



DEPARTMENT OF VETERANS AFFAIRS

Mixed-methods Evaluation of a Telehealth Collaborative Care Program for Persons with HIV Infection in Rural Settings

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Introduction

In large cities in the United States, persons living with HIV infection often receive comprehensive healthcare in high-volume HIV specialty clinics that employ multidisciplinary care teams in a single venue.^{1,2} However, this model does not adapt to rural and low HIV prevalence settings, where there are few healthcare providers with HIV expertise and distances between patients and HIV specialty clinics are often great.³ The majority of rural-dwelling persons with HIV in the US have often had to travel long distances to HIV specialty clinics in urban areas, frequently neglecting care due to travel burdens.³

Typical of these conditions, in 2009 the Iowa City Veterans Affairs (ICVA) healthcare system cared for more than 30 Veterans with HIV infection who traveled more than one hour each way from outlying, mostly rural areas to receive all their care at the HIV specialty clinic, bypassing primary care clinics closer to home. This created two problems: 1) travel burdens made it difficult for patients to obtain care, and 2) though the quality of care at the specialty HIV clinic was high, it lacked the expertise, resources, and systems necessary to provide comprehensive primary care for an aging population.

Key Findings

A telehealth collaborative care (TCC) program was found to effectively deliver comprehensive care to persons with HIV infection living in rural areas. Evaluation of the program showed that TCC reduced travel distance to care centers while maintaining the high quality of care (as expressed by rates of viremia control) provided by the HIV specialty clinic.

Areas of concern included:

- Maintaining privacy in local primary care clinics
- Tradeoffs between access, continuity, and care coordination
- Importance of continuing specialist involvement in collaborative care

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As a way to address these issues, ICVA developed an innovative telehealth collaborative care (TCC) program for patients with HIV. This program combines HIV specialty care delivered by clinical video telehealth (CVT) with primary care delivered by generalist providers in VA Community Based Outpatient Clinics (CBOCs).

This research brief describes the process of implementing TCC and the results of a mixed-method evaluation of the program, relevant to other healthcare systems considering similar programs serving rural settings.

Methods

TCC Program Development

Development and evaluation of the TCC program occurred between September 2009 and April 2012 (Figure 1).

Prior to the intervention, some rural HIV patients in the study area bypassed CBOCs due to concerns that they may be unable to provide adequate care. Other patients worried about loss of privacy and HIV stigma related to care in their local clinics. Despite these concerns, most patients expressed interest in receiving care in CBOCs, provided their privacy would be protected and that they maintain a direct connection to the HIV specialty clinic team through telehealth.

Based on patient interviews, a TCC model was created that integrated HIV specialty care delivered by video telehealth with primary care delivered by CBOC teams. Care would be delivered during a single patient visit. Planning discussions with CBOC teams focused on:

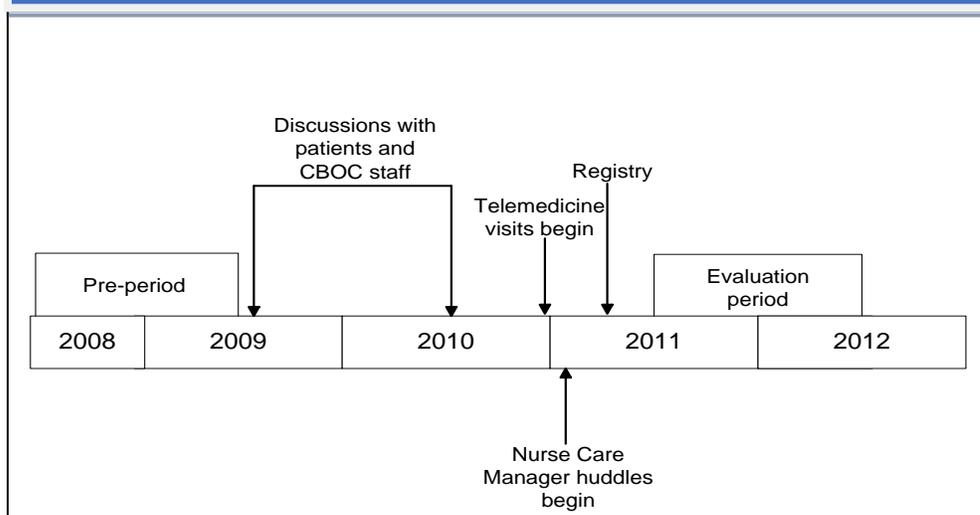
- **Defining clear roles for primary care and HIV specialty teams.** The HIV care team would supervise antiretroviral therapy, prophylaxis for opportunistic infections, and discussions about preventing HIV transmission. The CBOC team would supervise other primary and preventive care, such as screening and care for common coexisting conditions (e.g., hypertension, hyperlipidemia, diabetes, smoking cessation, depression, and osteopenia). A personalized patient handout was created to aid the patient in navigating co-managed care, including a list of relevant care personnel.
- **Establishing care coordination processes.** In “telehealth care coordination huddles” the nurse care manager from the CBOC primary care team sat with the patient and reviewed, together with the HIV specialty team via videoconference, the specific care plans and medication changes made during that day’s CBOC and HIV telehealth visits.
- **Managing population across sites.** Using VA’s Computerized Patient Record System (CPRS) and Corporate Data Warehouse (CDW), a registry was created of all patients in care for HIV in the ICVA system. For each patient the registry automatically pulled data relevant to care for HIV infection, common comorbidities, and cardiovascular risk factors.

