



Center for
**Connected
Health Policy**

The National Telehealth Policy Resource Center

**Federally Qualified Health Centers (FQHC)
Research Catalogue**

August 2018

To increase and organize the evidence for the use of telehealth, the Center for Connected Health Policy (CCHP) has been examining published studies that have been designed to measure the use of telehealth in achieving one or more of the goals of the Triple Aim. CCHP has been cataloguing studies published in peer reviewed journals that meet certain criteria. This catalogue of Telehealth and Federally Qualified Health Centers (FQHCs) studies is one result.

CCHP employed several search parameters when selecting telehealth and FQHC studies. All studies selected were U.S. based, published post 2010, have a sample size of no less than 50 (for studies with control groups, there needed to be a minimum of at least 30 subjects per group), a study period of no less than 6 months and a primary focus on the outcomes (though if all other factors were met and the time period was unspecified, the article was included), quality and or costs of a selected telehealth modality. Retrospective study and pilot studies have been included separately, due to the absence of a widely accepted quality assessment scale for these types of studies.

Academic OneFile, PubMed, EBSCO, Project Muse, JSTOR, and Science Direct were used in the peer-reviewed articles search. If CCHP was unable to obtain a copy of the full article, it was not included in the catalogue.

This catalogue was prepared by Michelle Grant and the work supervised by Mei Wa Kwong and Christine Calouro in July 2018.

CONTROL TRIAL SUMMARIES:

Hark, Lisa A., Katz, L. Jay, Myers, Jonathan S., Waisbourd, Michael, Johnson, Deiana, Pizzi, Laura T., . . . Haller, Julia A. (2017). Philadelphia Telemedicine Glaucoma Detection and Follow-up Study: Methods and Screening Results. *American Journal of Ophthalmology*, 181, 114-124.

Study Length	State	Sample Size	Telehealth Modality Type	Method	Outcome	Quality	Cost
22 months	PA	906	Store and Forward	Randomized Clinical Trial	X		

Summary

Purpose: To describe methodology and screening results from the Philadelphia Telemedicine Glaucoma Detection and Follow-up Study.

Design: Screening program results for a prospective randomized clinical trial.

Methods: Individuals were recruited who were African-American, Hispanic/Latino, or Asian over age 40 years; white individuals over age 65 years; and any ethnicity over age 40 years with a family history of glaucoma or diabetes. Primary care offices and Federally Qualified Health Centers were used for telemedicine (Visit 1). Two posterior fundus photographs and 1 anterior segment photograph were captured per eye in each participant, using a nonmydriatic, autofocus, hand-held fundus camera (Volk Optical, Mentor, Ohio, USA). Medical and ocular history, family history of glaucoma, visual acuity, and intraocular pressure measurements using the ICare rebound tonometer (ICare, Helsinki, Finland) were obtained. Images were read remotely by a trained retina reader and a glaucoma specialist.

Results: From April 1, 2015, to February 6, 2017, 906 individuals consented and attended Visit 1. Of these, 553 participants were female (61.0%) and 550 were African-American (60.7%), with a mean age of 58.7 years. A total of 532 (58.7%) participants had diabetes, and 616 (68%) had a history of hypertension. During Visit 1, 356 (39.3%) participants were graded with a normal image. Using image data from the worse eye, 333 (36.8%) were abnormal and 155 (17.1%) were unreadable. A total of 258 (28.5%) had a suspicious nerve, 62 (6.8%) had ocular hypertension, 102 (11.3%) had diabetic retinopathy, and 68 (7.5%) had other retinal abnormalities.

Conclusion: An integrated telemedicine screening intervention in primary care offices and Federally Qualified Health Centers detected high rate of suspicious optic nerves, ocular hypertension, and retinal pathology.

Access: <https://www.ncbi.nlm.nih.gov/pubmed/28673747>

Pyne, J., Fortney, J., Mouden, S., Lu, L., Hudson, T., & Mittal, D. (2015). Cost-Effectiveness of On-Site Versus Off-Site Collaborative Care for Depression in Rural FQHCs. *Psychiatric Services: A Journal of the American Psychiatric Association.*, 66(5), 491-499.

