THE DIGITAL WORLD AT THE SERVICE OF HEALTH

THE PRACTICAL CASE OF TELEMEDICINE IN SAO TOME AND PRINCIPE
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The importance of Telemedicine in Sao Tome and Principe

Health is one of the main priorities for Portuguese Cooperation, whose overall objective is to strengthen public health systems of our partner countries as a core element in their development strategies.

The reinforcement of support to the health sector in the area of development cooperation implies a growing and sustained commitment to the use of information and communication technologies to support diagnoses and clinical and therapeutic guidance of specialists.

The use of this type of technology to promote Telemedicine has been one of the main thrusts of the Health for All project which has been developed in Sao Tome and Principe since 2005 by the Instituto Marquês de Valle Flôr, with the support of Camões - Instituto da Cooperação e da Língua.

The Health for All project represents one of the great successes of Portuguese Cooperation, and its added value is widely recognised both by the Government of Sao Tome and Principe and internationally.

According to the UNDP, this project has contributed to the fact that Sao Tome and Principe currently ranks 3rd among all Sub-Saharan African countries in terms of health indicators, demonstrating the effectiveness of the strategy adopted by the Health for All project.

With the support of Telemedicine, it was possible to monitor patients in real time, support medical decisions and better prepare the missions of specialists travelling to Sao Tome and Principe under the Health for All project.

This technological advance has not only improved the medical support provided to the population, but has also optimised the use of resources and streamlined the missions of specialists who travel to the country, with positive impacts on medical evacuations.

I hope that the success of Telemedicine in Sao Tome and Principe can be replicated in other countries and encourage the development of new technological tools to support more development cooperation projects.
INTRODUCTION

Sao Tome and Principe, a country with which we have had a close and long-lasting partnership for more than 30 years, is facing challenges in several areas, including health.

In solidarity with the needs of the San Tomean population, and recognising the importance of investing in the health sector in Sao Tome and Principe, IMVF, with national authorities, Portuguese Cooperation, the Portuguese General Directorate of Health and some private stakeholders, have dedicated themselves to implementing the Health for All Programme, which, through a progressive strategy, has its intervention integrated in supporting a network of promotional, primary, preventive and specialised health care.

After implementing a good response in terms of preventive and primary care in the country, one of the shortcomings felt in the archipelago was still the lack of specialist doctors from Sao Tome. This gave rise to the idea of organising regular medical missions of Portuguese specialists to the country. These specialists contribute on a voluntary basis with assistance to patients and with training and capacity building for local technicians.

Simultaneously, and as a complement to the missions, as of 2011, consultations and exams can be carried out via telemedicine through the Mediagraf platform between Portugal and Sao Tome and Principe. It was thus possible to break geographical and time barriers and bring together health professionals from the two continents. For the success of this initiative, the IMVF had the technological expertise of PT Inovação, currently Altice Labs, and the University of Aveiro.

Telemedicine has proved to be a valuable tool at the service of health in Sao Tome and Principe, ensuring the population’s continued access to quality health care, through the follow-up and guidance of more complex clinical cases. It has also allowed for a reduction in the number of health evacuations and the associated economic and social costs. Training and counselling of San Tomean health professionals at a distance has become a significant added value.

It has been a growing path with the progressive integration of X-ray, ultrasound, echocardiogram, mammography, CAT, as well as exams in specialities such as cardiology, dermatology, ophthalmology, otorhinolaryngology and, more recently, gastroenterology. These are solutions to be maintained and increased in the near future.

The spirit of innovation and the avant-garde technological developments achieved were key elements that allow Sao Tome and Principe to currently have what is considered to be an exemplary solution, thus contributing to the inclusive and sustainable development of the country.

