Dear Colleagues,

As the outbreak of novel coronavirus (COVID-19) continues in the US and most of the world, it is very hard to focus on anything else at this time. We recognize that there is a great deal of anxiety about what is yet to come. Many of us are concerned about the health of our loved ones, the impact of school closures on our lives and our children's lives, being quarantined indefinitely, inability to go about our daily routine, etc. During this difficult time, please know that all of you are in our thoughts and prayers. And please know that the Clinical Engineering and HTM community, as a whole, is growing closer in order to assist with this national and global health crisis.

Throughout the last few weeks, I have seen a great deal of involvement and collaboration from different groups in hospital and clinics, as well as a great deal of collaboration among different hospitals. Every other day I am on a call with leaders from different hospitals in the San Francisco Bay Area, discussing technology innovations such as using 3D Printing for PPE and medical device parts and disposables, or how to use our medical equipment more efficiently during this healthcare crisis. I am also in close communication with clinical engineering leaders of different children’s hospitals throughout the country. All of this is being done in real time, in order to learn from each other and see how we can help each other and get ahead of any unforeseen needs. If there will be a silver lining to this, it is that the crisis is bringing all of us closer together to address this and future emergencies.

Some of the things we have worked on with other clinical engineering leaders, are listed below – please feel free to include them in your emergency preparedness, add additional information to them, and share them with us!

Throughout this period, ACCE is still working to set up different webinars available for all of our members. Just last week we helped set up a webinar with colleagues in Italy, China, and US in order to learn from each other and be ready for what may be yet to come. We will be setting up additional webinars on COVID-19, so please stay tuned The Education Committee is also working on additional webinars focused on topics such as Cybersecurity, Emergency Preparedness, and overall helping us grow in the profession.

ACCE was, as usual, enthusiastically preparing numerous activities for HIMSS 2020 and AAMI Exchange 2020, but understandably, both events were cancelled.

And last, but not least, I want to thank all of you for being part of the Clinical Engineering community, for putting yourself out there in the front lines, and for going above and beyond to ensure that healthcare is not interrupted. I hear every day from our clinicians, thanking us for making

(Continued on page 2)
President’s Message—Continued

(Continued from page 1)

sure that equipment and systems are ready for them to use, when they need it, and where they need it!

Please stay safe, healthy, positive — and wash your hands frequently! During these tough times, it is hard to do our job with a smile; but it is very important for us to continue to be kind towards each other, towards our customers, and towards our leaders. This too shall pass, but the way we approach it and the way we treat each other will remain.

Stay safe!

Ilir Kullolli
ACCE President
president@accenet.org

COVID-19 Preparedness Plan

✔ Spread out technicians in 3 shifts in order to limit close contact (less people in the shop)
✔ Separate technicians into clusters working in different areas. If someone gets infected from one of the clusters, you can have other clusters jump in to help
✔ Identify positions that can work from home or from a remote site, and implement an onsite/offsite schedule
✔ Utilize Skype/Webex/Zoom or other tools for meetings
✔ Implement a 10-hour shift/4 day schedule to limit amount of time onsite
✔ Eliminate/postpone all non-essential projects
✔ Do not have vendors/others onsite during this period, unless absolutely necessary

Volunteers wanted!

If you would you like to volunteer for ACCE, please complete this volunteer survey.

Volunteers are needed to write ACCE News articles, participate on a variety of important committees and assist in various other roles.
Congratulations to the 2020 Student Paper Competition Winners!

**US/Canada Master Division**

Ms. Payal Mandot  
Graduate student at University of Ottawa  
Paper: “Biomedical Engineering Department Staff Analysis: The Ottawa Hospital Productivity Review”

**International Master Division**

Ms. Rachele Fabbri  
Graduate student at University of Florence  
Paper: “A Collaborative RESTful cloud-based tool for management of chromatic pupillometry in a clinical trial”

**US/Canada Doctorate Division**

Ms. Priyanka Upendra  
Graduate student at Capella University  
Paper: “Bed Control Process Standardization at a County Hospital”
Frank Painter, has been described by his colleagues as "the finest kind of individual who exemplifies our industry and its people to the highest degree".

