Building a Telepsychiatry Service

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Thanks, Collaborators!

- **FAHC**
  - Judy Amour
  - Harry Clark
  - Tara Pacy
  - Steve Taylor
  - Mike Wehner

- **MCD Public Health**
  - Margaret Gradie
  - Kim Mohan
  - Kate Perkins
  - Dot Seigars

- **RMCL**
  - Michael Edwards
Background

Mental Health Problems and Unmet Needs
For Example, Depression

The *leading* cause of disability and the fourth leading contributor to the global burden of disease
Depression is common

- Affects about 121 million worldwide
- May have profound effects on personal safety, quality of life, and co-occurring non-psychiatric conditions...
Of the estimated 17.5 million Americans who are affected by some form of depression, 9.2 million have major or clinical depression.

Two-thirds of people with depression do not seek necessary treatment.
The economic cost of depression is estimated at $30.4 billion a year
  • Cannot estimate the cost of human suffering

Women experience depression about twice as often as men

By 2020, WHO estimates that depression will be the number two cause of "lost years of healthy life" worldwide
According to the Centers for Disease Control and Prevention (CDC), suicide was the ninth leading cause of death in the US.

About 15% of those with major depression go on to suicide despite some receiving “gold standard” care.

[adapted from: http://www.psychiatry.wustl.edu/depression/depression_facts.htm]
Life Domains Affected by Depression

All of Them
People in rural areas of the US have much less access to medical care of all types compared to those in urban areas.

Some medical conditions may make it difficult or impossible for affected individuals to receive necessary services because they may be unable to come for appointments or to participate in their care as required.

Few providers are willing/able to spend uncompensated time in travel and few patients with significant medical comorbidity are able to make long trips without costly assistance and a significant investment in time.
There are higher proportions of rural men who smoke, have hypertension, and impaired renal function, and of rural women with obesity, hypertension, diabetes, and renal impairment, compared to their urban counterparts.
While the prevalence and incidence of mental disorders is similar between rural and urban residents, compared to their urban counterparts, rural residents are an underserved and vulnerable population
Rural Folks

- Are far less likely to have access to mental health care providers or services or to have mental health benefits
- Have lower rates of use of psychiatry services
- Have higher suicide rates
Rural Elders & Late-Life Depression
It’s even worse for them
Leads to significant individual and family burden

More use of health care resources

Increased mortality from comorbid medical illness and from suicide

Underrecognized and undertreated
  • Especially in hospitals and nursing homes

Often missed or taken as a normal part of aging
  • “You’re old, you should be depressed.”
Prevalence rates in men and women become comparable after the age of 55-65 (men increase, women level off)

The frequency with which people with depression seek treatment declines sharply after age 55
Elders Not Seeking Help

- Symptoms inappropriately attributed to declining physical health
- Embarrassment about having psychological complaints
- Assumption that depression is a normal part of aging
- Trouble distinguishing between grief and “real” depression
Depression in Elders: Prevalence in Special Populations

- **Ambulatory Medical Care Setting**
  - 30-50% will have significant depressive symptoms

- **Long-Term Care (i.e., NH) Setting**
  - 25% of the best functioning residents have symptoms consistent with a major depression
US Nursing Home Facts

- Number of nursing homes: 16,100
- Number of beds: 1.7 million
- Occupancy rate: 86%
- Number of current residents: 1.5 million
- Average length of time since admission (current residents): 835 days
Of more than 1.5 million residents of US nursing homes:

- 80+% have psychiatric disorders or conditions
  - Depression, dementia and associated behavioral symptoms, delirium, anxiety, psychosis, sleep disorders
    - In addition, many have comorbid non-psychiatric conditions that create a “vicious cycle”
Depression prevalence
- > 20% meet DSM-IV criteria for major depression
- > 44% have important subsyndromal depression

Delirium prevalence
- 25% upon admission to PAC units
- 12% LTC units
Associated Problems

- High rates of functional, cognitive, and behavioral impairment
- Worse health outcomes
- Increased hospital use
- High mortality (illness; suicide)
NH caregivers often can’t/don’t recognize or treat depression, delirium, disruptive behaviors, etc.

