



# Telemedicine and HIV Health Care



## Questions

What is the state of the art in telemedicine today?  
What is the state of the art in HIV health care provision through media and distant medical technologies?

## Key Take-Home Messages

- Telemedicine models range from simple telephone consultations (1;2) to complete “virtual hospitals” offering a full range of home care for people living with HIV (3).
- Telemedicine has been well received by patients, and services delivered via telemedicine are often described as more convenient and comfortable while reducing travel times and HIV-related stigma (3-6).
- Clinical outcomes from telemedicine models have been equal to or greater than outcomes using traditional care models (4;6;7).
- Telemedicine in the form of teleconsultation with HIV specialists allows primary care physicians to build their knowledge base, treat patients more confidently and make fewer referrals (2;8).

## The Issue and Why It’s Important

Telemedicine or electronic interactive healthcare consultation offers a variety of benefits to both patients and primary care clinicians. For patients, telemedicine can reduce travel times, reduce costs associated with travel and time away from work, and offer more privacy and less risk of exposure to HIV-related stigma. For primary care clinicians, telemedicine allows for real-time specialty consultation with distant health care providers who possess HIV expertise.

Telemedicine is particularly important as expert advice from HIV specialists has been linked to improved antiretroviral therapy (ART) adherence (7) and significantly better outcomes for patients receiving HAART regimens (8). Telemedicine has also been shown to be especially effective with HIV-positive youth (5).

## EVIDENCE INTO ACTION

The OHTN Rapid Response Service offers HIV/AIDS programs and services in Ontario quick access to research evidence to help inform decision making, service delivery and advocacy. In response to a question from the field, the Rapid Response Team reviews the scientific and grey literature, consults with experts, and prepares a brief fact sheet summarizing the current evidence and its implications for policy and practice.

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## What We found

### What are the models of patient-provider telemedicine?

Various models of telemedicine have been studied for their ability to engage patients directly.

In Iowa (4), researchers tested a co-management model with 30 patients:

- A rural patient would have a face-to-face visit with his/her primary care physician at the local outpatient clinic.
- While at the clinic, the patient also communicated with an HIV specialist team through video-based telehealth.
- A nurse care manager at the clinic provided continuity between the two appointments by sitting with the patient during the HIV session and then reviewing all specific care plans and medication changes made that day.

Similar approaches have been tested in a prison setting with 687 patients (7) and in a Los Angeles outpatient setting with 43 patients (6). In the prison study, each telemedicine visit involved an infectious disease specialist, an infectious disease trained pharmacist and a case manager meeting remotely with a prisoner and a correctional nurse via teleconference. In the Los Angeles study, a nurse at the outpatient clinic measured vital signs while the off-site healthcare providers used a teleconference link to conduct consultations, perform interviews, place pharmacy orders, view charts and educate patients.

Telemedicine has also been used directly with people with HIV with no other clinicians present. In a study (5) aimed at improving ART adherence among African American youth, 14 individuals attending an HIV clinic in San Francisco were directly connected to an off-site HIV clinical pharmacist. The pharmacist conducted a 45-minute face-to-face medication counselling session via videoconference.

One study from Spain assessed the ability of a “virtual hospital” to offer complete home care for chronic HIV patients (3). Using videoconferencing, the virtual hospital offered consultations, electronic prescriptions, drugs sent by courier, a virtual library and a virtual community where patients were able to share articles, opinions and information.

### How effective are patient-provider telemedicine models?

Telemedicine studies show consistently positive outcomes for patients. The prison study (7) compared a cohort that had been attended by on-site correctional physicians alone to the cohort receiving HIV care via telemedicine. The study found that the telemedicine cohort had significantly greater virologic suppression and higher CD4 counts than the physician-alone cohort. In the Iowa study (4), over 90% of telehealth patients met health performance measures. In the Los Angeles outpatient study (6), clinic completion rates were higher for patients who received care via telemedicine (76%) than for those who attended in-person visits (61%).

The participants themselves responded very positively to the range of telemedicine techniques:

- In the Iowa study (4), patients said they felt they were receiving more personalized and more co-ordinated care through telemedicine; they also reported reduced travel time, less time away from work and less time spent trying to navigate between primary and specialty care.

- In the Los Angeles study (6), 95% of patients who completed a post-intervention survey rated telemedicine at the highest level of satisfaction and said they preferred it to in-person visits.
- In the “virtual hospital” study (3), 85% of patients said that telemedicine had improved their access to clinical data and that they felt comfortable with the system.
- In the San Francisco study (5), participants stated that the telemedicine session was more private than appointments at regular HIV clinics, since it reduced the risk of HIV-related stigma. They also said they felt more at ease with telemedicine: they were less intimidated by the specialist and felt they could talk more freely.

According to the San Francisco study team, youth may be more comfortable with telemedicine because they’ve grown up in a technology-dominated era. A study conducted in Toronto (9) came to a similar conclusion: HIV-positive youth, including street-involved and marginal youth, said they would use the Internet for HIV-related information if a youth-oriented “one-stop” e-health website were created for them.

### **What are the models of primary care clinician / specialist telemedicine?**

Telemedicine can also facilitate communication between primary care clinicians and specialists. One model of telemedicine consultation is the HIV Warmline, a federally funded US service that offers doctors, nurses and pharmacists free live telephone access to HIV specialists (2). The service is used by both urban and rural clinicians and by midlevel providers and physicians (2). The line allows these clinicians to stay up-to-date in a rapidly changing field (1). It also gives them access to consultants on site at the call centre who can discuss complex cases as they arise (1). Since 1992, the Warmline has received 37,000 calls (1).

In another model of “long-distance expert advice” studied in Spain (8), treating physicians submitted descriptions of HIV-infected patients on failing HAART regimes to an expert panel using a standard email form. Monthly conference calls were scheduled where 10 new patients were discussed. HIV specialists from across Spain participated voluntarily. Treating physicians and two experts joined every 90 minute consultation, and recommendations were made on a case-by-case basis. Open dialogue allowed treating physicians to ask for explanations about the number or type of drugs selected.

### **How effective are the primary care clinician / specialist telemedicine models?**

Both models were found to be effective:

- In the US, 90% of callers to Warmline said the service had improved their confidence about caring for HIV patients, 67% stated that it changed the way they managed HIV, and 74% were able to avoid referring patients to specialists (2).
- In Spain (8), all clinicians rated the consultation experience as useful and relevant to their practice. Patients of physicians involved in the long-distance consultations had encouraging viro-immunological outcomes at 24 weeks.

## **Factors That May Affect Local Applicability**

**Security** is an ongoing concern in telemedicine, as is **access to technology**. In terms of an e-health website, individuals must feel secure using both public and private Internet terminals. In all forms of telemedicine, patients and providers

must have ready access to a computer, broadband internet connection and enough technical expertise to perform some basic troubleshooting should problems arise – which may be difficult in some rural and remote settings or among people in prisons.

There may also be some **ethical issues**. All patients who participated in the telemedicine studies described in this rapid review were specifically selected based on being least likely to suffer harm from the intervention. Clinicians should give serious thought to the risk of harm to each patient before recommending a telemedicine model. Telemedicine models for individuals who are not medically stable may require more research.

## What We Did

We searched Medline for a combination of HIV (text term OR MeSH term) AND MeSH term Telemedicine OR text terms (telemedicine OR telecare OR telehealth OR mobile health OR distant medicine OR ehealth OR e-health). We also conducted Google search using a search term “Telemedicine.” All searches were conducted on June 2, 2014 and limited to articles published since 2004.

### Suggested citation

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