Case Study

Case Study Components. For the QAP, the CSM randomly selects an individual case of each nurse on a period basis as described above. For nurses new to the program, this is done monthly, for experienced nurses it is done quarterly. We used the intrinsic case study approach with guidelines suggested by Crowe et al.[7] The case was selected because it represents the critical aspects of individual data essential for evaluating the quality of care. Table 1 provides the elements of the particular program participant's case study using a format similar to other case studies published elsewhere.[12] This format quickly identifies the critical process elements that participants typically show as they progress through the program and are documented in the nurse's case notes. The NHC process flow outlines the background, initial goals, process of engagement, deeper meaning and later goals, and concluding outcomes. In addition, it includes the NHC strategies and client response/progress.

Figures 1 and 2 are the specific clinical outcome data collected on all our participants. Information is collected before the program (week 0), immediately after program completion (week 8), and four months after. The highlighted data indicates the clinical outcomes related to the participant's expressed goals, showing significant improvements in her most important risk factor and goal of increased stamina and independence: instrumental activities of daily living (IADL; average of responses to questions related to ability to do daily household activities) and independent agency and resiliency (ILI; represents the average of responses to questions related to participant's perception of their quality of life, confidence in performing daily activities, and confidence in managing symptoms).

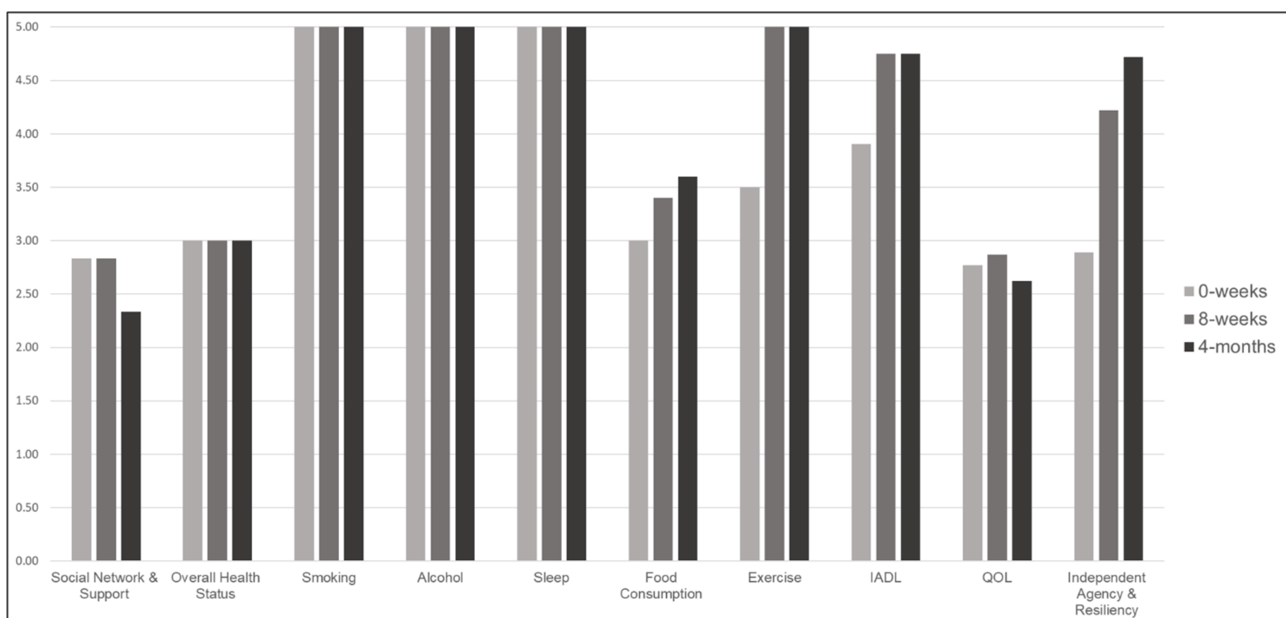

Figure 1. Clinical outcomes of the program participant

She also improved in outcomes related to her weight loss and mobility goals: food choices (average of responses to questions about frequency of eating items from various food groups, e.g., vegetables, sugary foods, etc.), exercise (average of responses to questions about how often various exercises are performed, e.g., walking, swimming, etc.), and modest body weight and BMI reduction (based on participant reported values).