- Myths
  - Depression = “normal” in old age
  - More confusion = worsening dementia
- Lack of training; poor staffing patterns; high staff turnover
- High prevalence of dementia
- Medical comorbidity
Only 20% of residents with mental health symptoms are evaluated by a MH specialist

- Limited availability of psychiatrists
- Worse in rural areas

Although best practice guidelines are available, they are often difficult to implement in NHs
How Might We Address This Discrepancy?

Telemedicine!
Telemedicine

- The use of medical information exchanged from one site to another via electronic communications to improve patients' health status.
  - Videoconferencing, transmission of still images, e-health including patient portals, remote monitoring of vital signs, continuing medical education and nursing call centers are all considered part of telemedicine and telehealth...
The use of telemedicine to deliver psychiatric care or education across distances using any available technologies. Other equivalent or related descriptors include *tele-psychiatry*, *telemental health*, *tele-mental health*, *telepsychology*, and *tele-psychology*. 
Cecil Wittson (psychiatrist) in 1961
- Interested in two-way video technology
- Compared effectiveness of FTF psychotherapy with that delivered via two-way television
Found choice of therapist and selection of group members more important than how therapy was delivered

First published application of telemedicine
In 1965, used two-way television system between Nebraska Psychiatric Institute and Norfolk State Mental Hospital, 112 miles apart, for several joint conferences.
Pluses

- Lessening the need for travel
- Increased number of staff members for consultation at State hospital
- Improved interpersonal and institutional relations
Minuses

- Initial hesitance to use system
- Technical problems such as sound pick-up and camera operation
- High cost of transmission
First reports of psychiatric consultations using telemedicine began to appear in the 70s

- In general, described consultations for patients of community primary care providers or to various satellite locations by psychiatrists at academic medical centers using two-way interactive television.
Solow et al (1971) used a psychiatry consultative model that comprised a referring provider briefly describing a patient to a consulting psychiatrist (CP), interview of the patient by the CP, and CP discussion of findings and recommendations with the referring provider.
Dwyer (1973) reported the successful use of TP to provide psychiatric consultations from Massachusetts General Hospital (the hub site) to a medical station (the satellite site) in Boston.

- About 30 psychiatrists and 30 psychiatry residents and medical students responded positively to TP and suggested that, for some patients, this modality might be preferable or superior to a FTF approach.
Lack of reliability compared to FTF

*Technophobia*, an irrational fear and avoidance of new technologies
Beginning in the 1980s, affordable videoconferencing allowed for widespread use. Early videoconference costs were prohibitive and picture and sound quality was not always satisfactory. With the use of digitized audio and video data, it is now possible to expect and obtain acceptable high quality transmissions (even for images that require very accurate reproduction) at lower costs.
Kldiashvili and Schrader (2011) reported that digital images are appropriate substitutes for glass slides for telecytology applications, particularly when used for quality assurance programs.
Urness et al (2006) reported generally high levels of patient satisfaction (equivalent to those for FTF) using TP

Doolittle et al (2011) found a steady decrease in per visit costs and increase in use of a teleoncology service from 1995 (103 visits at $812 per visit) to 2005 (235 visits at $251 per visit)
To better understand how telemedicine applications are described, evaluated, and implemented
Bandwidth or Digital Bandwidth

- A rate of data transfer, bit rate or throughput, measured in bits (bps), kilobits \((10^3 \text{ bits; kbps})\) or megabits \((10^6 \text{ bits; mbps})\) per second

- Typical free-standing telemedicine apparatuses may function reasonably well at bandwidths as low as 128 kbps but generally work better at rates of 364 kbps and higher
<table>
<thead>
<tr>
<th>Apparatus</th>
<th>Approximate Bandwidth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical Dial-up Telephone</td>
<td>28kbps</td>
</tr>
<tr>
<td>Faster Dial-up Telephone</td>
<td>56kbps</td>
</tr>
<tr>
<td>Telemedicine Minimum</td>
<td>128kbps</td>
</tr>
<tr>
<td>Basic DSL (Digital Subscriber Line)</td>
<td>768kbps</td>
</tr>
<tr>
<td>T-1 / DS1</td>
<td>1.5mbps</td>
</tr>
<tr>
<td>3G</td>
<td>2.4mbps</td>
</tr>
<tr>
<td>T-3</td>
<td>44mbps</td>
</tr>
<tr>
<td>Maximum FiOS (Fiber Optic Service)</td>
<td>50mbps</td>
</tr>
<tr>
<td>4G (long-range)/WiFi (Wireless Fidelity) (short-range)</td>
<td>&gt;100mbps</td>
</tr>
</tbody>
</table>
Think of different bandwidths as different pipe diameters