Frank Painter, retired clinical engineering internship program director & adjunct professor, biomedical engineering graduate program, Department of Electrical & Computer Engineering, University of Connecticut, Storr, CT

2020 Certification Renewals

CCE renewal is required once every three years. If your CCE expiration date is on June 30, 2020, you have until June 14, 2020 to complete and turn in your completed renewal form.

For more detail, refer to the 2020 CCE Renewal Handbook

The renewal fee can be paid by check or via PayPal on the ACCE- HTCC webpage.

To check the expiration date of your CCE status, please click here.

Changing your CCE status to Emeritus or Retired?

Please refer to the 2020 Handbook and Application for Retired and Emeritus Status Change.

Any questions can be directed to Sandy Allen, HTCC secretariat, at certification@accenet.org.

Journal of Clinical Engineering Subscriptions for ACCE Members

The Journal of Clinical Engineering is a compilation of articles, papers, and extensive manuscripts relevant to clinical/biomedical engineering or biomedical technology. Subject matter directly relates to the engineering or technology involved in patient care and treatment or technology in the broad field of health care delivery.

ACCE members receive a discounted subscription to the Journal of Clinical Engineering for only $99! (Originally $313). You must login to the ACCE website to view the code. Then visit LWW.com to enter code.
Learn From Our Italian CE Colleagues About COVID-19

ACCE is pleased to share an interview conducted by one of its collaborating organizations, the Brazilian Association of Clinical Engineering (ABEClin), with another collaborating organization, the Italian Clinical Engineering Association (AIIC), about the experience of Italian clinical engineers involved in the COVID-19 pandemic there.

Interview with the Italian Clinical Engineers on the Coronavirus Situation

NOTE: The questions (in italics and bold) were posed by leaders of ABEClin, while the responses were provided by leaders of AIIC.

Given the impact on healthcare and the mobilization of the Italian clinical engineering professionals, we would like to know what difficulties clinical engineering professionals faced at the beginning of the epidemic? And what actions were possible at the time?

At the beginning of the epidemic, the operational difficulties mainly concerned those colleagues who were busy in the areas most affected in the early days, in particular the hospitals of Lombardy, the region with the capital of the city of Milan.

In the early days there was still no perception of the size of the problem, or at least not everyone could have it, and even though throughout Italy we started to circulate information and news, not everyone immediately had the feeling that it was important to act immediately. So, at the beginning of the emergency the problem was essentially related to the perception of the situation. The peculiarity of Lombardy was the fact that once the first positive case was discovered (Codogno, 21.2.2020) there was an "explosion" of cases (just look at the growth curves of the phenomenon) which proved to be immediately serious. Intensive Care Units very quickly saturated, and it was necessary to very quickly start managing the patients who arrived in the Emergency Room in less serious but nevertheless complicated conditions. This determined the need to quickly set up ventilated places (CPAP etc.) as new intensive care places. All this was necessary within 5/6 days.

At the beginning, Clinical Engineers were involved in the collection of equipment inside the hospital, because everyone's impression was that the emergency could be managed with what was available. As the numbers increased, it immediately became clear that it was necessary to resort to the market and buy new equipment. The explosion in the number of cases has effectively saturated the availability.

The network of Clinical Engineers has allowed the dissemination of information and management needs for the sick, so those in the other regions who were lucky enough to experience the crisis in the second wave had time to adapt their facilities and supply some material. But always without knowing if what they were acquiring would have been enough, too little, or too much.

At the time it was therefore only possible to react to the emergency with all possible tools (including knowledge of suppliers to be able to collect the equipment) and to share with colleagues, both for any loans and simply to be able to prepare.

At this moment, on a national scale, the other regions had time to prepare even if there is always the doubt of not knowing how many real cases will arrive in their area.

Currently, with several severe cases and quarantined regions, what are the biggest difficulties in meeting the needs of equipment and services?

