Delivering Care

To an Island Nation

Cape Verde

IVeH Foundation Enables Telemedicine Adoption in Cape Verde

A horseshoe-shaped archipelago of ten islands off the west coast of Africa, the Republic of Cabo Verde, unofficially known as Cape Verde, sits in a strategic crossroads of Atlantic air and sea lanes. The one-time colony of Portugal and now-independent island nation of 500-thousand people, finds itself at a crossroads concerning healthcare.

Healthcare in Cape Verde is limited, as medical facilities and some medicines are in short supply or unavailable. There are hospitals in Praia, Mindelo and São Filipe on the island of Fogo, with smaller medical facilities in other places. One of the most important hospitals of Cape Verde is Agostinho Neto Hospital in Praia with about 350 beds. In many towns there are health clinics and pharmacies. The islands of Brava and Santo Antão no longer have functioning airports so air evacuation in the event of a medical emergency is nearly impossible from these two islands. Brava also has limited inter-island ferry service, but there is a pharmacy and a small health clinic in the town Vila Nova Sintra.

Healthcare Challenges[1]

- Increasing prevalence of communicable diseases
- Increasing levels of substance abuse among the youth
- Over-dependency on external aid for the health sector
- Poor donor coordination
- High levels of poverty
- Weak management within the health system
- Poor human resource base for health development

The Cape Verde archipelago was uninhabited when the Portuguese discovered it in 1456. African slaves were brought to the islands to work on Portuguese plantations. As a result, Cape Verdeans are *mulattos* (*mestiços* in Portuguese), who have mixed African and European origins. European ancestors also include Spanish and Italian seamen who were granted land by the Portuguese Empire[2].

Recognizing the need for new healthcare measures

Inconvenient schedules and time-consuming means and cost of transportation results in delayed care for residents, causing health problems to become serious. These patients and others crowd hospital facilities on Santiago. Patients with serious chronic disease often find it necessary to travel to Lisbon for treatment, nearly 1,700 miles away. Despite the construction of new airports and significant improvements in harbors, travel between the islands is limited to one or two flights and/or ferry rides each day. Prior to this study, air and sea transport were the only ways for Cape Verdeans to receive specialty care at the Hospital Dr. Agostinho Neto in capital city of Praia on the island of Santiago, or at the Hospital Dr. Baptista de Sousa on the island of Sao Vicente.

The Cape Verde government recognized the need to implement new healthcare procedures. Under the direction of the International Virtual e-Hospital Foundation (IVeH), a national telemedicine network was established - the Integrated Telemedicine and e-Health Program – Republic of Cape Verde (ITeHP-CV) - using the IVeH model of "initiate-build-operate-transfer" over a 26-month period (November 2011 – December 2013). IVeH collaborated with the Republic of Slovenia on the rollout of telemedicine through the Development Cooperation Program.

Passengers deplaning from one of the island's daily flights.

According to the 2010 revision of the World Population Prospects the total population was 496,000 in 2010, compared to only 178,000 in 1950. The proportion of children below the age of 15 in 2010 was 31.8%, 62.3% was between 15 and 65 years of age, while 5.9% was 65 years or older[1].

Regional Hospital, Island of Fogo

Health Development

The health indices of Cape Verde are above the average for the African continent: life expectancy is 70 years, and the current under-five mortality rate is 35 per 1000 live births. Similarly, the maternal mortality ratio is 76 per 100 000 live births which is significantly less than the average for the region. Many factors have contributed to this rapid improvement in the health status of the population, including a concerted interest by government in health development, liberalization of the economy, community participation and mobilization and democratization of the administrative system[1].

Challenges

Development of telemedicine in the future, as an integral component of the health care system, depends on the successful resolution of these concerns.

Translating the Value of Telemedicine

Developing a telemedicine model that would meet all needs and value systems presented a challenge. Not every member of the Republic of Cape Verde government may have seen the value in the potentially expensive, possibly arduous, process of telemedicine implementation. It is difficult for some to see the value proposition and therefore, telemedicine must be positioned.

Framing telemedicine value in terms of what the overall system stands to gain can be persuasive. A few questions needed to be answered: Will the program equip to serve more specialty cases? Will the program deliver more timely, improved access to care, especially specialty care? Will the program serve to decrease readmission rates? Will the program serve to build a team of specialists? Will the program reduce or eliminate costs associated with air and sea transport, as well as healthcare costs?