A special word of gratitude and appreciation to all the partners in this initiative, as well as to all those who shared the dream and vision with us and dared to go against what was considered to be an impossible task. This is exactly the reason why the spirit and the results achieved with this telemedicine system implemented between Portugal and Sao Tome and Principe have earned high national and international recognition. And that makes us very proud.
HEALTH FOR ALL PROGRAMME

Over 30 years of commitment to the population of Sao Tome and Principe

Since 1988, Portuguese Cooperation and its Development partners have been implementing a broad programme to strengthen the health sector in Sao Tome and Principe.

In a country marked by geographic isolation, external dependence on resources, fragile public policies and a huge deficit of health professionals, the Health for All Programme has been making a decisive contribution, through various phases and in different areas, towards the increasing accessibility, equity and effectiveness in providing quality health care in Sao Tome and Principe. This has been accomplished by adopting an integrated strategy that has progressively encompassed:

1. Supporting the promotional, preventive and primary care network through an integrated care package, providing medical assistance, medicines, complementary means of diagnosis, equipment, materials and medical consumables;

2. Reducing and preventing communicable diseases such as HIV/AIDS, tuberculosis and other endemic diseases;

3. Supporting specialised care by carrying out medical missions of Portuguese specialists (26 medical specialties, including: Imaging, Paediatric Surgery, Ophthalmology, Otorhinolaryngology, Dermatology, Gastroenterology, Urology, Paediatric and Adult Orthopaedics, Cardiology, General Surgery, Pathological Anatomy, Gynaecology and Obstetrics, etc.);

4. Fighting non-communicable diseases such as cancer, cardiovascular diseases, diabetes, etc.

5. Telemedicine as a tool for clinical support at a distance;

6. Rehabilitating health infrastructures, as well as creating and equipping specialised assistance services;

7. Investing in training Sao Tomean health professionals, both on site and in medical surgical specialties and technical areas in Portugal.

The efforts undertaken - side by side with national authorities - have enabled the transition to a decentralised Health System that now covers the entire national territory and population.

Currently, the health indicators in Sao Tome and Principe are among the best in Sub-Saharan Africa, showing the effectiveness of the strategy adopted and the impact of the Health for All Programme, which has been widely recognised and awarded for the excellence of its intervention.

The important qualitative achievements in the Health for All Programme have been made possible by the combined commitment of various entities, especially the main donors: Cooperação Portuguesa through Camões – Instituto da Cooperação e da Língua, I.P. and the Portuguese General Directorate of Health;

Donors: Camões, Instituto da Cooperação e da Língua, I.P.;
DGS - Portuguese General Directorate of Health

Partners: Sao Tome and Principe Ministry of Health;

Implementation: AMVF - Associação Marquês de Valle Flôr and IMVF - Instituto Marquês de Valle Flôr
TELEMEDICINE, INNOVATION AT THE SERVICE OF HEALTH

Key milestones in the evolution of Telemedicine

Integration of examinations such as x-ray, ultrasound and echocardiogram.

Beginning of Telemedicine 1st telemedicine consultation between Portugal and Sao Tome and Principe with the Medigraf platform 1st generation (satellite circuit, point to point), connecting Dr. Ayres de Menezes Hospital with the telemedicine room at IMVF headquarters.

Since the first telemedicine consultation, the Medigraf platform has undergone significant technological evolution, becoming more efficient and placing Portugal at the forefront of Information and Communication Technologies at the service of health.

Launch of the Medigraf platform 2nd generation (wireless network circuit, 2MB bandwidth), multipoint, web environment, clinical file, with integration of medical equipment with DICOM – Digital Imaging and Communications in Medicine.

The images of the patient’s eyes, obtained through different ophthalmological examinations have the quality, acuity and accuracy required to obtain a safe clinical diagnosis remotely. Set up in Sao Tome and Principe - a country where, at the time, there was no ophthalmologist - TELEYE enables real-time visual health assessment.

Beginning of TELEYE on the telemedicine platform (Ophthalmology). TELEYE is a pioneering solution that integrates a set of 6 devices for carrying out complete ophthalmological examinations remotely, in real time and on demand: a Slit Lamp, a Retinograph, an Auto Refractometer/Keratometer, a Tonometer and a High-Definition Camera.