Study Length	State	Sample Size	Telehealth Modality Type	Method	Outcome	Quality	Cost
18 months	AR	364	Video Conference	Randomized, Pragmatic Comparative-Effectiveness Trial	X		X

Summary

Objective: Collaborative care for depression in primary care settings is effective and cost-effective. However, there is minimal evidence to support the choice of on-site versus off-site models. This study examined the cost-effectiveness of on-site practice-based collaborative care (PBCC) versus off-site telemedicine-based collaborative care (TBCC) for depression in federally qualified health centers (FQHCs).

Methods: In a multisite, randomized, pragmatic comparative cost-effectiveness trial, 19,285 patients were screened for depression, 2,863 (14.8%) screened positive, and 364 were enrolled. Telephone interview data were collected at baseline and at six, 12, and 18 months. Base case analysis used Arkansas FQHC health care costs, and secondary analysis used national cost estimates. Effectiveness measures were depression-free days and quality-adjusted life years (QALYs) derived from depression-free days, the 12-Item Short-Form Survey, and the Quality of Well-Being (QWB) Scale. Nonparametric bootstrap with replacement methods were used to generate an empirical joint distribution of incremental costs and QALYs and acceptability curves.

Results: The TBCC intervention resulted in more depression free days and QALYs but at a greater cost than the PBCC intervention. The disease-specific (depression-free day) and generic (QALY) incremental cost-effectiveness ratios (ICERs) were below their respective ICER thresholds for implementation, suggesting that the TBCC intervention was more cost effective than the PBCC intervention.

Conclusions: These results support the cost-effectiveness of TBCC in medically underserved primary care settings. Information about whether to insource (make) or outsource (buy) depression care management is important, given the current interest in patient-centered medical homes, value based purchasing, and bundled payments for depression care.

Access: <https://ps.psychiatryonline.org/doi/pdf/10.1176/appi.ps.201400186>

Fortney, John C., Pyne, Jeffrey M., Mouden, Sip B., Mittal, Dinesh, Hudson, Teresa J., Schroeder, Gary W., Williams, David K., Bynum, Carol A., Mattox, Rhonda, Rost, Kathryn M. (2013). Practice-based versus telemedicine-based collaborative care for depression in rural federally qualified health centers: A pragmatic randomized comparative effectiveness trial. *American Journal of Psychiatry*, 170(4), 414-425.

Study Length	State	Sample Size	Telehealth Modality Type	Method	Outcome	Quality	Cost
18 months	AR	364	Video Conference	Randomized Pragmatic Comparative Effectiveness Trial	X		

Summary

Objective: Practice-based collaborative care is a complex evidence-based practice that is difficult to implement in smaller primary care practices that lack on-site mental health staff. Telemedicine-based collaborative care virtually co-locates and integrates mental health providers into primary care settings. The objective of this multisite randomized pragmatic comparative effectiveness trial was to compare the outcomes of patients assigned to practice-based and telemedicine-based collaborative care.

Method: From 2007 to 2009, patients at federally qualified health centers serving medically underserved populations were screened for depression, and 364 patients who screened positive were enrolled and followed for 18 months. Those assigned to practice-based collaborative care received evidence-based care from an on-site primary care provider and a nurse care manager. Those assigned to telemedicine-based collaborative care received evidence-based care from an on-site primary care provider and an off-site team: a nurse care manager and a pharmacist by telephone, and a psychologist and a psychiatrist via videoconferencing. The primary clinical outcome measures were treatment response, remission, and change in depression severity.

Results: Significant group main effects were observed for both response (odds ratio=7.74, 95% CI=3.94–15.20) and remission (odds ratio=12.69, 95% CI=4.81–33.46), and a significant overall group-by-time interaction effect was observed for depression severity on the Hopkins Symptom Checklist, with greater reductions in severity over time for patients in the telemedicine-based group. Improvements in outcomes appeared to be attributable to higher fidelity to the collaborative care evidence base in the telemedicine-based group.