Physician Engagement

The consumer electronics market has made tools available to care providers for use in practice; however, in remote Cape Verde, providers may not use consumer electronics for a host of reasons: cost, availability, and connectivity to others. Providers may not have the capability of incorporating technology into the care being provided if the infrastructure cannot support it. Moreover, providers may not want to incorporate technology into their practice. There could be a variety of reasons; they may not want to be dependent on technology, they may be overworked or they merely do not want to train on the equipment. Additionally, there may be a fear that they cannot rely on technology/the equipment if it breaks down to continue treatments and patient consults. Beyond waiting for a younger physician population (already trained in telemedicine technology) to graduate from medical school, physician telemedicine engagement must be approached with care.

One way to address the issue is to remind care providers that telemedicine is bringing medicine back to its roots, back to the communities and back to individual houses, aiding in population healthcare. Telemedicine is the future of healthcare, of a connected population and industry.

Infrastructure

Concerns surrounding the infrastructure of telemedicine are valid. No one wants to deal with a malpractice lawsuit after a disconnected

virtual consult leads a patient to follow the wrong treatment regimen. Strong platforms for scheduling people, locations and devices to address infrastructure issues are critical. Telemedicine offers options for the necessary technology that can sustain a program's needs.

Stable Internet connection is key. Even if the telemedicine infrastructure is strong, problems can still occur. Test-runs are vital to prepare care providers and to ensure they are comfortable running the technology.

Sustainability

Issues with sustainability derive from whether a program will be able to maintain telemedicine services once implemented. One of the biggest issues with telemedicine sustainability is how it will be funded. The best way to address that is to demonstrate value to the funding entity or the payor.

One method for guaranteeing the value of a telemedicine program is to talk with those who have experience. Acquiring buy-in from all levels becomes easier when they understand that it has been implemented successfully elsewhere, and the telemedicine program is more likely to be successful and demonstrate needed value. Discussing implementation processes with successful telemedicine practitioners is a best practice that could determine the difference between a sustainable program and a failed program. Promoting a culture of openness and preparedness is critical, as is: using a multidisciplinary team-based approach; establishing leadership support; minimizing barriers to patients, like cost, time and travel; and including nonstandard measures, like patient experience and staff satisfaction, in program evaluations.

Vendor Selection

Vendor selection and technology adoption are big challenges for providers looking to implement telemedicine. Technical attributes and organizational cultural fit are critical to innovation programs. Applying the same principles used in demonstrating value, such as promoting cultural openness and preparedness and using a multi-disciplinary team-based approach should be the foundation of any implementation.
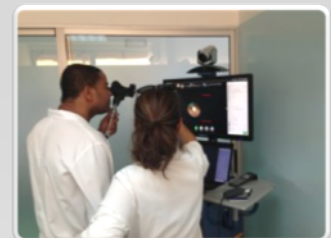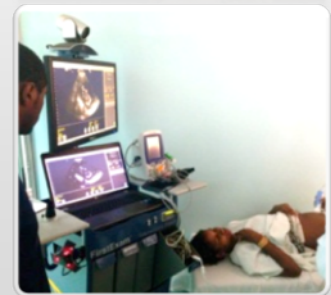
Dr. Vanda Azevedo, Cardiologist and Cape Verde's Telemedicine Program Coordinator recognized that it would take time to fully implement the project, "…as everyone must get acquainted with the new tools, and realize the full benefits that this cutting-edge technology will bring to Cape Verde."

Action

The collaboration between the Republic of Cape Verde and the Republic of Slovenia led to the development of the Integrated Telemedicine and e-Health Program – Republic of Cape Verde (ITeHP-CV). The ITeHP-CV Program aims to increase quality, accessibility and efficacy of healthcare services provided in Cape Verde.

Once telemedicine was agreed upon as the solution to pursue, the ITeHP-CV provided the International Virtual e-Hospital (IVeH) with a grant funded by the International Trust Fund. In consortium with Croatia's Supra Net Projekt, d.o.o. (SNP) and Slovenia-based Nove Komunikacijske Tehnologije, d.o.o. (NKT), Telemedicine systems provider, GlobalMed®, was awarded the Cape Verde project and began working with IVeH and its founder and Chief Executive Officer, Dr. Rifat Latifi, to establish an integrated and self-sustainable nationwide telemedicine and e-health program connecting 10 telemedicine centers throughout all 9 inhabited islands of Cape Verde.

