Development of telehealth activities in Colombia

Blanca Luz Hoyos — Adviser of the Directorate General of Quality of Service of the Ministry of Social Protection. Bogota, Colombia.

Luis Fernando Correa Serma — Director of the Ministry of Social Protection. Bogota, Colombia.

Abstract

The goal of this paper is to describe the situation of telehealth development in Colombia. The method used was a descriptive study prepared from a detailed diagnosis done by the groups made up of people related to the Ministry of Health and universities: development of telehealth projects, development of standards in the context of Colombia and aspects related to human resources training in telehealth. Colombia have held a national telehealth project involving 140 Health Service Providing Institutions, working on primary care and semi-intensive care. This project with four years of existence is already quite institutionalized, with normative regulation frameworks. In the area of telehealth training, several courses are already in place. The discussion regarding standards is only at the initial stage. Conclusion: there is a well structured telehealth national project in Colombia which is being extended and consolidating its activities at the moment.

Key-Words: *Telemedicine; Telehealth; Information Technology; Information Systems; Colombia.*

Resumen

Desarrollo de actividades de Telesalud em Colombia

Este artículo tiene por objetivo describir la situación del desarrollo de la telesalud en Colombia. El método utilizado fue un estudio descriptivo elaborado a partir de un diagnóstico detallado realizado por los siguientes grupos compuestos por personas vinculadas al Ministerio de la Salud y a universidades: desarrollo de proyectos de telesalud, desarrollo de estándares en el contexto de Colombia y aspectos relacionados con la formación de recursos humanos en telesalud. Colombia cuenta con un proyecto nacional de telesalud que incluye 140 Instituciones Prestadoras de Servicios Sanitarios – IPS, actuando en áreas de atención básica y cuidados semi-intensivos. Este proyecto, que tiene cuatro años de experiencia, ya está bastante institucionalizado, con marcos de regulación normativos. En el área de formación en telesalud, hay diversos cursos en marcha, cubriendo las diversas áreas. La discusión relacionada con las normas es todavía incipiente. Conclusión: Colombia tiene un proyecto de telesalud nacional bien estructurado, en fase de ampliación y consolidación de sus actividades.

Palabras-clave: *Telemedicina; Telesalud; Tecnología de la Información; Sistemas de Información; Colombia.*

Resumo

Desenvolvimento de ações de telessaúde na Colômbia

Este artigo tem como objetivo descrever a situação de desenvolvimento da telessaúde na Colômbia. O método utilizado foi de um estudo descritivo desenvolvido a partir de um diagnóstico detalhado realizado pelos seguintes grupos constituídos de pessoas vinculadas ao Ministério da Saúde e universidades: desenvolvimento de projetos de telessaúde, desenvolvimento de padrões no contexto da Colômbia e aspectos relativos à formação de recursos humanos em telessaúde. A Colômbia possui um projeto nacional de telessaúde envolvendo 140 Instituições Prestadoras de Serviços de Saúde – IPS, com atuação nas áreas de atenção básica e cuidados semi-intensivos. Este projeto, com quatro anos de existência, já está bastante institucionalizado, com marcos de regulamentação normatizados. Na área de formação em telessaúde, diversos cursos já estão em andamento, abrangendo as diversas áreas. A discussão relativa aos padrões ainda é incipiente. Conclusão: Na Colômbia, existe um projeto de telessaúde nacional bem estruturado, em fase de ampliação e consolidação de suas atividades.

Palavras-chave: *Telemedicina; Telessaúde; Tecnologia da Informação; Sistemas de Informação; Colômbia.*

INTRODUCTION

The Telehealth Project is included into Colombia's Health Service Policy and Modernization Plan, because on the one hand, Telemedicine is considered a health service operation that uses ICTs, modernizing the operating procedures of the service providers, improving the installed capacity and therefore, their resolution capability. It also enables the consolidation of the network, optimizing the resources both of the system and the users and improving the access of the population to good quality health services in a timely manner. On the other hand, ICTs allow healthcare professionals to be updated, contributing to improve the care provided to patients; finally, the population can also have access to information on the main healthcare issues.