- Larger pipes allow greater flow rates
- More data transferred per second
Conversion of data into a form called a *ciphertext* that cannot be easily understood by unauthorized persons.

- **Decryption** is the process of converting encrypted data back into its original form, so it can be understood.
Caution!

Some or all videoconference data may be encrypted, potentially enhancing its security, but encryption itself is no guarantee these data are completely safe.
Not all encryption methods are equally effective.

Some software applications used for videoconferencing may not be HIPAA-compliant even though data is encrypted.
Some software producers may neither fully disclose the limitations of their encryption technology nor what data might be accessed or made available to third parties during or after a videoconference session.
When in doubt, consultation with appropriate (e.g., Risk Management, Information Technology) services is recommend before a telepsychiatry consultation is performed.
There are no universally accepted or mandated standards or guidelines for telepsychiatry but...

- *Practice Guidelines for Videoconferencing-Based Telemental Health* was published in 2009 by the ATA

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Requirement/Goal</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
<td>Ensure safety of a suicidal or otherwise unsafe patient</td>
<td>Establish a reliable and rapid system of communication other than the TP apparatus (e.g., cellular or other telephone, pager) to contact an onsite person in case assistance is needed</td>
</tr>
<tr>
<td>Usability</td>
<td>Conditions and apparatuses must be user-friendly and reliable</td>
<td>Take time to learn about equipment by having a few practice sessions with technical assistance available; make sure venues are well-lighted, quiet, secure, and easily accessible; have back-up plan for communication (e.g., cellular or other telephone) in case of equipment malfunction; know how to access technical staff during any time a telemedicine encounter might occur—24/7 if necessary</td>
</tr>
<tr>
<td>Acceptability</td>
<td>Increased likelihood that TP will be used</td>
<td>Provider must be comfortable with equipment; acknowledge to patient and/or staff at distant site limitations/benefits of approach (e.g., saves travel time and money, there will be a slight delay in audio portion of signal); assistance may be needed to position patient or to physically examine for some conditions such as EPS; headphones may be useful for some patients with hearing problems</td>
</tr>
<tr>
<td>Education</td>
<td>To better understand how TP can be used</td>
<td>Record Encounters: These can be used to show others how TP works, for second opinions, and for provider education</td>
</tr>
</tbody>
</table>
Grady (2002) identifies the importance of the “seven A’s” when implementing and maintaining a telepsychiatry service and to assure its success…
Alliance is the consultant’s relationship with the remote site’s administrative, support, and provider staff.

Assessment includes identifying needs and resources of the satellite site, capabilities and resources of the hub site, and the interest/investment of both sites.
**Approach** describes how to get the “telepsychiatry word” out to others. Grady recommends that clinicians be the individuals contacted (i.e., approached) first as they will have the greatest insights into the needs of consultees and patients at the satellite sites.
Improved *access* for patients may be the single most important reason for telepsychiatry. This also refers to where the teleconferencing equipment is located...
Putting it where it is most easily accessed at the distant site (e.g., a community mental health clinic, a primary care provider’s office) and the hub (e.g., within a telemedicine department, within the consultation-liaison/psychosomatic medicine division) will increase the likelihood that it will be used.
Accountability refers to responsibilities of the provider and facility including physical safety of the patient, security of patient records, and a plan for performance evaluation and improvement.
Apprehension may be felt by the telepsychiatrist, patient, consultee, or support staff. It is the responsibility of the telepsychiatrist to be sufficiently comfortable and adept with the equipment such that he or she can use it with confidence and allay the concerns of others.
Anticipation of equipment malfunctions, patient refusals, staff worries, and other problems will help the provider develop contingency plans.
Other Things to Consider
Equipment

- **Price**
  - How much you can spend vs. how much you need to spend
  - Who pays?

