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The utilization of video-conference shared medical appointments in rural diabetes care

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ABSTRACT

Aim: To explore whether Video-Shared Medical Appointments (video-SMA), where group education and medication titration were provided remotely through video-conferencing technology would improve diabetes outcomes in remote rural settings.
Methods: We conducted a pilot where a team of a clinical pharmacist and a nurse practitioner from Honolulu VA hospital remotely delivered video-SMA in diabetes to Guam. Patients with diabetes and HbA1c ≥7% were enrolled into the study during 2013–2014. Six groups of 4–6 subjects attended 4 weekly sessions, followed by 2 bi-monthly booster video-SMA sessions for 5 months. Patients with HbA1c ≥7% that had primary care visits during the study period but not referred/recruited for video-SMA were selected as usual-care comparators. We compared changes from baseline in HbA1c, blood-pressure, and lipid levels using mixed-effect modeling between video-SMA and usual care groups. We also analyzed emergency department (ED) visits and hospitalizations. Focus groups were conducted to understand patient's perceptions.
Results: Thirty-one patients received video-SMA and charts of 69 subjects were abstracted as usual-care. After 5 months, there was a significant decline in HbA1c in video-SMA vs. usual-care (9.1 ± 1.9 to 8.3 ± 1.8 vs. 8.6 ± 1.4 to 8.7 ± 1.6, $P = 0.03$). No significant change in blood-pressure or lipid levels was found between the groups. Patients in the video-SMA group had significantly lower rates of ED visits (3.2% vs. 17.4%, $P = 0.01$) than usual-care but similar hospitalization rates. Focus groups suggested patient satisfaction with video-SMA and increase in self-efficacy in diabetes self-care.
Conclusion: Video-SMA is feasible, well-perceived and has the potential to improve diabetes outcomes in a rural setting.

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1. Introduction

The burden of diabetes mellitus significantly impacts quality of life, as well as, economics for persons with diabetes and the healthcare system. Recent meta-analyses showed that multifactorial risk factor control reduces complications in diabetes without an increased risk of death, thus highlighting the importance of achieving guideline recommended goals for glycemic, as well as, hypertension, hyperlipidemia to reduce morbidity and mortality [1]. Quality improvement strategies to reduce the burden of dia-

Abbreviations: ACE-inhibitor, angiotensin converting enzyme-inhibitor; ARB, angiotensin receptor blocker; CBOC, community-based outpatient clinic; DM, diabetes mellitus; ED, emergency department; PACIC, patient assessment of care in chronic conditions; VAMC, Veterans Affairs Medical Center; VHA, Veterans Health Administration; video-SMA, video-shared medical appointments.

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betes advocate for a concomitant multifactorial therapy [2]. This must include vigorous behavioral and pharmacologic interventions which are labor intensive, costly [2], and difficult to accomplish in the traditional care settings [3–5]. Shared medical appointments (SMA's) are an innovative interdisciplinary model in improving care for chronic diseases including diabetes care [6–11]. SMA's are defined as group visits in which several patients meet with one or more provider(s) at the same time [8–15]. In the group visit intervention, the SMA providers deliver interactive discussions to shape values that the person places on a given outcome in an environment of peer support. During the SMAs, the facilitator uses group dynamics to promote observational and experiential learning, provide reinforcement for healthy behavior, and foster diabetes self-management to promote self-efficacy [10–12,16–19]. Thus, SMAs may well be an efficient method to achieve guideline recommendations in diabetes through efficient resource use, improvement of access to care, and promotion of behavioral change [16–18,20,21] with peer support [8–12,19,21]. It is also an ideal setting to activate patients and induce change in self-management behaviors [8,9,12,13,22].

Yet, the spread and access to these services are limited in rural areas due to lack of healthcare specialists and skill sets to conduct SMA's [23–25]. The challenges of health-care delivery in rural areas are social and geographic isolation, limited access to multi-disciplinary expertise, lack of decision support and inter-professional exchange for the local providers [11,23,24,26]. These socio-geographic barriers may be overcome by video-teleconferencing technology for real-time SMA (video-SMAs) between a distant provider and the local patients. Telemedicine is defined as the delivery of healthcare services using video-conference technology [27]. Given the recent advances in the delivery of health care through video-conference technology in the Veterans Health Administration (VHA) [28], this pilot study intends to explore the feasibility of innovative modes of care delivery, such as video-SMA, to improve DM care at remote clinical sites lacking local expertise.