METHODOLOGY

In order to help in the process of telehealth development in Colombia, technical groups involved in the following topics were constituted by the Ministry of Social Development of Colombia: development of telehealth projects, development of standards in the Colombian context and aspects related to human resources training in telehealth. These groups are made up of people linked to public and private institutions working in the healthcare area and universities. Based the topic of each group, a detailed diagnosis of the telehealth development situation in Colombia was prepared. Below is a summary of the experience.

RESULTS AND DISCUSSION

Development of the National Telehealth Project

In compliance with Law 1122/ 2007[1], the Social Protection Ministry started the telemedicine project in 2007, approving the allocation of resources to purchase equipments, to provide services in telemedicine and to train the staff working at the beneficiary institutions. All these procedures were carried out with the support provided by the National Board of Social Security in Health. However, since 2002, the Ministry of Information and Communication Technologies (former Ministry of Communication) and the Social Protection Ministry created a strategic partnership with the aim of ensuring connectivity to the Public Health Service Institutions. This commitment was ratified on the ICT National Plan 2008-2019[2], through the Compartel program, with a total of 841 Institutions covered with connectivity service by 2009.

The National Telehealth Project has been in operation for four years. It works with health service provision using telemedicine and covering 140 public Health Service Providing Institutions in the most remote places of the country. Two types of services are provided: teleprimary care and tele-intermediary care, as well as training and continuous education using tele-education.

The project is financed with resources from the national government. It is coordinated by the Ministry for Social Protection, although it is run by a Health Promoting Entity (EPS), and a known Health Service Provider-CAPRECOM, which has the participation of three Reference Centers, the National University of Colombia and the University of Caldas with their Telemedicine Center and the Cardiovascular Foundation of Colombia.

The general goal defined by the ICT National Plan is to improve access, time and quality of health services provided to the population living in geographically remote regions far from specialized and reference centers. Also, the following specific goals were defined for the project: 1) to select states and municipalities where health services are implemented and developed using telemedicine; 2) to define the healthcare model using Telemedicine for the population living in remote areas, far from specialized and reference centers; 3) to define the Reference Centers that will allow a better access to health services; 4) to create strategic partnerships with the Ministry of Information and Communication Technologies in order to implement the connectivity process at health institutions where the Project will take place; 5) to equip Healthcare Institutions where the project will be done with the necessary equipment to provide healthcare services using Telemedicine; 6) to organize the training of the healthcare professionals working at the Institutions to provide services using Telemedicine and 7) to follow up and assess patients seen using telemedicine.

Also, the National Health Plan of ICTs defined as a general goal the implementation of health service provision using telemedicine in 100% of municipalities of the states mentioned on the 2nd paragraph of the article 26 in law 1122 /2007 and those with difficulties of access.

The following annual goals were also set:

- Year 2007-2008: 44 Health Providing Institutions of Low Complexity with Basic Telemedicine and 11 Health Providing Institutions of Medium Complexity for Intermediary Telecare;[3]

- Year 2008-2009: 30 additional Health Providing Institutions;
- Year 2009-2010: 30 additional Health Providing Institutions.

The Telehealth project includes equipment, healthcare services provision, training and continuous education of the healthcare staff, technical support and connectivity of the healthcare institutions included in the project. Two processes are used to provide healthcare services: [4]: The first one is a package called Tele-Basic that includes specialized outpatient clinic on approximately 18 medical specialties, together with the diagnosis aid of tele-radiology and tele-electrocardiography offered on all Healthcare Institutions included in the project. The second one is the Intermediary Tele-Care – Tele-ICU – that provides care to critically ill patients through permanent monitoring until they can be stabilized or the action to be taken is defined, that is to say, discharge, move the patient to a regular hospital room or refer him/her to another healthcare institution.

The main beneficiaries of this project are the people living at the most remote municipalities in the country, with great difficulties of geographical and economic access to healthcare services. This is why the project has been able to guarantee the principle of equity[5].

The Telehealth project started in 2007 and three stages had been developed until the present moment. The first stage between 2007-2008 included 60 public Healthcare Institutions from seven (7) states established on Law 1122 from 2007. Also the states of Chocó and San Andrés, Providencia and Santa Catalina were included, with a total of nine (9) states, with an investment of $8 billion pesos corresponding to the surplus of the ECAT subaccount of the FOSYGA. The second stage took place between 2008-2009 extending the Project to 30 new Healthcare Institutions. By the end of 2009, a total of 90 Healthcare Institutions were providing health services using telemedicine. For the development of this second stage resources also came from excess resources from the subaccount ECAT of the FOSYGA, allocated by the National Board of Social Security on Health with $3.5 billion pesos.

