

Health Informatics Association for Latin-America and Caribbean (IMIA-LAC)

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1 Overview

IMIA-LAC (Latin-America and Caribbean) activities have been severely restricted in the last two years due to the COVID-19 pandemic. At the same time, digital health professionals and institutions from countries in the region, as well as IMIA-LAC member societies, have been playing a key role during the pandemic, strongly contributing to national health services for monitoring, reporting and planning actions aimed to combat this serious crisis that afflicts the entire world.

INFOLAC, the congress traditionally held by IMIA-LAC, ceased in this period due to the pandemic, and its return is being considered for the end of 2022.

2 Member Reports

2.1 Brazilian Health Informatics Association (SBIS)

Founded in 1986, the Brazilian Health Informatics Association (SBIS) (www.sbis.org.br) aims to contribute to the improvement and transformation of health through the appropriate use of Information and Communication Technologies. Proceeding with excellence, impartiality, diversity, ethics, commitment and enthusiasm, SBIS has currently over 1,600 members.

Some SBIS achievements in the last year:

- CBIS 2020 (Congresso Brasileiro de Informática em Saúde): SBIS held from December 07 to 11, 2020 the XVII Brazilian Congress of Health Informatics (<http://sbis.org.br/cbis-2020/>). This was the first congress holden 100% on a digital format. It was originally planned to be held at Foz do Iguaçu city, a border city with Argentina and Paraguay. The event was attended by over 450 people and 150 speakers. 254 papers were submitted and 101 published;
- Software Certification: The Electronic Health Record System (EHR-S) Certification Program was started in 2002, and in 2009 began certifying software by an audit to verify compliance with a broad set of about 500 information security, privacy, structure, content and functionality requirements, based on international and national standards (as ISO, HL7, IHE, LOINC, SNOMED), and Brazilian laws. By October 2021, 87 systems have obtained a SBIS certification. In last year new versions were published that present some improvements: there are now three maturity levels and four categories: Clinic, Emergency, Inpatient, Telehealth, and e-prescription;
- Professional Certification (cpTICS): The SBIS Professional Certification Program was started in 2012 aiming to recognize the core competencies of health informatics professionals through the award of a Professional Certificate in Health Information and Communication Technology (cpTICS). Due to the pandemics, there were not test applications last year, and 48 professionals approved and received a cpTICS certification;
- Journal of Health Informatics (JHI): JHI, the SBIS's electronic science journal (<http://www.jhi-sbis.saude.ws/>), had its first issue released in October 2009. It is a free and open access peer-reviewed journal which offers an international means of disseminating original research results and interpretative reviews concerning the field of health informatics. By November 2021, 319 articles were published on 56 editions (13 volumes) of JHI;
- First National Contest of Digital Projects for the fight against COVID-19: more than 100 projects were submitted. Winner took money prize and mentoring;
- First Workshop of Clinical Informatics – the CCIO role;
- Training course of "OMOP modeling and OHDSI tools", six weeks long, 18 hours with theoretical and hands-on classes;
- Monthly open Live Webinar;
- Contributions in the elaboration of published documents:
 - Ministry of Health "Health Digital Strategy 2020-2028";
 - Ministry of Health "National Policy on Health Informatics and Information";
 - National Agency of Supplementary Health (ANS) new version of the "Data Exchange in Supplementary Health Specification (TISS)", including communication, terminology, privacy and security specification;
 - Data Protection National Authority resolution on "Surveillance and penalty process";
- Contributions in the elaboration of the following working in progress and documents to be published:
 - Brazilian Health Regulatory Agency (Anvisa): Software as Medical Device and Digital Prescription and Dispensation Resolutions;
 - Brazilian Congress law projects: Telemedicine and telehealth, National EHR, Digital signature including for prescription and medical certificate, Healthcare documents digitalization, Brazilian General Data Privacy Regulation (published in 2018 and reviewed in 2019 and 2020);
 - Data Protection National Authority resolution on "GPDR for small companies, startups, innovative, and individual companies";
- Activities:
 - Ministry of Health: contributions for the ConecteSUS programs, including the "Health Data National Network",

and the "Primary healthcare informatization", e-prescription for the government medication program (Programa Farmácia Popular), COVID-19 LOINC terms translation and mapping;

- Medical Specialties Chamber: Proposition for creation of the Medical Informatics area;
- Post graduate coordinator: reopening of master and doctoral digital health proposal programs;
- National Institute of Information Technology (ITI), Medical Professional Chamber (CFM), Dentistry Professional Chamber (CFO), Pharmacist Professional Chamber (CFF): deployment of the e-prescribing validation platform;
- Specification of e-prescription data and communication model for the Health Data National Network (RNDS) of the Ministry of Health;
- Proposal of SNOMED partnership for e-prescription use and medication translation for Brazilian Portuguese;
- Participation in the following external committees:
 - Digital Pharmacy working group of the Pharmacists Professional Chamber;
 - Digital Health working group of the Brazilian Medical Association;
 - Medical Informatics working group of the Rio de Janeiro State Medical Professional Chamber;
 - Standardization Committee of the Supplementary Healthcare Data Exchange of the National Agency of Supplementary Health;
 - Telehealth Group of the National Congress;
 - Special Interest Group of Digital Health of the Telemedicine Academic Network (RUTE) of the Research National Network (RNP) of the Ministry of Science, Technology and Innovation;
- Active Working Groups in SBIS:
 - Nursing
 - E-prescription
 - Semantics
 - Innovation
 - GDPR