Acquisition of new equipment and digitalization of the imaging sector at Dr. Ayres de Menezes Hospital.

OCTOBER 2010
MARCH 2011
JUNE 2013
FEBRUARY 2015
As a response to the challenges in accessing specialised healthcare in Sao Tome and Principe, the spirit of solidarity and cooperation of national and international entities led to the creation of a valuable and innovative technological tool for the country – Telemedicine.

The development of the telemedicine platform – which has been operational since March 2011, has made it possible to break the barriers of time and space while providing health care, transforming the health cooperation scenario between Portugal and Sao Tome and Principe.

Telemedicine consultations between the two countries allow the follow-up and guidance of more complex clinical cases and, at the same time, the distance training and counselling of Sao Tomean health professionals, minimising the lack of specialised human resources in Sao Tome and Principe. This technology has enabled medical observation from thousands of kilometres away with the same quality as face-to-face observation.

**CHALLENGES FOR THE FUTURE...**

- Telesurgery;
- Telementoring/ Training;
- Remotely controlled robotic surgery.

**Opening of the new Imaging and Telemedicine Department** at Dr. Ayres de Menezes Hospital.

**Beginning of TeleGastro** (Gastroenterology)

It enables screening (through invasive examinations such as endoscopies and colonoscopies), prevention and treatment of various pathologies of the oesophagus, stomach, duodenum and anorectal, offering the possibility of real time diagnoses and therapeutic orientation.

**Expansion of the Imaging specialty** with the integration of examinations: CT, mammography and breast ultrasound.

**Beginning of TeleORL** (Otorhinolaryngology specialty), allowing medical consultations and specialty exams such as laryngoscopies, otoscopies, pharyngoscopies, etc.

**Opening of TeleDermatology.**
IN A NUTSHELL

The importance and added value of telemedicine in providing health care in Sao Tome and Principe:

- A more regular follow-up of clinical cases at a distance, promoting the access of Sao Tome patients to various medical specialties, to which they do not have access due to the lack of several local specialists, thus allowing for a timely diagnosis and better therapeutic guidance;
- Improving the effectiveness and efficiency of medical missions in the field, through prior contact with the patient for better triage for each specialty and planning of consultations and surgical interventions;
- Strengthening of ongoing training for Sao Tomean health professionals, with an approach focused on specific cases;
- Strengthening the cooperation, development and innovation within the Lusophone world, using solutions and professionals within the Lusophone space.

The telemedicine system is an essential tool for sustaining specialised healthcare provision in Sao Tome and Principe.
THE DIGITAL WORLD AT THE SERVICE OF HEALTH - THE PRACTICAL CASE OF TELEMEDICINE IN SAO TOME AND PRINCIPE

Exams and clinical files introduced in the Mediagraf telemedicine platform, which are available for remote consultation (by Portuguese specialists).

Integrated in the Mediagraf telemedicine platform: Imaging, Dermatology, Ophthalmology, Otorhinolaryngology and Gastroenterology.

By the end of 2013, the Mediagraf platform used for telemedicine consultations between Portugal and Sao Tome and Principe was awarded two prizes in the Changing Lives category.

Mediagraf, developed in partnership with PT Inovação, currently Altice Labs, stands out as an application capable of improving the living conditions of populations in what concerns their most precious assets: health and well-being.

AWARDS AND DISTINCTIONS
DECEMBER 2013

The Mediagraf platform receives awards in the Changing Lives Category of AfricaCom and Broadband Infovision Awards 2013.

By the end of 2013, the Mediagraf platform used for telemedicine consultations between Portugal and Sao Tome and Principe was awarded two prizes in the Changing Lives category.

The AfricaCom 2013 Awards, which celebrate the best industry achievements occurred on the African continent, and the Broadband Infovision, considered among the most prestigious in recognising broadband excellence in the market, recognised Mediagraf as a significant initiative in terms of impact on African telecommunications and the community, contributing to its economic and social development.