The third stage was carried out in 2010 financed with resources allocated by a Ministerial Resolution, also corresponding to the surplus of the ECAT subaccount of the FOSYGA for $14.626 million pesos, to guarantee the continuity of services using telemedicine at the 90 Healthcare Institutions from the first two stages and to ensure the extension to 50 additional Healthcare Institutions. Thus, a total of 140 Healthcare Institutions provide health services using telemedicine.

A total of 33 units provide Intermediary Tele-Care services in 22 states. During the first two years 10,332 consultations were carried out using Basic Telemedicine and 2,596 patients were seen at Intermediary Tele-Care units. On the other hand, 5,404 diagnosis aid services were provided in 2009, including outpatient tele-electrocardiography and tele-radiology. These results show the benefits provided by telemedicine, with the reduction of the number of referrals and many lives saved. It is important to bear in mind that telemedicine has made possible the improvement of access to specialized healthcare services in a timely manner with good quality and low cost, both for the population, patients and their family. It is also important to note that a document called “Country Plan on Telehealth for 2010-2014”was prepared within the ICT National Plan. The goal of this document was to promote and to drive forward the development of Information and Communication Technologies (ICTs) at health sector entities with the aim of improving the quality of healthcare provided, the training of human resources and the institutional management, among other aspects.

It is also important to say that within the National Plan for ICTs, the document “Country Plan in Telehealth for the period 2010-2014” is under review, with the aim of promoting and driving the development of Information and Communications Technologies (ICTs) at healthcare entities in order to improve the quality of care, the training of human resources and the institutional management, among other aspects.

With regard to the assessment of the implemented project, a Cost-Effective study is being done comparing the Health Service Provision with Telemedicine and Traditional Health Service Provision.

Besides this National Telehealth Project, Colombia also has a binational project with Peru, called Rural Telemedicine Network at the Putumayo River Basin. The feasibility study for this project has already been done and the next step is to start the execution of the project covering 13 health providers in both countries.

There are also some projects on telehealth developed by some universities, such as the National University of Colombia, the University of Caldas and the University of el Cauca, among others.

Also, there are some initiatives at state and municipal levels, sometimes mixed experiences, with the participation of the national government and private companies, as for example operators and ICTs industry.

From the private sector point of view there are some experiences by Health Service Providing Institutions – IPS as it is the case of the University Hospital of Santa Fe in Bogotá, the Cardiovascular Foundation of Colombia, as private institutions, Health Promoting Companies– EPS, such as Saludcoop, Telemedicine Companies, such as ITMS of Colombia and CINTEL, among others.

There is also the effort made by some territorial entities, such as the government of el Meta, which finances and coordinates health service provision using telemedicine in all its municipalities.

Regulation of telehealth actions in Colombia

With regard to the regulation of telehealth actions, until now the only regulation from the Telehealth point of view has to do with the Resolution 1448/2006, that set standards for health service provision using telemedicine. However, the Ministry for Social Protection is currently in the process of organizing the patient–centered Unified System of Information. There is also a law project "according to which guidelines are established to develop telehealth in Colombia". This law has been sent for Presidential sanction and it states the physician's responsibility when using telemedicine to provide healthcare services. Furthermore, the SENA together with several entities issued the standard of working competence for healthcare operators working with telemedicine.

The use of standards to regulate the medical practice in the country has been very limited. For example, the International Disease Classification (CIE- 10) has been used for disease types and the Single Classification for Health Procedures (CUPS), that can be seen at http://www.pos.gov.co/Paginas/cupspos.aspx. These standards have made possible to do objective analysis of the health situation in the country and have enabled to guide the decision making process. With regard to health informatics, there is not any regulation for information systems used by health service providers, nor a regulation for communication guides for medical devices, or among the information systems. However, Resolution 1448/2006 of the Ministry for Social Protection has established some minimum requirements for computerized clinical records. According to this Resolution, "the qualification conditions are defined for institution providing health services using telemedicine", as well as references stated in law 527/1999 "that defines and regulates access and use of messages on data, electronic trade and digital signatures, to handle electronic data". These standards had been the base for implementing and developing telemedicine as health service provider; although such rules do not constitute a standard on its own, they do include some fundamental elements, such as the obligation of confidentiality and integrality of medical information, using data encryption techniques. On the other hand, DICOM standard is the standard default for medical images because the capturing devices come with this standard as image format, although its use is not regulated.