2.2 Paraguayan Society of Health Informatics (SPIS)

Paraguayan Society of Health Informatics (SPIS) was created in 2017. Currently, more than 60 members have joined. Its main aim is to contribute to create the appropriate environment for the development of health informatics in Paraguay. In this context, during the 2021 SPIS organized a campaign, among its members, to register national projects related to the health informatic area. These projects can be found at <https://spis.org.py>. Also, SPIS organized monthly webinars to present these projects; more than twelve projects have been presented.

3 Other National and Institutional Activities in the Region

3.1 El Salvador

In this year of pandemics, the activities were limited by the restrictions in the country. Nevertheless, country professionals and institutions were active in participating and supporting on RECAINSA (Central American Health Informatics Network) activities.

3.2 Committee on Information and Communications Technology (ICT) in Health at The Peruvian College of Physicians (Peru)

During years 2020-2021, the Peruvian College of Physicians (CMP) implemented several initiatives and programs for the application of ICT in health within the context of the COVID-19 pandemic. At the beginning of the COVID-19 pandemic, the coronavirus self-assessment tool (<https://www.demo2020.cmp.org.pe/auto-evaluacion-covid-19/>) was developed to help in determining if a person should be tested for COVID-19. The questionnaire could be completed by the person or on behalf of another person. The tool is free and accessible to the entire population. As of April 30, 2020, more than 70,000 people have used the tool and almost 7,000 have been identified as suspects for presenting symp-

toms and/or by epidemiological characteristics compatible with COVID-19 according to the guidelines by the Peruvian Ministry of Health [1]. In addition, the application "Escudo Sanitario Perú" was developed as an online tool to identify the situation of medical and health professionals during the COVID-19 pandemic. This tool made possible to visualize the health status of doctors, and the health risk that doctors and health professionals have been experiencing due to COVID-19 throughout Peru.

Open data was essential to face this pandemic, contributing to better transparency, reproducibility of results and evidence-based decision-making [2, 3]. In this sense, one of the most popular tools is the Observatory tool named "Observatorio CMP" available at: <https://www.cmp.org.pe/observatorio-cmp/> that allows viewing the information of all registered medical doctors in Peru, physicians with COVID-19 (by self-report), statistics of services, physicians already vaccinated, mortality of physicians by COVID-19 in Latin America, and data about insured physicians. This website is an important tool for decision-making and is a transparent way to inform the members of the College and the general public.

The CMP has also implemented the "Salud a un Clic" technological platform (<https://www.cmp.org.pe/saludaunclic/>) to register the medical history and as a support for teleconsultations in order to provide care and follow-up to the frontline doctors during the COVID-19 pandemic. This program integrates a mobile health (mHealth) application (called "CMP Te Cuida") that is available in the App Store and Google Play, whose use is exclusively for doctors and integrates data to the platform.

In addition, in coordination with the Ministry of Health and the National Registry of Identification and Civil Status (RE-NIEC), a procedure has been developed to validate physicians to access the web-based application of the National System of Deaths (called "SINADEF") to register death certificates online.

Likewise, digital transformation efforts have been made to digitize administrative processes. The multi-channel platform namely "Aló CMP" allows the CMP to aid the doctor in the different institutional services

and programs. The assistance is provided by trained personnel, who coordinate actions working from homes via telework. Through this platform, calls, e-mails and messages from members and the general public to the institution are integrated.

Regarding digital fabrication, 3D-printed personal protective face shields were donated to physicians in several regions of Peru by private universities and other institutions [4].

Another key component of telehealth during years 2020-2021 was tele-education. Through e-learning or live streaming platforms physicians, throughout Peru, were trained via weekly updated topics with emphasis on the management of COVID-19 patients, with the academic support of different groups of experts in issues of public health, medical education, telehealth, with the participation of scientific societies, public and private universities, international agencies, and the Peruvian Ministry of Health. Videos can be accessed through the Facebook social media of the Peruvian College of Physicians at: <https://www.facebook.com/ColegioMedicodelPeru>.

Finally, according to Avarez-Risco et al. “the COVID-19 epidemic has spawned an infodemic, with excessive and unfounded information that hinders an appropriate public health response” in Peru [5]. To address this serious issue, the Peruvian College of Physicians has developed the website “Ciudadano Informado” (available at: <https://www.cmp.org.pe/ciudadano-informado/>) which provides up-to-date information via its social media and website target to the general public regarding preventive measures related to the COVID-19 pandemic.