IN NUMBERS

over 5,800

Clinical sessions through telemedicine

5 MEDICAL SPECIALTIES

over 90,000

Exams and clinical files introduced in the Mediagraf telemedicine platform, which are available for remote consultation (by Portuguese specialists).
“The radiology we had at Dr. Ayres de Menezes Hospital in 2009 was the one existing in hospitals at the beginning of the 20th century, but with worse technical conditions.”

“The future of health care in Sao Tome and Principe depended on the evolution in terms of complementary means of diagnosis in the area of imaging.”

Ahmed Zaky
Tropical Medicine and Public Health doctor, IMVF
Executive Board Member and Chief Project Officer

“In March 2010 we had the first mission to survey the existing equipment. Technicians refused to work without a darkroom. There was one technician who ran away from me and at the end of the week, when she saw everything assembled and her colleagues working, she told me that if her colleagues could do it, she could do it too.”

“Telemedicine has used the development of technology to apply it in health, locally and remotely, and also the development of the quality of services we can provide in this form of diagnosis and therapeutic guidance.”

Celeste Alves
Radiologist, Champalimaud Foundation

“What motivates me most about the Health for All is the possibility of working with a team of various types of professionals, who are very dedicated, meet their partial objectives and have managed to significantly reduce the prevalence of blindness and low visual acuity in Sao Tome and Principe to below 48%, compared to the beginning of the Programme in 2010”.

Luís Dias Pereira
Ophthalmologist
FIRST-PERSON TESTEMONIALS

"With the arrival of new equipment at the service of imaging, more experience and better service conditions are acquired, as well as with the arrival of technicians and specialists."

Anicolette da Mata
Radiology technician at Dr. Ayres de Menezes Hospital

"Telemedicine makes it much easier because we can have contact with other colleagues and exchange information and ideas, and often avoid travelling outside Sao Tome and Principe."

Grimalde Trindade
Ophthalmologist at Ayres de Menezes Hospital
Telemedicine is a great advantage because it allows distance training for local doctors [in São Tomé] and, since I am a professor of medicine at Nova Medical School in Lisbon, and being the students of otorhinolaryngology at CUF Tejo, it is the time when I usually take the opportunity to make telemedicine consultations with them; it is the moment when they can see the patient. It is an online consultation, through the data, clinical history, and the observation that the colleague there makes, it as well an added value for those training on this side (Lisbon). So, it’s a double training in terms of medical formation.

Cristina Caroça
Otolaryngologist at CUF Tejo Hospital

“What motivates me the most in this project is to be able to contribute to the growth of a medical area I am so enthusiastic about, and to see that each project we design and each step we take enables an improvement in healthcare in São Tomé and Principe.”

Sara Campos
Gastroenterologist at Champalimaud Foundation
“Health for All is a project that has brought a new dynamic to the people of Sao Tome and Principe, because all the specialities it has brought have decreased the number of cases we have had and the number of evacuations in various pathologies.”

Isaulina Barreto
General practitioner at Dr. Ayres de Menezes Hospital

“Health for All has given me the opportunity to fulfil my greatest dream, which is to become a gastroenterologist and work in Sao Tome and Principe. This project gives us the opportunity to interact with highly qualified Portuguese medical specialists so that we can better serve the population at a national level.

Lagchar Barreto
Ophthalmologist at Dr. Ayres de Menezes Hospital
Health for All is the possibility of helping people in my speciality in areas and geographies where there is no alternative. It’s a chance to help those in greater need. And it’s the chance to collaborate in a project that clearly improves the health levels of an entire country. It’s something extraordinary. So Health for All is one of the most important pages in my long professional life.

Miguel Peres Correia
Dermatologist | former president of the Portuguese Society of Dermatology

"Health for All is solidarity, it is nonconformity with inequalities - in this case, the right to health - and it is a structured Programme designed to combat and reduce these inequalities."

