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Regional Nodes of Colombian Clinical Engineers

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ABSTRACT

The Health Technology Management (HTM) staff in small or remote hospitals can have difficulty accessing good practice information, so we have created a simple, convenient, and accessible networking model for clinical engineers in Colombia, called Regionals Nodes. These Nodes break radically with tradition because they do not have a static structure that limits access to meetings or information. These Nodes are dynamic which allows them to reach more people in less time and at a lower cost. The Nodes use social media to be in contact, coordinate regular meetings with leaders and topics of interest, and disseminate large amounts of information quickly. Thus, new open spaces are created, they are adaptable to each region, and can easily evolve over time. Currently the Ministry of Health and Social Protection (MoHSP), with regional support of engineers from hospitals with national or joint commission accreditation (JCI) lead the Nodes. Today, there are 240 engineers from 140 hospitals and 13 universities and a regulatory agency that recently joined. This initiative began in 2015 with minimal coverage and we have now reached 40% of the country. The members of the Nodes meet every 2 months in order to prepare projects on Medical Equipment Management (MEM) and share information and experiences. Some of the accomplishments and outcomes of these meetings are: continuous training in Colombian regulations, positioning biomedical engineers as key stakeholders in MEM, institutional strengthening of the MoHSP in the health technology field, and HTM regional benchmarking. The interaction among the members of the participant institutions has facilitated a successful knowledge and best practices transfer in MEM from the 8 high-complexity university hospitals to almost 140 regional and local hospitals. These regional and local hospitals have limited access to resources and the operation of the Nodes has contributed in improving the efficiency in the equipment managing process and outcomes that better service the population. One of the priority projects of the Nodes is collaboration with the MoHSP in the validation of the Equipment Maintenance and Obsolescence Assessment Manual. The next steps are strengthening of the Nodes, increasing membership and motivating members and institutions, and interacting with professional engineering societies and health technology organizations worldwide. These steps will involve seeking support and improving communication with health authorities, hospital directors, and administrators looking for the expansion of the Nodes.

Keywords – *Medical Equipment Management, regionals nodes, networking, clinical engineer.*

INTRODUCTION

In the past few years Colombia has made important efforts with legislation development in biomedical equipment. In this context and in terms of formulating public policies that establish goals to strengthen biomedical equipment management practices by the country's health care services providers, the Ministry of Health and Social Protection (MoHSP) has taken the lead, together with hospitals who have national or joint commission accreditation (JCI), and established a working group called the "National Board," with the objective to structure and recommend proposals and guidelines in this field.

With the proposals achieved as a product of a national and international reference process and review and dissemination of successful experiences, the context and the realities analysis of the country in the field of Medical Equipment Management (MEM), we have been seeking to inform health care service providers about their responsibilities and actions in the use, operation, and maintenance of technology. Furthermore, we hope to advance the positioning and empowerment of the leaders of MEM in hospitals and clinics of at all levels.

In order to promote accessibility to information, guidelines, and tools for MEM, the Regional Nodes were established as a result of the work of the central government and the National Board. Thus, a collaborative network of clinical engineering was formed to socialize, disseminate, and validate MEM proposals in a large area of Colombia.

As additional objectives, these Nodes will contribute collectively to the solution of common needs, to generate collaboration and alliances which will materialize in mutual projects, and the exchange of specialized knowledge, initiatives, innovations as well as experiences and best practices among MEM professionals.

This paper presents the set-up and implementation of this work initiative called Regional Nodes, as well as the methodology adopted for its operation, the results obtained, and the next steps.

METHODOLOGY

In order to achieve the proposed objectives from the development and work of clinical engineering Regional Nodes in Colombia, initially the participation of the

MoHSP as the project leader was guaranteed. Moreover, the person from MoHSP would represent this institution and be responsible for the coordination of the Nodes, and consequently, the entire network.