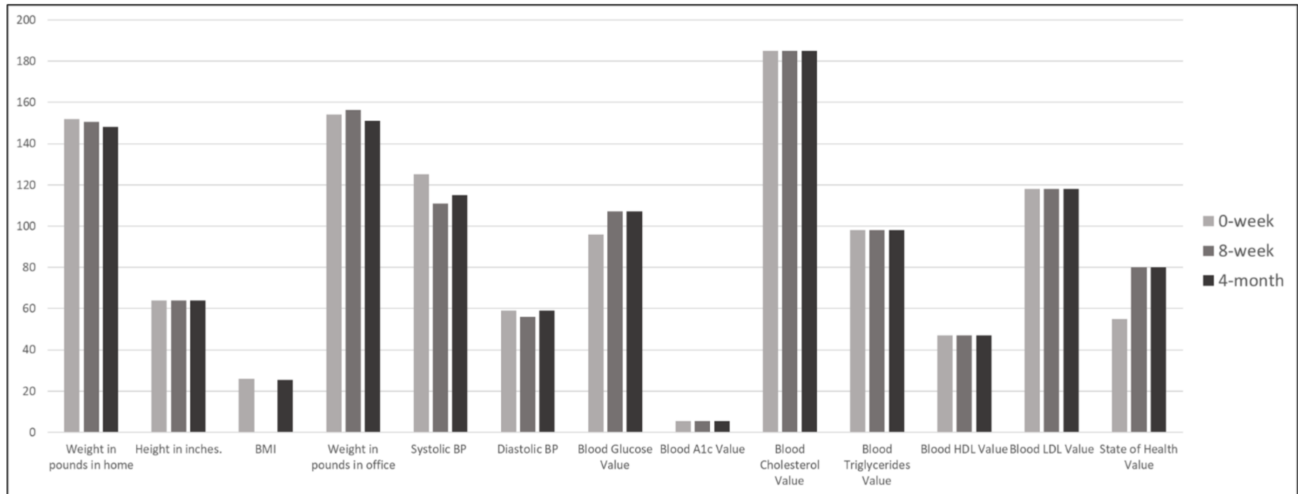

Figure 2. Supplemental health data for program participant

Figure 3 indicates the participant's satisfaction with the program.

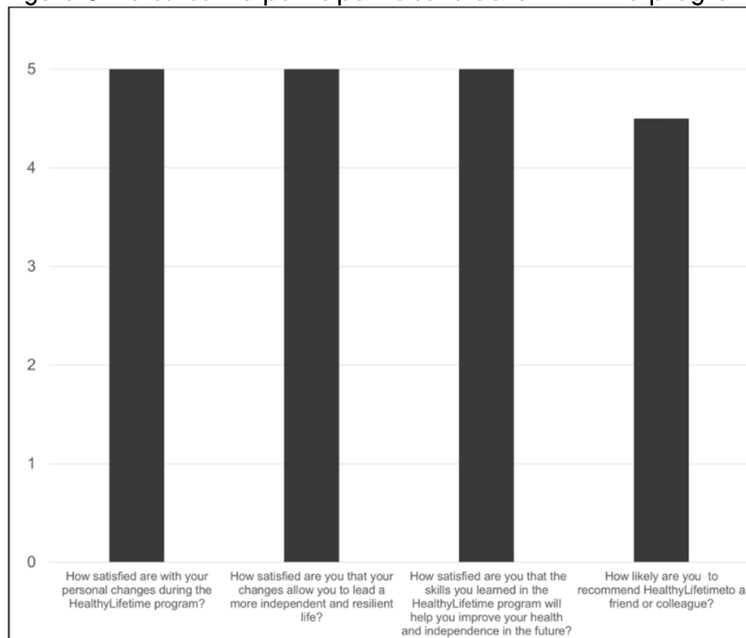

Figure 3. Program participant satisfaction at 4 months.

