

# Paving the Way for Telemedicine in Indian Country: The Hopi Tribe and Harvard University



## The Hopi Tribe and Harvard University Telemedicine Project

This project originated as a means to further the application process towards a Native American Research Center for Health (NARCH) grant for the telemedicine initiative between Harvard University and Hopi Health Care Center. But in our communications with Hopi and Harvard, we discovered there is little communication between the two parties. It is our belief that before funding for this entire project is secured and the project starts, the first logical step is to create a relationship between Harvard and Hopi. We hope that this project will provide a starting point with which the two parties might work together to develop a connection for a lasting partnership.

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## EXECUTIVE SUMMARY

The Hopi Health Care Center stands out as a leader in rural health care. The facilities are capable in handling many of the tribe's needs. With the combined efforts of the Hopi Health Care Center and Harvard University in creating a successful telemedicine project, various health needs in the Hopi community could be met and Harvard University would benefit from the experience.

The primary goal of the Hopi Tribe and Harvard University telemedicine project is to investigate how telemedicine can be best used to improve health care in rural areas, starting with the relationship between Harvard University and the Hopi Tribe. This telemedicine project could potentially serve as an example for other rural areas, in particular for tribes, to use as a resource in attempting to improve health care provision.

This telemedicine project has a great potential to facilitate a model partnership between a research institution and an American Indian/Alaskan Native community. Because this project is only just materializing, this report advocates the establishment of strong relationships between individuals involved in the project at Harvard University and the Hopi Tribe and investigates some of the issues the project may face.

The primary objective of this report is to provide Harvard University and the Hopi Health Care Center a resource in order to facilitate the growth of a partnership that can carry on into the future. This report will explore four areas that the two parties should examine together and suggest a few first steps towards establishing commitment from both sides.

Understanding the needs of the Hopi community and the capabilities of Harvard University, the technological capabilities of the telemedicine equipment, and the organization and operational issues concerning both parties' facilities will provide a foundation for communication and understanding. At the same time, we emphasize relationship building to ensure a solid level of commitment.

## GOALS AND ORGANIZATION

### Goals

- Investigate issues involved in creating the partnership relating to four key areas: the needs of the Hopi community, the telemedicine technology, the organizational structure of the project, and the operation of the project.
- Facilitate a conversation towards understanding and commitment between the Hopi Health Care Center and Harvard University.

### Organization of the Report

This project involves the investigation of four key issue areas and then suggests possible next steps towards creating a lasting partnership.

- Needs
  - The needs of rural areas.
  - The needs of the Hopi Tribe.
- Technology
  - What are the capabilities of the telemedicine equipment?
  - How can both Harvard University and Hopi Health Care Center work towards maximizing the benefit of the technology?
- Organization
  - Overview of the basic organizational structure of the telemedicine initiative at the Hopi Health Care Center and Harvard University.
  - Potential organizational issues surrounding the project.
- Operation
  - Operational issues surrounding the project.
- Moving Forward
  - Needs and opportunities
  - Relationship building

Needs

Technology

Organization

Operation

Moving Forward

## RURAL HEALTH CARE CHALLENGES

Rural areas face many unique health care challenges, and understanding these challenges will help telemedicine projects expand to fit the needs of tribal communities and rural areas in general.

### Geographic Isolation

The geographic isolation and transportation barriers are one of the main reasons that there is a disparity between health care in urban and rural areas. The large distances between the urban areas and the rural areas provide for much disparity and costs associated with health care in the two areas. The lack of major or convenient transportation routes between the two areas inhibits the free flow of health care.

### Financial Situation

The rural areas generally have a less affluent population with fewer financial and capital resources. The creation of proper health care that provides for all the needs in the community is dampened due to fiscal limits.

### Less Medical Expertise

There is a reduced ability to acquire, develop, or maintain specialized medical expertise. There is little incentive for specially trained doctors to move into rural areas and there is little training ability on the community's part available for highly specialized individuals due to the mentioned financial situation.

Rural areas often have similar needs when it comes to health care. Emergency care, mental health services and dental services are a few of the main health care priorities in rural areas.



## HOPI COMMUNITY HEALTH CARE NEEDS

The Hopi Health Care Center is a leader in rural health care, yet the Hopi community faces needs that the center cannot always meet. There are specific needs that the Hopi community has that can possibly be assisted by telemedicine:

### **Preventative Care**

Preventative care is needed in the community. Pre-natal care and diabetes prevention is a service that would benefit the area.

### **Behavioral and Psychiatric Care**

Behavioral and psychiatric care would also benefit the community due to the mental conditions and alcoholism.