2. Materials and methods

2.1. Study design

2.1.1. Setting

This study targets the socio-geographic barriers in rural diabetes care using the Honolulu VAMC video-conferencing technology to deliver video-SMA to the Guam Community-based outpatient clinic (CBOC). The western most U.S. territory of Guam is a 210-square-mile tropical island, 3950 miles from Hawaii. Guam has a shortage of health care professionals and presently has only one public hospital and a Naval hospital for acute care.

This pilot consisted of a prospective non-randomized study where a target of 100 patients with chart documented diabetes and HbA1c ≥7%, and were seen by their primary care provider during the study period were recruited. Given the short time-frame of 5 months, only thirty-one patients were recruited to participate in the video-SMA program (Fig. 1). Written informed consent was obtained from each video-SMA participant. The remaining 69 subjects with diabetes who attended Guam CBOC for primary care during the same period of time served as the usual care comparator group. A waiver of informed consent was approved to review the time-matched usual care participants' data. The Institutional Review Board and Research and Development Committees at the Honolulu VAMC and Providence VAMC (coordinating site) approved the protocol. All study procedures were conducted in accordance with the ethical standards of the Helsinki Declaration of

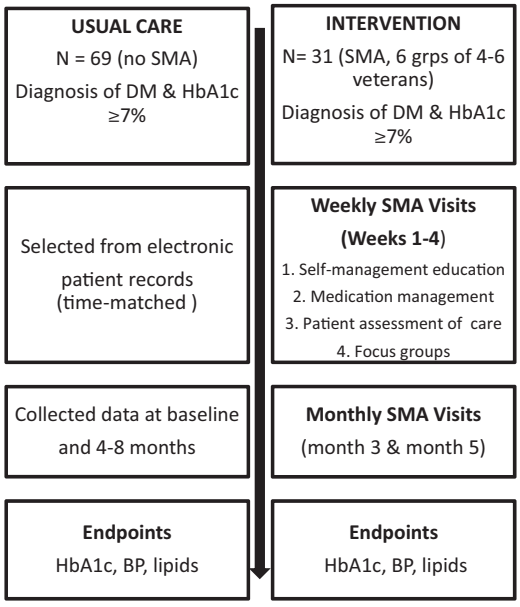

Fig. 1. Flowchart of study inclusion exclusion criteria.

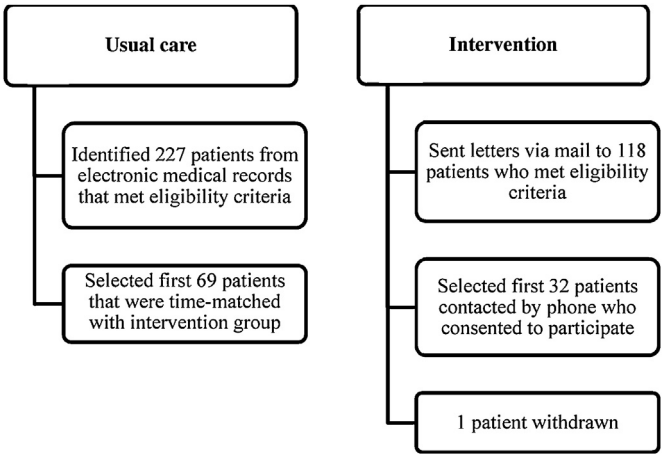

Fig. 2. Consort diagram of participants.

1975. Enrollment for this study began in January, 2013 and ended in February, 2014.

2.2. Study population

Patient enrollment in both groups is shown in Fig. 2. Patients were eligible if they had documented diabetes and HbA1c ≥7%, or were referred by their primary care providers to assist in diabetes care. Patients were excluded from the study if they were unable or not willing to participate in the video-SMA. Patients for the usual care group were selected from the Guam Veteran population with the same criteria of a baseline HbA1c ≥7%. A total of 69 usual care patients were consecutively selected for a total of 100 patients in the study.

Time 0 for the intervention group occurred at the time of the first video-SMA, while for usual care, the first primary care visit within the study period. Study duration was 5 months for all patients.

2.3. Intervention

Participants received 4 weekly video-SMA group sessions (3–5 patients per group) followed by 2 bi-monthly booster video-SMA