Cohort Analyses Components. The averaged values for individual participant outcomes listed in Figures 1- 3 for cohorts of participants are downloaded semi-annually to review participants' progress toward critical goals. While our program is highly personalized, by reviewing the key factors related to overall health and independent living, we can tap a range of outcomes of interest across the cohort. We expected to see improvement in the cohort for at least 3 – 5 outcomes if ***HealthyLifetime™*** provides a quality and efficacious experience for our participants. Additionally, we evaluate the cohort's change in cognitive-behavioral outcomes as indicated through natural language analyses of the audited coaching sessions by the IHBC tool. We see significant improvements in the cognitive-behavioral outcomes of participants over the eight-week intervention, which is described elsewhere.[14]

Role of Quality Assurance Program in Improving Nurse Coaching Skills

The case demanded the use of advanced health coaching strategies. Although the client ostensibly

volunteered for the program and provided stated goals, it became apparent that she was ambivalent about this process – her family had selected the goal of attaining independence. She had significant anxiety about starting another exercise program after her recent injury. She lacked motivation for change and commitment to her stated goals, expressed low self-efficacy (confidence to make complex lifestyle changes), and a sense of agency (the belief that her efforts would make a difference in the quality of her life). The NHC had to address these barriers to change before embarking on goal-setting and identifying resources. Seeing this occur through the case narrative provided supportive evidence of the NHC skills in identifying the client's readiness to change.

In this case study, the NHC worked hard to improve her skills and master the cognitive/behavioral strategies that the training program emphasizes. She achieved this through much practice and implementing the feedback and mentoring that the CSM provided on an ongoing basis as part of the QAP process. In addition, after her intake session with the client, the NHC presented this case at the Weekly Core/Clinical Meeting for review and discussion, which was also part of the QAP process. This helped reinforce her approach and strategies. Lastly, the patient-centered emphasis that defines this program provided her with the foundation needed to recognize that, unlike most clients who join the program, this client was in the contemplation phase of change and needed to develop a personal investment in the program before moving into planning. The ability to use feedback provided by the CSM and other nurse colleagues in the weekly sessions provides evidence that these core QAP processes are essential to continued skill building of nurse health coaches.

Cost of the Quality Assurance Program

The direct cost of the QAP includes 50% of the CSM salary and benefits as this individual carries out all of the QAP audits, nurse training, and nurse competency assessments. The participant IHBC evaluations are an additional cost per audit done by external evaluators. Training costs for nurses are attributed to program overhead, as training is essential for nurses to learn our specific strategies. The training cost represents the most significant investment in the QAP but is essential to achieving our outcomes. In return for training, nurses are asked to work at least one full year with our program. Indirect cost relates to nurses' time in quarterly competency evaluations (e.g., one hour quarterly) and case analyses, as described in this paper. The QAP represents 12.5% of the total cost of the program.

Discussion

We have described the QAP elements used in our all-virtual program. These elements include training and continued clinician competency assessment, weekly clinician peer-to-peer case presentations, evaluation of nurses case notes, and evaluation of individual and cohort clinical outcomes. Clinician expertise is often assumed by board certifications or evaluated through case reviews of errors or complaints.[15] Clinician competency assessments are often triggered by concerns about a clinician's knowledge, skills, or abilities, re-entry into practice after a hiatus, or when a clinician complies with a consent agreement or a professional board order.[16] While the Joint Commission of Hospitals and Health Systems in the U.S. requires staff evaluations at least every two years,[17] this requirement may or may not apply to all clinicians, such as nurses or physicians. Yet, providing periodic assessments of skills essential to program participant outcomes is vital for clinicians and program leaders to understand the link between skill competency levels and outcomes.[18] Much literature attests to the observation that skill competency levels can be effectively enhanced with appropriate training – focusing on gaining greater expertise not just addressing less than competent clinician outliers.[19,20] In our program for example, we recently upgraded our nurse training through natural language analysis methods and found that the level of expertise of the nurses was rapidly enhanced. We also found that the program participants enrolled significantly improved their IHBC scores and survey outcomes after that change.