### **Specialist Care**

Specialist services would be vital to the Hopi community. For example, high-risk pregnancies can be handled through the use of telemedicine with specialists at Harvard University.

### **Emergency Care**

Due to its distance from the nearest level 1 trauma center, the Hopi Health Care Center has a need for emergency services. Harvard University's main resource for the telemedicine project is emergency care expertise.

The Hopi community could possibly benefit greatly from the telemedicine project in these areas. Harvard University also has an excellent opportunity to gain valuable experience from a partnership with Hopi Health Care Center.



## TELEMEDICINE

### What is Telemedicine?

Telemedicine can be broadly defined as the provision of medical services over relatively long distances. It typically involves the use of interactive teleconferencing or “store-and-forward” consultations to help patients. The technology essentially allows more rapid data transmission to occur which facilitates communication and data analysis. The technology can be further illustrated by a few examples:

#### Telepathology

A physician can diagnose a patient using images or video sent over a telecommunications link. The images or video may be transmitted in “real time” or stored remotely and then sent to the physician at a convenient time, referred to as “store-and-forward.”

#### Teleconsultations

A health care practitioner can offer medical advice to physicians or patients at a remote location. This is typically done in “real time” using teleconferencing technology.

#### Distance Learning / Continuing Education

A health care practitioner can engage in classes communicating with other students and teachers using video conferencing technology. Also, one can access electronic educational materials such as instructional videos in order to refine a particular skill.

#### Remote Patient Monitoring

Patients can be monitored while away from a health care center using devices that monitor their physical state and communicate remotely with devices at the health care center.

#### Community Development

Teleconferencing equipment and internet access are becoming so cheap that it is often possible to purchase affordable low-end equipment for personal use at home. Such equipment would facilitate communication between individuals in a community, the development patient support systems, and public education.

### Are the Hopi Healthcare Center and the IEMH equipped for telemedicine applications?

Yes, the Hopi Health Care Center has a relatively fast (T1) connection to the Arizona Telemedicine Network and teleconferencing equipment. The Institute of Emergency Medicine and Health where the relevant equipment is set up at Harvard also has a fast connection to the Harvard University network and recently purchased teleconferencing equipment.



## TELEMEDICINE: STRATEGIC ISSUES

The relative youth of telemedicine technology creates various issues related to its implementation and use. These are important to be aware of when considering the development of a new program.

### **Cost of Service Delivery (Insurance)**

The cost of operating and maintaining the equipment needed to implement telemedicine applications are often not covered by insurance providers. Therefore, the costs of service delivery must often be accounted for using alternative sources of funding.

### **Confidentiality and Security**

Much of the information transmitted during the use of telemedicine technology is sensitive or confidential. Therefore, in order to protect the rights of the patient, efforts must be made to ensure that use of the new technology does not jeopardize confidentiality and that the system is secure from unauthorized use.

### **Ownership of Information**

Various applications of the technology will collect information useful for research purposes. The ownership of this information should be made explicit before the program begins operations so that all the parties involved understand who has rights to the information collected.

### **Access to the Technology within the Hospitals**

It may be useful for various departments within the hospitals that have telemedicine equipment to have access to the equipment. When creating the program, decisions should be made regarding which departments will have access to the technology to ensure that it can have the broadest possible benefit

### **Regulation of Health Care Practitioners**

Technical regulations regarding the proper use of each telemedicine application should be developed to guide health care practitioners in the use of the technology. New tools offer opportunities for unanticipated mistakes so it is useful for those using the technology to be aware of what can go wrong.



## ORGANIZATION AT HOPI

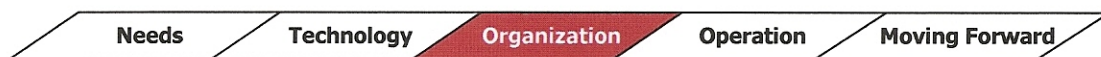
The Hopi Health Care Center is an Indian Health Service (IHS) direct service facility. The center has in place a bureaucracy that is in charge of the telemedicine project on the Hopi Health Care Center end.

The Executive Committee of the Hopi Health Care Center has two members that preside over the telemedicine project. The Clinical Director and the Administration Officer both work with the telemedicine project straight from the Executive Committee. The Clinical Director focuses on service needs and the Administration Officer focuses on the technology and scheduling aspects of the project.

There is a system in place coordinating the provider and the patient with conferences and information sharing.

It will be important in the first steps of this project to bring the organization of the Hopi Health Care Center and Harvard University together on the same page. A carefully thought-out process of organization is evident, and now it will be essential to have both parties up-to-date and well informed about the organizational structure of the other.