- **Durability**

- **Size/Portability**

- **Usability**
Ease of access for patients/providers

Safety
  • Safety plan
  • Who/how to call for emergencies

Who covers costs
Licensure/Credentialing

- What is requirement at your home institution?
- What is requirement at distant site?
- What about privileges?
- What about malpractice coverage/requirements?
More Help?
Office for the Advancement of Telehealth (OAT)

...provides support for the establishment and development of Telehealth Resource Centers (TRCs). These centers are to assist health care organizations, health care networks, and health care providers in the implementation of cost-effective telehealth programs to serve rural and medically underserved areas and populations.
We (FAHC/MCD/RMCL) competed for and were awarded a 3-year grant from OAT to develop and implement the Northeast Telehealth Resource Center (NETRC)
NETRC Partners

- **FAHC/UVM**
  - Co-Investigator
  - Clinical, applications, and implementation expertise

- **Medical Care Development, Augusta, ME**
  - Program and Fiscal Management
  - Outreach and Marketing
  - Business Plan Development

- **Regional Medical Center at Lubec, ME**
  - Enhance the capacity of rural providers
  - Support a favorable policy environment
  - Conduct innovative projects that explore new technologies and contexts for use
  - Outcomes analysis
The best source for general information about telemedicine is the American Telemedicine Association (ATA): http://www.americantelemed.org

- Take a few clicks to the Telemental Health Special Interest Group (SIG)


Thanks!
Telemedicine at FAHC
History of Telemedicine at FAHC

- Began mid-90s
- Mike Ricci, first Medical Director
- TR succeeds MR in 2005
  - Two OAT grants to develop Northeast Telehealth Resource Center (NETRC)
  - Continued growth of pediatric critical care and NH telepsychiatry; implementation of palliative care, MFM, critical care collaboration with CVMC
  - Research collaborations with Brown and Cornell
Telemedicine Team

- Judy Amour, Projects and Grants Administrator
- Harry Clark, Telemedicine Coordinator
- Tara Pacy, Director
- Terry Rabinowitz, Medical Director
- Steve Taylor, Telemedicine Technician
- Mike Wehner, Manager
Telemedicine at FAHC/UVM

- Network links 16 hospitals and three nursing homes in VT and NY

- Delivers distance education (e.g., Grand Rounds), facilitates administrative contacts, and delivers tele-consultations in pediatric critical care, psychiatry (NH, child and adolescent), palliative care, maternal and fetal medicine, wound care, and other areas as requested/needed
Research collaboration
  - Nursing home telepsychiatry, PTSD treatment for veterans and trauma responders, palliative care, homebound elders

Various administrative and other meetings as needed

www.fahc.org/Telemedicine/
TM Activities: Past, Present, & Future

- Wound care
- Teledermatology
- Tele-ambulance
- Pediatric critical care
- Tele-neurosurgery
- Nursing home telepsychiatry
- Critical care telemedicine consultations
- MFM consultations
- Distance evaluations for dialysis
- Oncogenetics consultations for patients/families at cancer risk
- Vascular surgery follow-ups
- Pediatric Neurology teleconsultations for seizure, headaches
- ? Telestroke
- ? More teledermatology
- Tumor board
An act relating to telemedicine

It is hereby enacted by the General Assembly of the State of Vermont:

Sec. 1. 8 V.S.A. chapter 107, subchapter 14 is added to read:

Subchapter 14. Telemedicine

§ 4100k. COVERAGE FOR TELEMEDICINE SERVICES

(a) All health insurance plans in this state shall provide coverage for telemedicine services delivered to a patient in a health care facility to the same extent that the services would be covered if they were provided through in-person consultation.
Results From Almost 300 Nursing Home Telepsychiatry Encounters
Average age 77.5 ± 13.6 years