GlobalMed provided a total of ten mobile Telemedicine Stations to Cape Verde between September 2012 and April 2013, in two separate phases. Each station was installed by a group of engineers under the technical direction of IVeH. They were equipped with a Polycom video conferencing solution, TotalExam™ examination camera, stethoscope, a vital signs monitor, a ClearProbe™ ultrasound and a 12-Lead ECG to be used for 'tele-trauma" cases, primary care and many other clinical disciplines identified as Cape Verde priorities.

A 2014 paper, "Cabo Verde telemedicine program: initial results of nationwide implementation," co-authored by Dr. Latifi, reaches the conclusion that the ITeHP-CV was launched successfully and initial results are encouraging. The continuity of the program and sustainability are primary goals. A long-term follow-up study is required in order to ensure those goals are met.

Manoel Coelho, GlobalMed's Brazilian-born Director of Global Business Development, traveled to Cape Verde to supplement practitioners' existing telemedicine knowledge with additional training on the GlobalMed systems for use in their practices. The Cape Verde clinicians worked with a team from IVeH to become proficient with telemedicine. A number of them have worked with remote cardiologists in Portugal to evaluate island children born with heart defects (those who require surgery are flown to Lisbon).

GlobalMed®

GlobalMed is honored to partner with the IVeH Foundation to provide access to healthcare where it is needed. The foundation designed and implemented the telemedicine program on Cape Verde and chose GlobalMed solutions for the project.

Value Created

## "This is a monumental step for Cape Verde!"

A Cape Verde nurse used the TotalExam camera with detachable tongue depressor to conduct an oral self-exam while a dentist, watching via live video from another island, could readily see an abscessed tooth. He advised the nurse that the tooth needed immediate attention. Another oral self-exam with the telemedicine camera resulted in a dentist on a distant island, but connected via the telemedicine system, quickly pointing out a cavity. A pregnant woman was able to view her unborn child via ultrasound for the first time.

When asked about the impact of the project, Dr. Vanda responded, "I believe the telemedicine equipment that we are initiating this project with has an excellent quality and [will] allow us to remotely assess patients as if the specialist was with the patient. As a cardiologist, the telemedicine equipment I am now utilizing, allows me to read the ECG in real time as if I was on the patient's bedside. Cape Verde is only to gain with the implementation of telemedicine. Now with telemedicine, a general clinician can perform an ECG from Brava [one of the most remote islands] and connect directly with an experienced cardiologist from one of the two central hospitals. This is a monumental step for Cape Verde!"

Care Without Borders
The Promise of Africa

Could this be a textbook example of what needs to be done to put together a telemedicine program for an entire country? "Perhaps," Coelho said. Even though Cape Verde is a stable country, Coelho noted, "It depends on how committed the government will be to its adoption and then, how the program is managed." Indeed. "Few places… demonstrate the promise of Africa better than Cape Verde," US Secretary of State Hillary Clinton said during a landmark visit in 2013. "Some places have certain aspects that can be comparable. But no place has put it all together, with good governance, transparency, accountability, the rule of law, a democracy that is delivering for its people, lifting them out of poverty, putting them now in a category of middle-income countries in the world."[3]
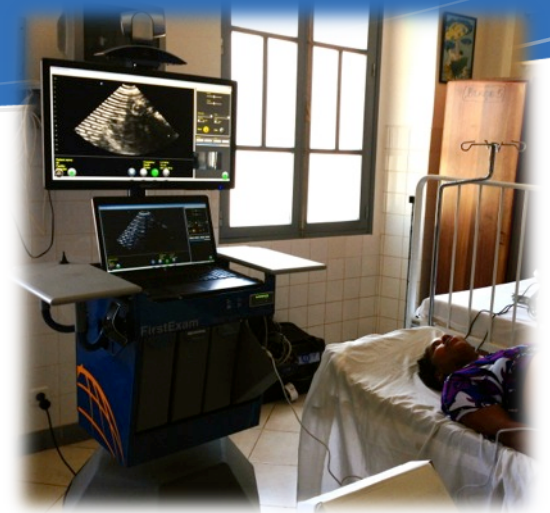
Pregnant woman undergoes an ultrasound using the Mobile Telemedicine Station in Cape Verde.

[1]http://www.afro.who.int/en/cape-verde/country-health-profile.html
[2]http://www.princeton.edu/~achaney/tmve/wiki100k/docs/Demographics_of_Cape_Verde.html
[3]http://capeverdeinformation.wordpress.com/2013/08/12/memorable-quotations-about-cape-verde/