Moreover, while case reviews are common in primary care and hospital practices, these are often triggered by poor patient outcomes.[21] Regular, random review of clinician notes identifies issues so interventions can be instituted early. Making appropriate changes to programs, including curriculum or enhanced training, is an essential part of the QAP feedback loop and corrective action to ensure continuous quality improvement.[22]

Our nurse training emphasizes participant-directed, person-centered approaches requisite to individual behavior change.[23] These are not quickly learned skills, yet many healthcare organizations in the U.S. and Europe espouse a patient-centered focus and the quality of the patient experience as a quality measure.[24] Recent reports regarding implementing the Center for Medicare and Medicaid Services (CMS) Value-Based Care initiative in the U.S., where patient-centeredness is a cornerstone, found that the preparedness of physicians and nurses to implement this approach was lacking due to inadequate information and training in its

practice.[25,26] While we fully expect clinicians to have the necessary skills by their licensure, providing structured training in the particular program's emphasis, workflows, and skill requirements not only ensures alignment with expected outcomes,[20] but we find that even the most experienced nurse clinicians are enthusiastic about the training.

Regarding evaluating a randomly selected individual client's clinical outcomes, the outcomes achieved in our case study illustrate what can be gleaned from reviewing them when considered in the context of the client narrative. The individual case presented showed significant improvement in her priority goal and modest or minimal improvements in others. Given the client's ambivalence at the start of the program and the barriers she faced, such improvement is considered highly successful, whereas it may be considered a modest improvement for a highly motivated participant. The individual case studies provide context and perspective in evaluating outcome data of small cohorts of participants. The small sample cohort data illustrates whether the program is 'moving the curve' on outcomes in the expected directions.[27]

Regarding our QAP cost, we recognize that quality programs are expensive.[28] Yet our QAP provides significant information across a range of factors that address not only clinical outcomes but information that helps understand root causes influencing how and why we are achieving clinical outcomes in a virtual delivery environment.

Conclusions

Using our behavioral strategies draws out the patient's internal motivation to change. It allows them to craft their own behavior changes that put them on their individual path toward integrating sustained healthy lifestyle changes. This highly personalized approach to care requires QAP methods, processes and outcome measures that illustrate the essence of the nurse-client communication effectiveness. While client satisfaction is an important metric to evaluate, program structure, training, and ongoing assessment of individual nurse coach skill sets, the *essence of our quality assurance program*, ensures a higher level of improved and sustained patient outcomes, which justifies the cost of the QAP program.

Conflict of Interest Statement

The authors have no conflicts of interest to declare. All co-authors have seen and agree with the manuscript's contents, and there is no financial interest to report. We certify that the submission is original work and is not under review at any other publication.

Funding Statement

A grant from the Michigan Department of Health and Human Services supported this study.