RK 16	EMPRESA	PAÍS	CIUDAD
1	Hospital Israelita Albert Einstein	BR	São Paulo
2	Clínica Alemana	CL	Santiago
3	Fundación Valle del Lili	CO	Cali
4	Hospital Samaritano de São Paulo	BR	São Paulo
5	Hospital Italiano de Buenos Aires	AR	Buenos Aires
6	Hospital Clínica Bíblica	CR	San José
7	Fundación Cardioinfantil	CO	Bogotá
8	Fundación Cardiovascular de Colombia	CO	Bucarama
9	Hospital Pablo Tobón Uribe	CO	Medellín
10	Hospital Universitario Austral	AR	Buenos Aires
11	Clínica Internacional	PE	Lima
12	Médica Sur	MX	C. de México
13	Centro Médico Imbanaco	CO	Cali
14	Clínica Ricardo Palma	PE	Lima
15	Hospital Alemão Oswaldo Cruz	BR	São Paulo
16	Hospital Universitario de San Vicente Fundación	CO	Medellín

FIGURE 1. Best hospitals and clinics in Latin America. Ranking 2016.

From these providers from different regions of the country, clinical engineers were invited to be part of the National Board together with the MoHSP. This was done to manage and maintain the Regional Nodes of clinical engineering, which are working groups or technical meetings held in the different regions.

The meetings were based on debates and knowledge generated by the National Board. Afterward, the information flowed to the Regional Nodes with support from the MoHSP. After every debate, meetings were held at the Regional Nodes for unification, consolidation, and validation of the MEM information. This was followed by the identification of needs, feedback to the node leaders, and finally feedback to the MoHSP at the meetings of the National Board.

In order to accomplish the described methodology, it was established that there should be a schedule of the regional meetings in which MEM topics were previously defined and discussed. In addition, the results of the work done by the members of the Regional Nodes could be presented.

RESULTS

Currently we have work leaders composed of 12 clinical engineers from 8 high-complexity hospitals, which are recognized because they have national accreditation and JCI accreditation, as well as successful experiences in MEM.

These 12 engineers are leading and maintaining 6 Regional Nodes of Colombian clinical engineering (Figure 2): Center Node: Bogotá, Cundinamarca and departments of the center of the country; South West Node: Valle del Cauca, Cauca, Nariño; Antioquia Node; Santanderes Node: Santander and North of Santander; Caribbean Coast Node: Atlántico, Bolívar, Cesar, Córdoba, La Guajira, Magdalena, Sucre; and Coffee Triangle Area Node.

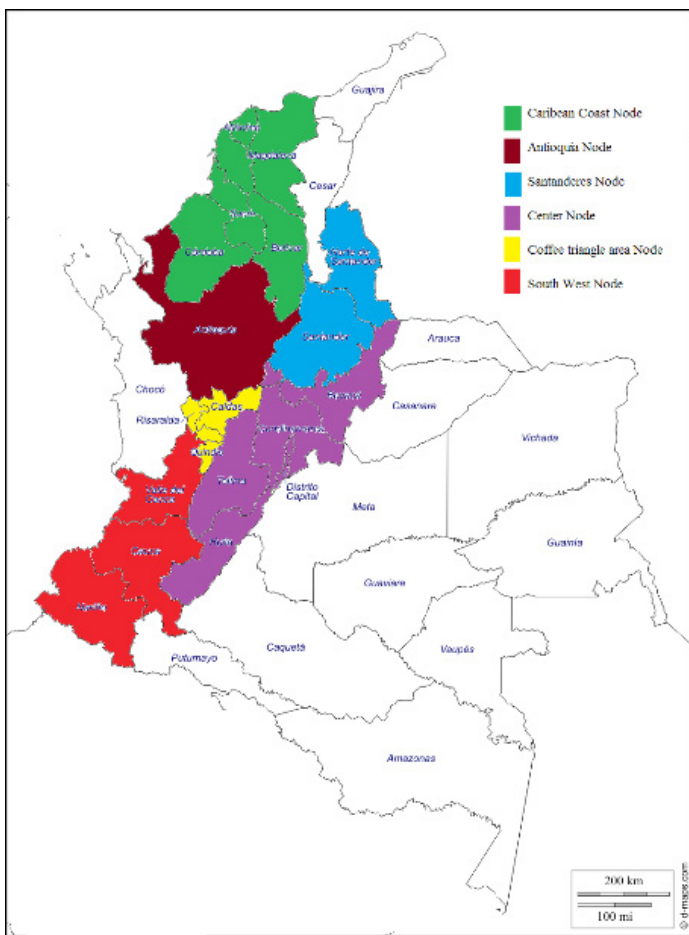


FIGURE 2. Colombian Nodes map.