At the moment there are essentially two problems:

Saturation of intensive care units and the need to create others, but without the available spaces. Therefore, the layout or functions of hospitals and departments must be reviewed to create new places;

Unavailability of equipment (ventilators and monitoring systems) both because the manufacturers do not have an "emergency" production capacity and the adaptation of the production lines required more than 10 days, and because the evolution of the epidemic at the supranational level has led to creating constraints and pre-emptions by some states on domestic production which is blocked for their own needs rather than shared abroad.

Instead, we have observed that the variability of the equipment that is provided is not a problem, in the sense that clinicians adapt to what they are faced with, as long as it provides the basic services that are required of the specific equipment.

The greatest difficulties therefore concern the continuous requests to equip our hospitals adequately to cope with COVID-19 patients, both for ordinary hospital stays with the need not to spread the infection, and especially for the most serious patients in Intensive Care Units. Setting up new intensive care units is not only a problem of space and availability of suitable rooms (in an emergency like this we can also use rooms that normally would not have all the characteristics typically required for intensive care) but above all, the availability of the necessary equipment: ventilators and monitors. Clinical Engineers are playing an important role in this, both in recovering all the equipment available in the hospital, for example those used in different departments or those not currently in use, and in receiving new equipment that hospitals are buying and quickly setting up new intensive care beds. And we must not forget that in any case, even in the present coronavirus-related emergency, the rest of the hospital activities do not stop: some scheduled activities have been suspended, but we must continue to guarantee assistance to hospitalized patients and the management of all emergencies.

(Continued on page 6)
Louis (Lou) W. Schonder from earthMed has been added to the International Committee (IC) in early 2020 as a replacement for Antonio Hernandez, who retired from IC after serving as a member and its chair for several years. Lou retired from ECRI Institute after almost 20 years of service, first as a senior test technician at CITECH and later as a medical equipment planner. Prior to joining ECRI Institute he worked at Alfred Koch Labs, International Shared Services and Graduate Health System. Lou founded earthMed in 2007 to help improve healthcare in developing countries through medical program development, education, direct patient care, diagnostic support, medical device donations, medical supply donations, and community outreach support with the help from medical volunteers. Through earthMed, he organized and participated in 5 missions to Mongolia.

IC submitted two nominations for the 2020 ACCE international awards. The first one was for nominating the Executive Board of the Mexican Society of Biomedical Engineering (SOMIB) for the Antonio Hernandez award for its dedicated and remarkable contributions to the advancement of clinical engineering in Mexico and Latin America. The second one was for nominating the Japan Association for Clinical Engineers (JACE) for the ACCE/HTF International Organization award, recognizing its significant contribution to the advancement of clinical engineering in Japan, working in collaboration with ACCE and other international organizations. Both awards were reviewed and recommended by the Advocacy Committee and approved by the Board.

In 2020, IC is planning to hold several joint activities with foreign organizations with whom ACCE has signed mutual collaboration and assistance agreements, as well as with other international organizations such as AAMI and IFMBE/CED. Some of these activities are likely to be held via the Internet due to the recent travel limitations caused by COVID-19. In addition, IC will continue to sign similar agreements with other national organizations and, when such organizations do not yet exist, encourage their creation.

Binseng Wang, IC Chair
International.chair@accenet.org

Learn From Our Italian CE Colleagues About COVID-19

What advice would you give to clinical engineering professionals in Brazil and other countries, so that they can prepare for what’s to come?

The main advice is to avoid waiting until the situation is so serious that you have to act in a hurry and in an emergency. We must immediately be ready and start to equip hospitals with new intensive care units, even temporary; you must immediately get the necessary equipment, and in this the collaboration with the manufacturers (local and multinational) is important. Clinical Engineers must be immediately involved in the working groups, both in the hospital and in regional and national institutions, to bring in those discussions the competence related to electromedical equipment, which in this situation is of fundamental importance. Policy makers need the skills of technicians to make the right decisions and act properly. The only problem is that the epidemiological curves are far from known and certain. This means that it is not possible to determine upfront how many places and where they will be needed. There is a risk, if you move on the emotional wave of over-preparing, while if you are too rational then you risk finding yourself with water at your throat and not being able to meet the need.