60% female

Depression, dementia, and delirium each comprised 21% of diagnoses

Behavioral disturbances in 17%
  - Exacerbated by vision and hearing problems
<table>
<thead>
<tr>
<th>Patient, Nursing Home, Encounter and Charge Characteristics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patients</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>63 (59.4%)</td>
</tr>
<tr>
<td>M</td>
<td>43 (40.6%)</td>
</tr>
<tr>
<td><strong>Age (yrs)</strong></td>
<td></td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>77.5 (13.6)</td>
</tr>
<tr>
<td>Range</td>
<td>44-100</td>
</tr>
<tr>
<td>Median</td>
<td>81</td>
</tr>
<tr>
<td><strong>Nursing Homes</strong></td>
<td></td>
</tr>
<tr>
<td>Distance (mi)/Travel time (min) (round trip)</td>
<td></td>
</tr>
<tr>
<td>NY</td>
<td>208/240</td>
</tr>
<tr>
<td>VT</td>
<td>70/88</td>
</tr>
<tr>
<td><strong>Encounters</strong></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>278</td>
</tr>
<tr>
<td>Mean encounters per patient (SD)/Range</td>
<td>2.6 (2.0)/1-10</td>
</tr>
<tr>
<td>Per year (last 7 years)</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>45.6 (12.8)</td>
</tr>
<tr>
<td>Range</td>
<td>29-64</td>
</tr>
<tr>
<td>Per Site</td>
<td></td>
</tr>
<tr>
<td>NY</td>
<td>172</td>
</tr>
<tr>
<td>VT</td>
<td>106</td>
</tr>
<tr>
<td><strong>Charges (USD)</strong></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>65,982</td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>237 (99)</td>
</tr>
<tr>
<td>Range</td>
<td>100-517</td>
</tr>
</tbody>
</table>
## Cost (USD) and Time Estimates for Face-to-Face and Telepsychiatry Services for 278 Encounters for 106 Nursing Home Residents

<table>
<thead>
<tr>
<th></th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2002</td>
</tr>
<tr>
<td><strong>Travel Time (hr)</strong></td>
<td></td>
</tr>
<tr>
<td>Yearly</td>
<td>28</td>
</tr>
<tr>
<td>Total</td>
<td><strong>843 (35.1 days)</strong></td>
</tr>
<tr>
<td><strong>Travel Distance (mi)</strong></td>
<td></td>
</tr>
<tr>
<td>Yearly</td>
<td>1456</td>
</tr>
<tr>
<td>Total</td>
<td><strong>43,196</strong></td>
</tr>
<tr>
<td><strong>Fuel costs</strong></td>
<td></td>
</tr>
<tr>
<td>Yearly</td>
<td>73</td>
</tr>
<tr>
<td>Total</td>
<td><strong>3,747</strong></td>
</tr>
<tr>
<td><strong>Range of personnel costs</strong></td>
<td></td>
</tr>
<tr>
<td>Patient-to-physician travel</td>
<td><strong>33,739-67,477</strong></td>
</tr>
<tr>
<td>Physician-to-patient travel</td>
<td><strong>84,347-253,040</strong></td>
</tr>
<tr>
<td><strong>Telepsychiatry costs</strong></td>
<td></td>
</tr>
<tr>
<td>Videoconference unit, line charges, hardware, service contract</td>
<td></td>
</tr>
<tr>
<td>NY</td>
<td>14,045</td>
</tr>
<tr>
<td>VT</td>
<td>10,381</td>
</tr>
<tr>
<td>Total</td>
<td><strong>24,426</strong></td>
</tr>
<tr>
<td><strong>Range of total potential cost savings</strong></td>
<td></td>
</tr>
<tr>
<td>Patient-to-physician travel</td>
<td><strong>13,060-46,798</strong></td>
</tr>
<tr>
<td>Physician-to-patient travel</td>
<td><strong>63,668-232,361</strong></td>
</tr>
</tbody>
</table>
You can diagnose and treat delirium, depression, and disruptive behaviors from a distance!

- ...and these conditions improve!

Residents, many of whom are demented, accept the modality and understand it

- “It’s pretty cool.” “It saves you a trip, Doctor.”

Family and staff really like it
Telepsychiatry consultations for nursing home residents save time, money, and provide a service that might not otherwise be available.