References

1. Shaver J. The state of telehealth before and after the COVID-19 pandemic. *Primary Care: Clinics in Office Practice*. 2022;49:517-530.
2. Bhaskar S, Bradley S, Chattu VK, Adisesh A, Nurtazina A, Kyrykbayeva S, Sakhamuri S, Yaya S, Sunil T, Thomas P. Telemedicine across the globe-position paper from the COVID-19 pandemic health system resilience PROGRAM (REPROGRAM) international consortium (Part 1). *Frontiers in public health*. 2020;8:556720.
3. Walley D, McCombe G, Broughan J, O'Shea C, Crowley D, Quinlan D, Wann C, Crowley T, Cullen W. Use of telemedicine in general practice in Europe since the COVID-19 pandemic: A scoping review of patient and practitioner perspectives. *PLOS Digital Health*. 2024;3:e0000427.
4. ACHIAGA MDMN. The rise of digital health technologies during the pandemic. 2021.
5. Valdes D, Alqazlan L, Procter R, Dale J. Global evidence on the rapid adoption of telemedicine in primary care during the first 2 years of the COVID-19 pandemic: a scoping review protocol. *Systematic reviews*. 2022;11:124.
6. Duncan LJ, Cheng KF. Public perception of NHS general practice during the first six months of the COVID-19 pandemic in England. *F1000Research*. 2021;10.
7. Hays RD, Skootsky SA. Patient experience with in-person and telehealth visits before and during the COVID-19 pandemic at a large integrated health system in the United States. *Journal of general internal medicine*. 2022;37:847-852.
8. Khoong EC, Sharma AE, Gupta K, Adler-Milstein J, Sarkar U. The abrupt expansion of ambulatory telemedicine: implications for patient safety. *Journal of general internal medicine*. 2022;37:1270-1274.
9. Lohr K. Committee to design a strategy for quality review and assurance. *Medicare: a strategy for quality assurance*. 1990;1.
10. Potempa K, Calarco M, Flaherty-Robb M, Butterworth S, Marriott D, Potempa S, Laughlin C, Schmidt P, Struble L, Harden K. A randomized trial of a theory-driven model of health coaching for older adults: short-term and sustained outcomes. *BMC Primary Care*. 2023;24:205.
11. Manary MP, Boulding W, Staelin R, Glickman SW. The patient experience and health outcomes. *The New England journal of medicine*. 2013.
12. Butterworth S, Potempa S, Laughlin C, Flaherty-Robb M, Calarco M, Harden K, Schmidt P, Furspan P, Potempa K. Case Studies: Person-Centered Health Coaching in People With Negative Social Determinants of Health. *AJPM focus*. 2023;2:100109.
13. Street Jr RL, Makoul G, Arora NK, Epstein RM. How does communication heal? Pathways linking clinician–patient communication to health outcomes. *Patient education and counseling*. 2009;74:295-301.
14. Potempa K, Butterworth S, Flaherty-Robb M, Calarco M, Marriott D, Ghosh B, Gabarda A, Windsor J, Potempa S, Laughlin C. The Impact of Nurse Health-Coaching Strategies on Cognitive—Behavioral Outcomes in Older Adults. *International Journal of Environmental Research and Public Health*. 2022;20:416.
15. Brennan TA, Horwitz RI, Duffy FD, Cassel CK, Goode LD, Lipner RS. The role of physician specialty board certification status in the quality movement. *Jama*. 2004;292:1038-1043.
16. UC San Diego PACE Program's Clinical Competency Assessment 24024; https://www.paceprogram.ucsd.edu/Assessment. Accessed April 3.
17. Are competency assessments and performance evaluations the same or two different requirements? 2016: https://www.jointcommission.org/standards/standard-faqs/health-care-staffing-services/human-resources-management-hshr/000001738/. Accessed April 4.
18. Hess BJ, Weng W, Holmboe ES, Lipner RS. The association between physicians' cognitive skills and quality of diabetes care. *Academic medicine*. 2012;87:157-163.
19. Dauphinee WD. Educators must consider patient outcomes when assessing the impact of clinical training. *Medical Education*. 2012;46:13-20.
20. McHugh MD, Lake ET. Understanding clinical expertise: nurse education, experience, and the hospital context. *Research in nursing & health*. 2010;33:276-287.
21. Donaldson MS, Corrigan JM, Kohn LT. To err is human: building a safer health system. 2000.
22. Salles G. Importance of quality corrective actions in business management. https://www.qualityweb360.com/importance-of-quality-corrective-actions-in-business-management/#:~:text=Operational%20efficiency%3A%20By%20identifying%20and,and%20optimization%20of%20internal%20processes. Accessed May 4, 2024.
23. Yardley L, Morrison L, Bradbury K, Muller I. The person-based approach to intervention development: application to digital health-related behavior change interventions. *Journal of medical Internet research*. 2015;17:e4055.

24. Garzonis K, Mann E, Wyrzykowska A, Kanellakis P. Improving patient outcomes: effectively training healthcare staff in psychological practice skills: a mixed systematic literature review. *Europe's journal of psychology*. 2015;11:535.
25. Kissam SM, Beil H, Cousart C, Greenwald LM, Lloyd JT. States encouraging value-based payment: lessons from CMS's State Innovation Models Initiative. *The Milbank Quarterly*. 2019;97:506-542.
26. Reed M. Examining Barriers to Expanding Innovative, Value-Based Care in Medicare. In; 2018; http://actonline.org/wp-content/uploads/2018-09-13-Testimony-CHI-House-EC-Health-Sub.pdf.
27. Etchells E, Ho M, Shojania K. Value of small sample sizes in rapid-cycle quality improvement projects. *BMJ Quality & Safety*. 2016;25:202-206.
28. Casalino LP, Gans D, Weber R, Cea M, Tuchovsky A, Bishop TF, Miranda Y, Frankel BA, Ziehler KB, Wong MM. US physician practices spend more than $15.4 billion annually to report quality measures. *Health Affairs*. 2016;35:401-406.