The Hopi Health Care Center has had telemedicine projects in the past and is aware of many organizational drawbacks it can face. It has taken measures to ensure that the technology capabilities of its equipment are designed by a clinical plan that will enable the technology to be user friendly.



## ORGANIZATION AT HARVARD

At Harvard, the project is emerging from the Institute of International Emergency Medicine and Health (IEMH) at the Brigham and Women's Hospital, a teaching hospital of Harvard Medical School. The IEMH has experience developing emergency health care improvements in rural areas. The following is their description from the IEMH official website.

The Institute for International Emergency Medicine and Health (IEMH) is dedicated to developing improvements in emergency health care that will benefit people worldwide, millions of whom face life-threatening conditions. We are based in Boston at Brigham and Women's Hospital, a teaching hospital of Harvard Medical School. Both of these nonprofit institutions are world renowned in clinical care, research and education.

The bedrock of any country's public health effort is an organized emergency response system. The IEMH is stimulating new thinking about these systems — at home and abroad. Worldwide, we are forming broad humanitarian partnerships among civil authorities and leaders in medicine and government. We are teaching doctors and nurses techniques that work well in their region. We are helping health care workers train thousands of "first responders" — people in the immediate area who can perform lifesaving maneuvers.

Drawing upon the expertise of the medical specialty of Emergency Medicine, we are structuring clinical programs and aligning resources so that whatever the emergency — individual crises or mass-casualty disasters — the sick and injured can receive the care they so desperately need. We are saving lives that otherwise would be lost.

IEMH pacesetting programs include:

- International Leadership Forums
- Train-the-Trainer Seminars
- Fellowship Program
- Exchange Program
- Medical Research



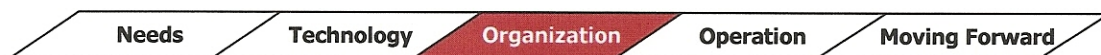
## ORGANIZATIONAL ISSUES

There are many organizational issues that both Harvard University and Hopi Health Care Center must observe. There are four main areas in which we suggest strengthening the organization between the two parties involved:

### Commitment

In order to bring Harvard University and the Hopi Health Care Center together, there should be a focus on commitment between the two entities, bringing them together as a team. There are many opportunities to ensure and promote commitment:

- **Mutual Appreciation and Respect**  
A basis for any relationship, mutual appreciation and respect will be a critical step in the commitment level between the two parties. Both should understand the great resource they will have in each other. For example, the Hopi community will be benefiting from Harvard University's services and Harvard University will be benefiting by getting practice and experience through the telemedicine project.
- **Local Champion**  
Finding an individual at each end of the project with significant interest and commitment in the telemedicine project can serve as an important incentive to keep the project in place. The local champions could coordinate communication and organize the first steps.
- **Exchange Program**  
In order to build a relationship, an exchange program would be a valuable tool. Doctors, students, or other members of team can visit the other area for a period of time to build understanding and knowledge.
- **Annual Conference**  
An annual conference would help build the relationship between Hopi Health Care Center and Harvard University. Planning the annual conference well in advance would also provide an incentive to keep the project progressing.
- **Written Agreement**  
A written agreement can place responsibility on certain members in the project and both Hopi Health Care Center and Harvard University. Having a committee of people from each place sign and agree to a commitment to the telemedicine project will provide incentive on an individual level to keep the project moving forward.



## ORGANIZATIONAL ISSUES CONTINUED

### Who's in Charge?

In the beginning, it will be important to define who will be in charge of what certain tasks. Will the Hopi Health Care Center or Harvard University be in charge of the project? It may be obvious who should be in charge, but it is important that this is stated explicitly, and is not merely assumed.

### Responsibility

Individual accountability is another key factor in establishing sustainability. Otherwise, there are no consequences for failure. Before the project can be fully employed, specific details such as accountability should be made evident.

### Aligning of Goals, Mission, & Vision

It's also important to make sure the goals of both parties are aligned and explicitly agreed upon. It's important to get any hidden assumptions out on the table beforehand. For example, long-term goal might differ between the two parties.



## OPERATIONAL ISSUES

There are many issues concerning the operation of the telemedicine project that both Harvard University and Hopi Health Care Center should keep in mind:

### Insurance

- Hopi Health Care Center and Harvard University may work together to overcome insurance barriers.