3.3 Department of Health Informatics (DHI) at Hospital Italiano de Buenos Aires (Argentina)

The Department of Health Informatics (DHI) was created in 2001. It performs functions such as health data management and technical management of computer systems. It is composed of different areas responsible for carrying out hospital information systems management: Clinical Informatics, Software Engineering, Business

Intelligence and Biostatistics, Norms and procedures, IT infrastructure, Research and Technological Innovation, Implementation, Community health informatics, and Training and Quality in Information Systems, with a team of nearly 200 professionals. The Department of Health Informatics of the Hospital Italiano de Buenos Aires has developed over the last 20 years a deep redesign of the institution's Health Information System with the aim of achieving harmony between providing high quality of care, while managing costs and the ability to meet the needs of the population.

- MEDINFO: DHI actively participated in MEDINFO 2021 and presented more than 20 papers. The presentation “Can CPOE based on electronic order sets cause unintended consequences (expensive and unnecessary tests) at the Emergency Department” was awarded with the First Prize as Best Papers.
- World Health Organization (WHO) - Collaboration Centre: the DHI has been working as a WHO Collaborating Centre in Knowledge Management since 2014, with the purpose to provide support in Digital Literacy Programs and to provide training on health information systems and electronic health records. In pandemic times, we actively collaborated Department of Evidence and Intelligence for Action in Health (EIH) at PAHO in the strategy 8 - Principles for Digital Transformation of Public Health that is currently being conducted in the region.
- Master Science in Health Informatics: the 2-year Master's Degree program in Health Informatics is aimed at professionals interested in knowing the complexity of this disciplinary field from different perspectives, and in developing the necessary skills to address the different challenges of health information systems. It was launched in 2017 and has nearly 500 students that are mostly from Argentina, but also has students from countries such as Uruguay, Colombia, Chile, Mexico, Panama, Paraguay, Ecuador, and Bolivia. The main objective is that graduates are trained to assume positions that require a deep knowledge of information technologies

and health organizations, endowed with creative thinking, capable of solving problems and generating new knowledge in multidisciplinary work teams. Among the different courses that the students have, the aim is that they can develop the necessary skills to apply the principles of Computer Science, Communication and Information to the organization, analysis, management and use of information in the health system.

- XVI University Conference on Health Information Systems: in November 2021, the 16th edition of the annual conference organized by DHI took place, but this time was completely virtual and was renamed as “JIS Go Live 2021”. A web platform was developed for the conferences with 2D – 3D features so there was a chance of emulating the in-person experience. With around 5,000 participants from 19 countries such as Argentina, Bolivia, Colombia, Uruguay, Chile, Spain, Ecuador, United States, Mexico, Paraguay and Peru. Throughout the three days of the conference there were 400 activities divided in 24 theme tracks with the participation of 480 national and international speakers. JIS Go Live also featured papers presentation so as to enrich the conference with the exchange of experiences from other institutions and professionals. A total of 35 workshops and tutorials were offered, on different aspects of the implementation of health informatics. The 1st Symposium on Pharmacology Informatics was organized which addressed all the aspects of from the supply chain to the administration of drugs. The 3rd Symposium on Nursing Informatics also took place, the main objective of which is the exchange of experiences to expand knowledge about the discipline. There was organized the 2nd Symposium on Artificial Intelligence (AI) in Health, with more than ten tracks where different topics were discussed about Computational Vision, Automatic Speech Recognition, Natural Language Processing, and Clinical Decision Support Systems, among others. There was also shared the experience of the Artificial Intelligence in Health

Program of the Hospital Italiano of Buenos Aires (pIASHIBA) in the meet of experts and in the Symposium.

Some of the projects that are in process of implementation are:

- Valquiria, consists in the implementation of a neural network for the automatic classification of skin lesions and sets a risk factor for skin cancer;
- Carpián, is an AI-based diagnostic imaging tool that assists professionals to determine the bone age -in months- of pediatric left hand;
- Artemisia, an AI system for the automatic categorization of breast density in mammograms, is in the process of external validation, such as TRx, which supports professionals in finding pathologies on chest X-rays.

- E-books and Innova magazine: during 2020, DHI continued with the publication of Spanish e-books on different topics related to Health Information Systems. DHI think that these e-books can be used as guidance in Spanish for those working on the field in the Latin-American region where there is a lack of information in the language. There are more than 30 books available through Amazon and at virtual platform <https://delhospitale-diciones.hospitalitaliano.edu.ar/tienda>. Innova is a quarterly publication that addresses different topics of health informatics in Spanish and aims to create another channel of communication to promote the multi-disciplinarity in Health Informatics. It is freely available at <https://www1.hospitalitaliano.org.ar/landing/innova-salud-digital>.

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