José Loureiro
Cardiologist | Prof. Doutor Fernando Fonseca Hospital
“I am very pleased with this project, firstly because it involves Portuguese and Portuguese-speaking experts, which facilitates communication and learning, and secondly because of the record time with which our doubts are overcome.”

**Alberto Santos**
General practitioner | Dr. Ayres de Menezes Hospital

“Telemedicine is a very useful tool that allows us to shorten the distance between Sao Tome and Principe and Portugal and to have better monitoring to be able to make difficult decisions and refer patients. Besides helping make decisions, we have an educational dimension that allows me to make decisions even when being alone. It’s a very enriching experience.”

**Myriam Cassandra**
Cardiologist | Dr. Ayres de Menezes Hospital
“My breast hurt a lot. At that time there were still no mammograms or breast ultrasounds in Sao Tome and Principe. When they started, I began to get into this routine and to do the follow-up. Before, there was no telemedicine, no mammograms or ultrasounds, no space for these examinations, so I was always worried about doing my self-examination at home to assess whether I had any lymph nodes, but I wondered why my breast hurt so much.”

Suzete de Carvalho
Patient at Dr. Ayres de Menezes Hospital (Imaging), laboratory technician (blood bank), resident in the city of Sao Tome

“I have had several medical consultations over the last two years. But it wasn’t until February 2021 that I had cataract surgery on both eyes. I’m feeling normal again. Before the surgery I couldn’t see letters or people. I could only recognise people by their voice.”

Jorge Ferreira do Sacramento
Patient at Dr. Ayres de Menezes Hospital (Ophtalmology), statistical technician, resident in Piedade/Trindade

“Having consultations with Portugal is a good initiative. The first time it was weird, I had never seen anything like that. I see that the country is really developing in technology, going in the right direction.”

Kley Afonso
Patient at Dr. Ayres de Menezes Hospital (Ophtalmology), plumber, resident in Pantufo.

“I had an appointment with Dr. Luis. What is the name? Telemedicine. Dr. Luis examined me and told me I needed surgery. So, when Dr. Luis came to Sao Tome, I went to see him. I was so lucky! I can see, with the help of God and the help of Dr. Luis”.

Francisco P. Diogo
Patient at Dr. Ayres de Menezes Hospital (Ophtalmology), retired from the Public Administration, resident at Praia Melão

“I was looking for a skin doctor, who knew about skin diseases. I went to the Central Hospital to find out whether or not there was one, and they showed me a workstation with doctors to see about this issue.”

Francisco Augusto
Patient at Dr. Ayres de Menezes Hospital (Dermatology), farmer and church pastor, resident in Saudade
“The Health for All Programme is an excellent example of collaborative efforts to achieve greater effectiveness and impact on health. With the effort, commitment and dedication of all those involved, it has been possible to improve accessibility, equity and quality of the health services provided in Sao Tome and Principe. The magnitude of this project, which now covers the entire territory, is expressed in the archipelago’s indicators, which are currently among the best in sub-Saharan Africa. If there is one thing this pandemic (Covid-19) has taught us, it is that the response to the global challenges with which we are confronted requires solidarity and international cooperation.”

António Sales
Assistant Secretary of State and Health of Portugal

“The Health for All programme remains a landmark of the cooperation relations between Portugal and Sao Tome and Principe. The partnership between Camões, I.P., the Ministry of Health of Portugal, the Ministry of Health of Sao Tome and Principe and IMVF is one of the most important programmes of Portuguese Cooperation.”

António Costa
Prime Minister of Portugal

During his visit to Dr. Ayres de Menezes Hospital in Sao Tome on 20 February 2018, President Marcelo Rebelo de Sousa declared he was “greatly impressed” with the Health for All project, and underlined “the merit” of the Portuguese institutions participating in the project as part of the medical missions and telemedicine consultations that take place between Sao Tome and Principe and Portugal.

Marcelo Rebelo de Sousa
President of the Republic of Portugal
Through telemedicine it is possible to overcome the barriers of time and space and transform the health cooperation landscape in all Portuguese-speaking countries.