14th March 2020

ABEClin
Eng. Alexandre Ferreli Souza, President
Eng. Ricardo Maranhão, Vice-president
Eng. Bruno Roma, Vice-president

AIIC
Ing. Lorenzo Leogrande, President
Ing. Stefano Bergamasco, Vice-president
Ing. Umberto Nocco, Vice-president

(Continued from page 5)
A Tribute to Cesar Augusto Caceres, MD

Widely regarded as the creator of the term clinical engineering, Dr. Cesar Caceres passed away Feb. 9, 2020 in Washington DC at the age of 92. He was born in Honduras and earned a medical degree from Georgetown University. Besides having his own clinical practice, he worked for the Public Health Service—where he was among the pioneers of the computer-ized analysis of ECG—and later joined George Washington University. Dr. Caceres was a founder of AAMI and served on its Board of Directors, including as its chair, for several years.

The first time the term “clinical engineer” appeared in print was in the Proceedings of IEEE in Nov 1969, in an article entitled “Automation of Data Acquisition in Patient Testing” written by Landoll and Caceres. Carefully reading this article, one would realize that they were actually referring to engineers responsible for designing medical instrumentation and not those who would eventually support it in the clinical environment. Nonetheless, this article did call the attention to the need for considering maintenance during the design process, including the obligation of providing operation and maintenance manuals to the hospital—a challenge we are still struggling with today! Although the term “clinical engineering” was not mentioned in the body of this article, its byline stated that Dr. Caceres “now with the Department of Clinical Engineering, George Washington University, Washington DC.” So at least as far back as 1969, clinical engineering existed as the formal name of an academic department.

According to an article in the December 2017 AAMI News, Dr. Caceres said that he coined the term “clinical engineering” when he was asked by a philanthropist what he was doing in the mid-1960s and he responded “… I told him it was ‘clinical engineering’—trying to put engineering into the clinical world of medicine so that our various disciplines could work hand-in-hand to improve healthcare in the reality of the practicing medical world.”

Dr. Caceres not only created the Department of Clinical Engineering at George Washington University, he also persistently advocated for the designation of Clinical Engineering as the desired name for the profession everywhere. For example, Manny Furst recalls attending an AAMI meeting in the late 1960s or early 1970s during which he heard a speech from Dr. Caceres to this effect.

In 1977, Dr. Caceres edited a book (with the assistance of Albert Zara) entitled “The Practice of Clinical Engineering.” In the Preface of this book, Dr. Caceres wrote that the term “clinical engineering” was “coined a decade ago to aid in the identification of the people involved with and in recognition of the field itself.” In addition, he devoted the Introduction of this book to explain why engineers are needed in the clinical environment. One of the most noteworthy paragraphs is quoted below:

“Engineering is beginning to be called on to do more in health because we have a significant problem. Just as exploitation of the sea for minerals is too important to leave only in the hands of chemists, or oil exploration to leave in the hands of geologists, the needs of medicine are really too important to leave only in the hands of physicians.”

For his efforts in editing this book, ACCE bestowed him one of its first Professional Development Awards in 1994.

It is interesting to note that while not widely acknowledged, Dr. Caceres’ colleague and co-author, James R. Landoll, was a very vocal advocate for the need to consider the challenges of maintenance and service of the new instrumentation that was being created at that time using the technology developed for the lunar expedition. In addition to what was written in the 1969 article he co-authored with Dr. Caceres, he led the discussion of a session called “Maintenance and Service” in the “Federal Agency Development in Medical Engineering” workshop held in 1969. This is not surprising because Landoll was an IEEE member and presumably trained as an electrical engineer, whereas Dr. Caceres was trained as a physician.