Every three months, the same member of the HIV clinic team queried this electronic registry to address actionable care issues for each patient. Specific care tasks were assigned to HIV or CBOC team members,

and appropriate HIV clinic or CBOC team personnel were alerted to specific tasks using a structured “TCC tasks note” entered in each patient’s electronic health record. **This note was available across sites in the shared medical record.** Aggregate results for care measures were also examined to identify systematic gaps in care for the TCC population and to inform system redesign.

Following complete implementation of TCC, a mixed-method evaluation

Figure 1. Development and Evaluation Timeline



occurred between June 1, 2011 and May 31, 2012. (A description of care measures is shown in **Table 1**.)

Attention was focused on management of cardiovascular risk factors because of their recognized role in accelerated coronary artery disease among persons with HIV.⁴ Screening for depression and alcohol use disorders was targeted for improvement because: 1) these are prevalent, under-recognized, and treatable conditions that influence outcomes among persons with HIV,^{5,6} 2) screening rates in the HIV clinic were low at baseline and few resources existed in the specialty clinic to address this, and 3) there was opportunity to improve screening rates using systems already implemented in CBOCs. Data for all *quantitative measures* were available in the CDW and through chart review.

All patients participating in TCC in September 2011 were invited to participate in a semi-structured telephone interview to evaluate the program. Areas of interest for *qualitative measures* included participants' perceptions of

- Shared care
- Care coordination and role clarity among clinical teams
- Use of CVT for HIV specialty visits
- Stigma and privacy considerations
- TCC program's impact on access to HIV specialty care and primary care

Findings

Sample

Overall, 32 patients who lived closer to a CBOC than to a HIV specialty clinic participated in TCC between 2010 and 2012. Of those, 30 preferred TCC for all care. Twenty-four were in care throughout the 2011–2012 evaluation period (median age: 54, male: 23), 17 of whom were also in care in ICVA throughout the pre-TCC period.

Quantitative results

More than 90% of patients had undetectable levels of HIV viremia in both pre- and post-TCC periods. Seventeen patients in care in the ICVA system during both the pre- and post-TCC periods showed a statistically significant improvement in syphilis screening, influenza vaccination, tobacco screening and cessation counseling, and screening for alcohol disorders and depression. Median yearly travel time decreased from 320 minutes per patient pre-TCC to 170 minutes post-TCC.

Satisfaction with TCC was high: fourteen of 18 patients reported that they were very or completely satisfied with their most recent TCC visit (**Table 2**).

Qualitative findings

Of the 24 patients in TCC in September 2011, 13 completed interviews. Three interview findings were of particular relevance:

- *Stigma and privacy were not barriers to TCC implementation.* Privacy concerns regarding HIV status were allayed once trust was established by the TCC/primary care teams. (In some cases, integrated TCC allowed patients to discuss HIV status with a local caregiver for the first time.)
- *Access, continuity, and care coordination were significant issues.* Patients expressed occasional uncertainty regarding the differing roles of HIV clinic and CBOC primary care teams, particularly concerning which providers should respond to urgent health issues. Patients' conceptualization of HIV as intertwined with, not distinct from, other health issues also contributed to unclear role boundaries. However, all but one patient found the convenience of travelling to a local CBOC for care outweighed the problems related to care coordination and continuity.
- *Specialty care access remains important.* Many patients perceived their HIV care as complex and rapidly evolving. Thus they did not expect CBOC providers to maintain expertise in the complexities of HIV therapy and recent advances in research. Patients expressed an interest in periodically discussing advances in HIV research directly with their HIV specialist.