Therefore, there is the need to define a working framework for health institutions, in order to allow universality of access to health services and interoperability among computing systems. Also, some efforts had been made internationally to standardize medical procedures, such as the architecture of clinical documents, the labeling of products, medical records, the rules to support clinical decisions and the exchange of health data. The standard of messages HL7, developed by the American National Standards Institute, based on a class model that covers most medical processes, constitute the first step towards standardization of data exchange among applications (making easier the development of interfaces).

On the other hand, due to the development of communications, information systems have to integrate themselves by cities, regions or countries. Thus, it is necessary to carry out standardization processes in order to guarantee interoperability among the systems.

For disease coding, the International Disease Classification (CIE-10) will continue to be used with the addition of SNOMED CT. For imaging, DICOM will continue to be used. In the case of drugs, CUM and ATC/DDD will be used and procedures coding - CUPS will be reviewed.

There is not a standardization policy to identify service providers, although patients are standardized in their identification with a personal id number.

With regard to participation in international standardization bodies, Colombia participates in the following ones:

- ISO – IEC: The Colombian Institute for Technical Standards and Certification (ICONTEC) is an organ that works to encourage standardization, certification and quality management in Colombia. It has voluntary membership from representatives of the National Government, private sectors of production, distribution and consumption, the technological sector in its different fields and from all companies and people interested;

- ICONTEC: as the National Standardization Entity (ONN) represents Colombia before International and regional standardization bodies such as the International Standardization Organization (ISO), the International Electrotechnical Commission (IEC), and the Pan-American Commission for Standards of the Pacific Basin (COPANT);
- HL7: The Colombian HL7 Foundation is an organization open to the different entities of the health sector, responsible for promoting knowledge, use and implementation of HL7 standard in Colombia. The main program of HL7 Colombia is to promote the use of HL7 standard in Colombia to exchange, handle and integrate electronic information on health;
- IEEE: In Colombia there is the IEEE chapter addressed to student branches. A Student Branch is a group officially constituted before world IEEE, made up of students from different academic undergraduate and graduate levels of a given university, with the main goal of permanent professional update, research, development and implementation of new technologies.

Among the main activities of the official ministries, there are the organization and participation in technical conferences and talks for professionalization, knowledge generation through research, development and implementation within the new technologies.

The Ministry for Social Protection in Colombia generates policies and follows up the adoption and adaptation of technical standards. Within its regulation scope, the Ministry has defined the minimum standards for health service provision using telemedicine inside the Compulsory System of Quality Assurance regarding the Single Qualification System. The standards connected to the topic are as follows:

- Resolution 1995/1999: "It defines the guidelines of clinical records in Colombia", to set up a precedent on the validity of electronic clinical records;
- Law 1122/2007 - SGSSS Reform: It promotes telemedicine services in territories with difficult access;
- Law 1151 National Development Plan 2006-2010: It establishes the destination of 0.3% of the U.P.C from Contribution and Subsidies for coordination and financing of telemedicine services;
- Order 1011/2006,"establishes the Compulsory System of Quality Assurance on Healthcare of the General System of Social Security on Health";
- Resolution 1448/2006: defines the qualification conditions for institutions providing healthcare services using telemedicine.

The technical standards issued by the Ministry for Social Protection are based on the previous knowledge of International standards. This is why it calls upon stakeholders in the country and it promotes working spaces with the academy, industry and associations to discuss standards.

With regard to the remuneration of telehealth activities, the payment of procedures and activities is done according to an existing fee in Colombia. Thus, remuneration is done with the same fees applied to face to face services.

Training human resources in telehealth

Although there is not any general policy for training human resources in telehealth, some universities have already developed content related to telehealth. Below, there is a description of the main actions developed by the universities in Colombia on this field.