There should be no doubt that without Dr. Caceres’ incomparable vision and vigorous efforts in convincing others to use the term “clinical engineering,” this field—and ACCE—might not exist today in its present form. Although some have regarded this field as one almost exclusively devoted to medical equipment maintenance and management, recent developments in device integration, cybersecurity and 3D printing for rehabilitation prove there is still much for engineers to contribute to the advancement of healthcare worldwide.

Binseng Wang
International.chair@accenet.org

Larry Fennigkoh
Elliot Sloane
The ACCE announces the 2020 Advocacy Awards Recipients

For more information about the ACCE Awards Recipients, visit the ACCE Website

**ACCE 2020 Challenge Award**
Andrew Kusters, BSE

**ACCE 2020 Lifetime Award**
Ethan Hertz, MS, MAS, MBA

**ACCE 2020 Professional Achievement in Technology Award**
Priyanka Upendra, MSE, CHTM

**ACCE 2020 Professional Achievement in Management Award**
Michelle Baquie, CCE

**ACCE 2020 Antonio Hernandez International Clinical Engineering Award**
Executive Board, SOMIB

**ACCE/HTF 2020 International Organization Award**
Japan Association for Clinical Engineers
The medical device industry has made tremendous progress in offering tools that help better manage connected medical devices. There are various platforms that passively monitor network traffic without affecting clinical workflow or causing a network outage. There are also various third party services available to assist healthcare delivery organizations (HDOs) build resilience against cyber maladies. Third party services include guidelines on how to develop and implement processes for review and risk management, performing audits and technical assessments, etc. that are referenced from industry best practices.

‘Healthcare and Public Health Sector’ is one of the critical infrastructure sectors identified by the United States Department of Homeland Security’s Cybersecurity & Infrastructure Security Agency (CISA). A number of educational tools and templates are available from the United States Federal Government to assist organizations with cybersecurity program development. An overview of CISA was released in May 2016. In addition to the tools and templates, CISA offers free assessments and surveys for critical infrastructure industries.

Additional resources are available from the National Institute of Standards and Technology (NIST), a United States government agency tasked with improving public-private collaboration on cybersecurity based on the Cybersecurity Enhancement Act of 2014. NIST published a ‘Framework for Improving Critical Infrastructure Cybersecurity’ in April 2018. The NIST framework provides HDOs and OEMs a structured approach to identify, assess, and manage cybersecurity risks.

The United States Food and Drug Administration (FDA) has published guidance documents for OEMs and HDOs, namely, pre market and post market management of cybersecurity for medical devices. FDA has endorsed the Underwriters Laboratories (UL) 2900-series standards as an aid for the medical device industry and regulators. These standards provide a common framework to implement security controls that protect sensitive data and command and control data.

MITRE, a federally funded research and development center is a working example of public-private collaboration. MITRE has developed the Medical Device Cybersecurity Regional Incident Preparedness and Response Playbook that is available at no charge for HDOs.

The importance of healthcare supply chain was emphasized through a series of vulnerability disclosures and outbreaks over the past couple years, including the recent COVID-19. In a proactive manner, the Healthcare Supply Chain Association (HSCA) and the European Union Agency for Cybersecurity (ENISA) have developed procurement guidelines for HDOs. These guidelines assist HDOs in assessing the security posture of new products through pre-procurement review and evaluation.

Center for Medical Interoperability (C4MI) is a not-for-profit medical research development organization that is focused on how healthcare technologies, including medical devices, share real-time information allowing seamless clinical workflow and positive patient outcomes. C4MI offers technical documentation, such as operational requirements and guidelines for wireless healthcare technologies. C4MI documents are a collaborative effort between OEMs and C4MI representing HDOs.

The Association for the Advancement of Medical Instrumentation (AAMI) has published several guidance documents that provide both OEMs and HDOs best practices to manage risks associated with connected medical devices. AAMI’s TIR57 and Medical Device Cybersecurity Practice Guide for HTM Professionals can be purchased from the AAMI Store.