### Legal Concerns

- **Liability**  
In the case of a lawsuit against the practitioner, will Harvard University or Hopi Health Care Center be liable?
- **Compliance**  
Telemedicine procedures should meet all applicable state, federal and other forms of regulations.
- **Americans with Disabilities Act**  
Standards of fairness and equality should still be upheld.

### Standards of Practice

- As with any new technology, equipment regulations should be explicit.

### Doctor Recruitment

- There should be an effort to match Hopi's medical needs with physician experience at Harvard University.
- Hopi Health Care Center should keep in mind the need to find physicians that believe in the usefulness of telemedicine and are excited about learning how to use the equipment.

### Doctor Licensing

- **Arizona License**  
Certain telemedicine applications, consultations for example, are prohibited by current state law if the doctor at Harvard University does not have an Arizona license.
- **Practice Parameters**  
Doctors should make sure to stay within the boundaries of their practice.

### Patient and Family Bill of Rights

- The issues pertaining to informed consent and necessary training and instruction guidelines should be upheld where applicable.



## MOVING FORWARD

### Needs and Opportunities

Admittedly, this project did not emerge from the needs of the Hopi community alone. The application of telemedicine technology to rural health care needs in general inspired the creation of a partnership between Hopi and Harvard in order to better understand how telemedicine can work for any rural community. The Hopi Healthcare Center was chosen because it is one of the best healthcare centers in a rural area.

After the concept of this partnership was born, the project then turned to investigating Hopi's specific needs as a basis for understanding which specific telemedicine applications would most benefit the Hopi community. Because the decision to take advantage of telemedicine technology in a sense preceded the investigation of health care needs, the creative process is not optimal in the sense of focusing on solving Hopi's specific needs. The project's perspective has been framed within the goal of helping rural communities in general, and this aspect of the process should not be over looked.

Following additional investigation into the possibility of a long-term partnership, it may turn out that the needs of both Hopi and Harvard are better met by an alternative arrangement that does not involve telemedicine or that involves new applications of the technology. Alternatively, both sides may understand that telemedicine does not optimally benefit Hopi, but the project may yield information that benefits rural communities in general, making a sub-optimal arrangement worthwhile. Moving forward, it simply remains important not to focus on the technology, but instead focus on meeting the needs and goals of all the parties involved.



## Relationship Building

The Hopi Health Care Center and Harvard University should start a relationship keeping the four areas of needs, technology, organization, and operation in mind. The first steps towards creating a relationship are fundamental to the project's success.

Suggestions:

- **Committee**  
An organization consisting of members from both Harvard University and Hopi Health Care Center should connect and talk about the issues at hand in the areas of needs, technology, organization, and operation issues. The two should align their goals and long-run vision of the project. There should be a few people from each side, possibly consisting of the following:

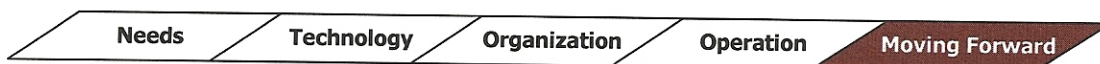
Hopi  
Indian Health Services  
CEO  
Tribal leadership  
Public Opinion  
Funding  
Health Care Providers

Harvard University  
IEMH Representative  
Doctor  
Funding  
Health Care Providers

If one or both sides cannot agree to a committee to bring Hopi Health Care Center and Harvard University together, the telemedicine project may suffer a significant lack of support and interest.

For a sample Hopi – IEMH Forum Schedule, see Appendix E.

- Each side should host a meeting for the other to increase the familiarization between the two parties. This could involve members of the committee or interested parties from either side visiting the other area. Ideally, such meetings should take place on a regular basis to reinforce continued involvement.
- The relationship building could extend beyond just telemedicine. Internships, education, and other programs held each year as an exchange program can build the connection and interest between the Hopi Health Care Center and Harvard University. To start the telemedicine project with an exchange program could build initial hope and trust in the relationship.



## CONCLUSION

The benefits that the Hopi Health Care Center and Harvard University telemedicine project could bring are great, expanding beyond the circle of these two parties. The application of such an initiative can be an example for many tribal communities and research facilities.

In order to ensure a good start to the project, both Harvard University and Hopi Health Care Center must be on the same page. Seeing eye-to-eye on issues at hand concerning needs, technology, organization, and operation, along with good communication and relationship-building practices, the incentive and motivation to keep the project running will help to ensure a positive outcome.

It is our sincere hope that by illustrating some of the issues and challenges that this project may expect to face, the prospect of a productive and enduring telemedicine partnership between the Hopi Tribe and Harvard University is advanced one step further towards reality.



Needs

Technology

Organization

Operation

Moving Forward