Conclusions

This mixed-methods evaluation demonstrates that *telehealth collaborative care (TCC) is a feasible approach for delivering comprehensive and accessible healthcare for persons with HIV in rural and low prevalence settings.* This was evidenced by the general acceptance of the program by patients, the reduction of patients' travel time, and

Table 1. Care Measures

Measure	Eligibility	Definition	Responsibility
HIV quality measures			
1. Retention in care	All	Seen at least twice annually, at least 60 days apart	HIV clinic
2. CD4 measurement	All	CD4 measured at least twice annually	HIV clinic
3. HIV viremia control	ART* > 6 months	Last HIV viral load < 50 copies/ml	HIV clinic
4. Syphilis screening	All	Syphilis serology annually	HIV clinic
5. Hepatitis C (HCV) screening	All	HCV serology at least once	PC [§] clinic
6. Hepatitis B (HBV) screening	All	HBV serology panel (sAb, sAg, cAb†) at least once	PC clinic
7. Influenza vaccination	All	Vaccine received annually	PC clinic
8. Pneumococcal vaccination	All	Vaccine received once	PC clinic
9. Hepatitis B vaccination	HBV sAb-/sAg- [†]	HBV vaccine first dose received	PC clinic
Cardiovascular risk factor measures			
10. Hypertension control	Hypertension Dx	Last blood pressure < 140/90	PC clinic
11. Glycemia control	Diabetes Dx	A1C measured in last 6 months and < 9	PC clinic
12. Lipid monitoring	All	Lipid panel annually	PC clinic
13. Tobacco cessation	All	Annual tobacco screening documented and cessation counseling / pharmacotherapy offered to users	PC clinic
Other measures			
14. Alcohol screening	All	AUDIT-C [‡] performed annually	PC clinic
15. Depression screening	All	Patient health questionnaire (PHQ), or other validated depression screen, performed annually	PC clinic
16. Patient satisfaction	All	Very or completely satisfied with last TCC visit	Both
17. Travel time	All	Estimated yearly total travel time to visits	Both

*ART – antiretroviral therapy; †sAb – surface antibody, sAg – surface antigen;
[‡]Alcohol use disorder identification test – consumption questions; [§] PC - Primary care

by the maintenance of the high quality of care that previously existed in the HIV specialty clinic.

Though the TCC model relied heavily on resources available in VA, including a single electronic health record for specialty and primary care sites and universal care access for all Veteran patients, ongoing changes in US healthcare to enhance data sharing may make TCC more available in rural and low prevalence settings.⁷

Multisite, controlled trials including much larger numbers of patients and more patient-oriented outcomes are necessary to determine the relative cost and effectiveness of alternate strategies for delivering HIV care in rural settings. As well, the study's subjects had generally well-preserved immune function; the TCC model may not be appropriate for patients with advanced Acquired Immune Deficiency Syndrome (AIDS).

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Table 2. Care Measure Results

	Measure	Pre-TCC* (N=17)		Post-TCC (N=24)		p
		N eligible	N met (%)	N eligible	N met (%)	
HIV Quality Measures	1. Retention in care	17	13 (76)	24	24 (100)	0.13
	2. CD4 Measurement	17	14 (82)	24	24 (100)	0.25
	3. HIV viremia control	15	15 (100)	24	23 (96)	.99
	4. Syphilis screening	17	6 (35)	24	24 (100)	0.001
	5. HCV screening	17	17 (100)	24	24 (100)	---
	6. HBV screening	17	13 (76)	24	22 (92)	0.5
	7. Influenza vaccination	17	8 (47)	24	23 (96)	0.008
	8. Pneumococcal vaccination	17	15 (88)	24	23 (96)	0.99
	9. HBV vaccination	5	2 (40)	10	9 (90)	0.25
Cardiovascular Risk Factor Measures	10. Hypertension control	10	10 (100)	14	14 (100)	---
	11. Glycemia control	4	3 (75)	5	5 (100)	0.99
	12. Lipid monitoring	17	16 (94)	24	24 (100)	0.95
	13. Tobacco cessation	17	5 (29)	24	24 (100)	0.001
Other	14. Alcohol screening	17	3(18)	24	24(100)	< 0.001
	15. Depression screening	17	0(0)	24	24(100)	< 0.001
	16. Very / completely satisfied with care	--	--	18	16(88)	---
	17. Travel time, minutes, median (IQR)	17	320 (180-594)	24	170 (39-221)	< 0.001

*TCC – Telehealth Collaborative Care

Impact

- The TCC model was shown to be effective within the context of VA infrastructure. However, ongoing reforms regarding data sharing in the US healthcare system may also allow its implementation outside VA.
- The TCC model may not be feasible for individuals with more advanced immune suppression due to HIV infection.

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