Networking has proven to be an effective method to optimize resources, create and strengthen communication channels, share MEM experiences, and facilitate knowledge

transference. As a result, every day, clinical engineers are looking to be part of the network on behalf of their institutions and universities that provide academic and methodological support to the network. Table 1 shows the

TABLE 1. Current Composition of the Regional Nodes

Region	Clinical Engineers	Hospitals	Universities
Bogotá	60	40	2
Antioquia	40	20	5
Southwest Colombia	55	35	2
Santanderes	25	10	2
Coffee Triangle Area	30	20	1
Caribbean Coast	30	15	1

current composition of the Regional Nodes in relation to the number of clinical engineers, health care institutions, and universities which are part of the network.

Strengthening of the Regional Nodes has resulted in a positive impact on the MEM around the country, such as:

- Continuous training in Colombian regulations.
- Cooperation relationships among participants.
- Institutional referencing to improve processes.
- Positioning of clinical engineers as the main stakeholders in MEM.
- Institutional strengthening of the MoHSP in health care technologies field.
- Better health care for patients.
- Accessibility of MEM information.
- Improving efficiency of the MEM process in regional and local hospitals.
- Collaboration with the MoHSP in the validation of the Equipment Evaluation, Maintenance and Obsolescence Manual.
- Contribution on the development of a proposal for “mandatory requirements for the medical equipment management” for public and private hospitals and clinics, blood banks, and public health laboratories.

DISCUSSION

Every day the strategy of the Regional Nodes gathering and disseminating information is strengthened in Colombia. By May 2017 there were 200 clinical engineers, and by July 2017 there were 40 more. This shows that the Regional Nodes are responding to the needs of the clinical engineers.

The challenges we face as members and leaders of these Regional Nodes are to consolidate a networking culture, overcome communication barriers, approve criteria about clinical engineering, ensure credibility in the results that have been obtained, and engage the members to achieve results in the short term. Furthermore, as leaders we must look for ways to vitalize the National Board and Regional Nodes to ensure their operation in the long term.

Currently we are working on network consolidation, information flow improvement, referencing among the members, communication with the MoHSP, and promotion of the integration of different stakeholders in clinical engineering management, including the formation of new Regional Nodes across the country.

We identified strengths of the Regional Nodes as the ability to keep creatively holding meetings and integrating more participants, maintaining activities that facilitate the network of clinical engineers, and developing solutions to common challenges, the management of knowledge, and the development of human capital.

The main opportunities for improvement are the consolidation and recognition of the Regional Nodes, keeping members motivated, and including new members. Finally, there will soon be the delivery of tangible products designed and validated by the Regional Nodes which may be applicable to our country.

Future work proposed includes:

- Formation of the association or college of Colombian clinical engineering.
- Increasing the number of members and institutions.
- Supporting the Institute of Health Technology Assessment (IETS) in MEM projects.
- Working on joint projects with the American College of Clinical Engineering's international committee in Colombia.

- Strengthening interaction with professional engineering societies and health technology organizations around the world.
- Improving communication with health care regulation authorities, hospital managers, and administrators.
- Overcoming communication barriers supported by the use of WebEx platforms necessary to strengthen virtual work.
- Construction of a website to share experiences, knowledge and documents.

CONCLUSIONS

Currently, the network has a coverage of 40% in Colombian territory, with leadership from the MoHSP and 8 hospitals who have national or JCI accreditations. As well there is the participation of 240 clinical engineers who work in 140 hospitals. Additionally, we have the support of the academy represented in 13 universities.

To be part of the Regional Nodes, there should be no cost for registration or support fees. The members should only demonstrate an interest in meeting colleagues, sharing their experiences and knowledge, and working to improve practices in biomedical equipment management.

Colombia is a diverse country with large cities and dispersed rural areas. Regional meetings make it easier for areas far away from capitals, and clinical engineers with limited resources, to have access to information and tools of the best practices in biomedical equipment management.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.