Conclusions: Contracting with an off-site telemedicine-based collaborative care team can yield better outcomes than implementing practice-based collaborative care with locally available staff.

Access: <https://www.ncbi.nlm.nih.gov/pubmed/23429924>

Davis, R., Hitch, A., Salaam, M., Herman, W., Zimmer-Galler, I., & Mayer-Davis, E. (2010). TeleHealth improves diabetes self-management in an underserved community: Diabetes TeleCare. *Diabetes Care*, 33(8), 1712-7.

Study Length	State	Sample Size	Telehealth Modality Type	Method	Outcome	Quality	Cost
12 months	SC	165	Video Conference	Randomized Controlled Trial	X		

Summary

Objective: To conduct a 1-year randomized clinical trial to evaluate a remote comprehensive diabetes self-management education (DSME) intervention, Diabetes TeleCare, administered by a dietitian and nurse/certified diabetes educator (CDE) in the setting of a federally qualified health center (FQHC) in rural South Carolina.

Research Design and Methods: Participants were recruited from three member health centers of an FQHC and were randomized to either Diabetes TeleCare, a 12-month, 13-session curriculum delivered using telehealth strategies, or usual care.

Results: Mixed linear regression model results for repeated measures showed a significant reduction in glycated hemoglobin (GHb) in the Diabetes TeleCare group from baseline to 6 and 12 months (9.4 +/- 0.3, 8.3 +/- 0.3, and 8.2 +/- 0.4, respectively) compared with usual care (8.8 +/- 0.3, 8.6 +/- 0.3, and 8.6 +/- 0.3, respectively). LDL cholesterol was reduced at 12 months in the Diabetes TeleCare group compared with usual care. Although not part of the original study design, GHb was reduced from baseline to 12 and 24 months in the Diabetes TeleCare group (9.2 +/- 0.4, 7.4 +/- 0.5, and 7.6 +/- 0.5, respectively) compared with usual care (8.7 +/- 0.4, 8.1 +/- 0.4, and 8.1 +/- 0.5, respectively) in a post hoc analysis of a subset of the randomized sample who completed a 24-month follow-up visit.

Conclusions: Telehealth effectively created access to successfully conduct a 1-year remote DSME by a nurse CDE and dietitian that improved metabolic control and reduced cardiovascular risk in an ethnically diverse and rural population.

Access: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2909047/>

RETROSPECTIVE STUDIES:

Olayiwola, J., Sobieraj, D., Kulowski, K., St. Hilaire, D., & Huang, J. (2011). Improving Diabetic Retinopathy Screening Through a Statewide Telemedicine Program at a Large Federally Qualified Health Center. *Journal of Health Care for the Poor and Underserved*, 22(3), 804-816.

Study Length	State	Sample Size	Telehealth Modality Type	Method	Outcome	Quality	Cost
12 months	CT	568	Remote Patient Monitoring, mHealth	Retrospective, Descriptive Study	X	X	

Summary

Background. Diabetic retinopathy (DR) is the leading cause of acquired blindness in U.S. adults. Early detection prevents progression. Screening rates are only 10% in medically underserved populations.

Methods. A statewide telemedicine-based program within primary care centers was implemented to improve DR screening, detection and referrals for underserved patients.

Study design. Retrospective, descriptive study.

Results. A total of 568 adults were screened during a comprehensive nurse visit from July 2009–June 2010 and had complete data available. Nearly 60% were minorities and 24% were uninsured. A total of 145 cases of DR were identified. The majority were recommended to return in one year for follow-up, while 75 were referred to a specialist.

Conclusions. Telemedicine using digital imaging technology in the primary care office is a strategy that can be used to screen underserved and at-risk patients for DR, increase compliance with screening, and streamline specialist referrals.

Access: <https://www.ncbi.nlm.nih.gov/pubmed/21841280>