Colombia

Overview of Colombia

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<th>Capital</th>
<th>Region</th>
<th>GDP Per Capita, PPP</th>
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<tr>
<td>Bogota</td>
<td>South America</td>
<td>$14,437</td>
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GDP $309.2 billion

Population 49,065,615

Area 1,138,910 SQ.KM

Taken from https://www.usnews.com/news/best-countries/colombia

According to INVIMA database (20/07/2019) Colombia has 3052 manufactures of medical devices, 385 of them are local manufacturers. It means that 93% of the medical devices used for healthcare services are imported, an expense of USD$2.344 million. Having this information into account, we can observe the increasing need of Clinical engineers working in different industries, looking for adequate HTM for patient safety.

A recent survey asked 1186 clinical engineers in Colombia using Facebook group as platform, showed the following results:

- 448 professionals are working as service engineer for medical devices manufacturers.
- 170 professionals are entrepreneurs and
- 168 are hired by healthcare institutions.
- The survey found that only 19 clinical engineers are researchers.

Engineering survey (Biomédicos Colombia, 2019)

We have keep and developed several strategies to impact this need:

Colombian College of clinical engineering start operation in Colombia in October 2017, its mission is the collective construction of knowledge in clinical engineering. The founder members have been working on dissemination and motivation for participation through regional nodes, universities and academic events. COLCINC has 30 members and 34 in

www.ced.ifmbe.org
process on inscription. The main challenge is the awareness of clinical and biomedical engineers of the importance to be part of an association.

There have been developed several events on biomedical engineering and clinical engineering field in the last two years as an effort of the advocacy of the profession. Webinars have been developed with cooperation of ACCE and IFMBE/CED with participation of 165 people.

Colombia has continued the development of new regulations in clinical engineering field in order to standardize medical devices life cycle, postmarket surveillance and patients safety. The MoH have developed standard related to prices regulation of medical devices, normalization of customized medical devices, medical equipment generators of ionizing radiation, new drafts of facilities and medical devices required for Healthcare institutions license with participation of clinical engineers from Healthcare institutions, Colombian regional nodes and COLCINC. The regulation related to clinical engineering departments is still under evaluation on MoH.

Five Regional nodes are still working in knowledge generation and dissemination through meetings and social media. Besides as a tool for potenticialize the interaction of stakeholders in each region of the country.

As an upper middle-income economy country we still have the following technology challenges:

- Scarc resources
- Obsolete or not safe Technology
- New technology continuous incorporation
- Inadequate facilities
- Lack of training skills
- Incipient integration of stakeholders
- Incipient regulation

Academia.

Good education of biomedical engineers is fundamental to ensure the proper development of health technology throughout their professional careers. These professionals are the driving force behind development and innovation, and therefore strongly affect the development of medical devices, procedures, and methodologies that directly affect patient safety as well as the sector's economy.

In Colombia there are 35 universities that offer undergraduate and/or graduate programs associated with bioengineering, (80 programs). In Medellin, Antioquia, four higher education institutions currently offer these programs and they have joined forces to strengthen the development of Clinical and Hospital Engineering in the region and the country. These institutions are: Universidad Pontificia Bolivariana, Universidad de Antioquia, Universidad EIA, and Instituto Tecnológico Metropolitano.

This collaboration has generated many results based on meetings of representatives with shared affinity and passion for the theme, and coming from various work environments, which started in 2013. The following results can be shown:

- Participation in the Technology Assessment Network promoted by the Medellin Health Cluster.
The organization of the last three meetings of the International Congress of Clinical Engineering, CONIC.

Contact between technology providers and students through training seminars on specific technologies.

The incentive of institutions that provide health services to further develop various health projects.

Manage contacts between different entities in industry, state, and academics.

25 scientific papers have been published in the Biomedical Engineering Journal (Universidad EIA) and 30 papers will be published this semester.

Efforts will continue to be made to further develop activities and to connect with other academic groups, with the state, with the health sector and with institutions that provide health services.

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