National University

There are three courses to study telemedicine deeper for all undergraduate degrees at health and engineering schools of the university. The training experience is important because the university has trained professors who are training telemedicine technologists.

University of Antioquia

Medicine

Medical Informatics I: On the first term, it brings some ideas on the role of the physician in the ICTs world. Information retrieval and adequate ownership of technology;

Medical Informatics II: On the fifth term together with the introduction to clinical areas. It includes legislation, context and medical informatics scope, ICTs and Health, Social networks, practical telehealth tools;

Internship: There is rotation in telemedicine following up the Telemap projects and the e-health component of ARTICA (Regional Partnership of Information and Communication Technologies);

Continuous Education: Virtual Graduate Degree in Informatics and health. Duration: 180 hours;

Surgical instrumentation: It is similar to medical informatics I content in Medicine.

Bolivarian Pontificial University

It has a cross-curricular proposal which is being implemented in Medicine. The extension to Nursing is being considered.

Contents are the following ones:

- E-health generalities – Public Health;
- Online learning Tools in Medicine – anatomic and histological models;
- Medical and assistance Records;
- Legal aspects;
- Ethical aspects;
- Types and modalities;
- Clinical Records;
  - Structure;
  - Contents;
  - Legislation;
  - Uses;
  - Assistance;
  - Legal;
  - Educational;
  - Administrative Financial;
- Decision making supporting systems – Internal Medicine;
- E-health impact and the information era on the professional exercise (Internship and residents) Public Health;
- Social Networks and medicine, Public Health;
- Consumer Informatics (relationship patient - information system);
- Collection, storage, analysis and display of clinical information;
- Integral System of Health Information in Colombia;
  - History;
  - Importance (Internship);
  - Conceptual basis;
  - Policies and strategies;
  - SIIIS Structure (Internship);
  - Reporting Systems (Internship), Public Health;
  - Coding Systems (Internship), Public Health;
  - Information Flow;
  - Vital and epidemiological statistics (Internship), Public Health;
- Telehealth (Internship).

CONCLUSION

Colombia is currently implementing a wide telehealth project with important results. There are initiatives in the main dimensions of telehealth development, such as human resources training, regulations and development patterns in the area. There are also some specific initiatives on the telehealth area, with experiences in projects carried out by several universities and municipalities. Finally, there is a well- structured national telehealth project which is already showing expressive results on primary care and semi-intensive care.

REFERENCES

1. Colombia. Congreso de la República. Ley 1122 de 9 de enero de 2007. [Citado en 2010 dez. 15]. Disponible en: http://www.pos.gov.co/ Documents/Archivos/Ley%201122%20de%202007.pdf.
2. Colombia. Congreso de la República. Ministerio de Comunicaciones. Plan nacional de Tecnologías de la Información y las Comunicaciones 2008-2019. [Citado en 2010 dez. 15]. Disponible en: http://www.eduteka.org/pdfdir/Colombia PlanNacionalTIC.pdf
3. Colombia. :Congreso de la Republica. Texto conciliado del Proyecto de Ley Nº 309 de 2008 Cámara 218 de 2007 Senado "Por la cual se establece los Lineamientos para el desarrollo de la Telesalud en Colombia. Bogotá, Colombia:Congreso de la Republica; 2008.
4. Ruiz Ibañez AZ. Telemedicina, Introducción, aplicación y principios de desarrollo. Medellín, Colombia: Universidad CES; 2007
5. Kopec A, Salazar AJ. Aplicaciones de telecomunicaciones en la salud en la Subregión Andina - TELEMEDICINA. Bogotá: Universidad de los Andes, OPS, OMS; 2006.
6. Colombia. Congreso de la República. Ley 527 de 18 de agosto de 1999. [Citado en 2010 dez. 15]. Disponible en: http://www.secretariasenado.gov.co/senado/ basedoc/ley/1999/ley_0527_1999.html
7. Colombia. Congreso de la República. Ley 1151 de 24 de julio de 2007. [Citado en 2010 dez. 15]. Disponible en: http://www.actualicese.com/normatividad/ 2007/07/24/ley-1151-de-24-07-2007/