In additional to the above organizations, several others offer services and tools to both OEMs and HDOs to manage risks of medical devices that are capable of connecting to the network and/or storing sensitive data. These organizations include, but are not limited to, Armis, Asimily, Zingbox, Ordr, Medigate, Cynerio, CynergisTek, Coalfire, ECRI, Emergo by UL, Imprivata, Protiviti, Deloitte, MedSec, MedCrypt, etc.
Human Factors and Clinical Engineering

1. Which is a human factors problem?
   a) “I was never trained on the use of this device.”
   b) “I can’t see the display if the lights in the room are off.”
   c) “We don’t have enough of these available on the unit for our needs.”
   d) “This device breaks all the time and is unreliable.”

2. Why is HFE critical to the design and development of medical devices?
   a) it reduces the environmental factors influencing device use
   b) It allows the user to use it anyway they want to
   c) optimizing the device-user interface makes the device fool-proof
   d) the device will work as the staff expect it to

3. Mistakes with medical devices are called “use errors” rather than “user errors” because:
   a) the error might have been the result of poor device-user interface
   b) The clinical staff make mistakes during use, so we call them “use errors”
   c) By finding out who made the mistake we can avoid problems with “use errors” in the future
   d) Problems with the “use” of a medical device which has been shown to work as intended is usually the fault of the clinician

4. Examples of medical device human factors problems includes mistakes made by:
   a) not being trained on the proper use of the device
   b) defective pumping mechanism which periodically increases flow rate
   c) defective buttons which allow the user to unknowingly enter incorrect amounts
   d) maintenance and calibrations not being done on time

Correct answers:
1. b
2. d
3. a
4. c

Explanations:
Human factors has to do with the way humans interface with things. Designing a device to meet the human’s needs and expectations would be designing good human factors into the device. To design a device with good human factors requires an understanding of the human’s capabilities, dimensions, limitations, etc. So, building a piece of equipment - with the knobs too close together so the human would bump one while adjusting the other or with connections and connectors so similar that the human might inadvertently make the wrong connection - would be poor human factors engineering. In this first question - training, device availability and device reliability have nothing to do with human factors. Designing the display so the human can see it all lighting conditions is good human factors engineering. When designing a piece of equipment, we cannot make it perfect. Human users are so diverse in training, capabilities and age, among other things, that designing a medical device for all possible users would not be possible. An example of this might be that the design of a dialysis machine for home use is quite different than a dialysis machine for a critical access healthcare setting. These are very different user groups and environments. In the second question good human factors engineering will result in a device that works the way the users expect and need it to an that it will work without any surprises or adverse results. If someone designs a device that is easy to use, works well every time it is used and no one will make mistakes when using it, this would be a good thing. If someone designs a device that is difficult to use and is prone to mistakes, this would be bad. If these two scenarios are possible, then why blame the user for mistakes using a poorly designed device. The users should be considered to be part of a system comprised of the user and the device. So, if an error was made using a device that was working the way it was designed, the error might not be the fault of the user, but the device-user interface. In the third question, blaming the error on the user and calling it a “user error” would be wrong, so we now call these “use errors”.

(Continued on page 17)
New Look

For more than 50 years, ECRI has advanced the science of patient safety and healthcare effectiveness through an unbiased evidence-based approach. Now we introduce a new brand identity that builds on the best of our past, articulates our values, and positions our organization to lead through a new decade in healthcare.

ECRI’s new tagline is “The most trusted voice in healthcare.” Its new brand mark represents the layers of integrity, rigor, and independence—guiding principles that fuel the organization’s ability to empower healthcare professionals to save lives and provide the highest level of care.

ECRI provides assurance to make healthcare safe in three main areas:

Patient Safety. As one of the largest Patient Safety Organizations in the U.S., ECRI has studied millions of adverse events and near misses from more than 1,800 healthcare facilities across acute care, ambulatory surgery, aging services, and physician offices. Armed with this data, ECRI’s patient safety team studies the causes of serious patient safety incidents, researches best practices, and disseminates guidance, benchmarking, and recommendations.

Evidence-based Medicine. ECRI, a federally designated Evidence-based Practice Center, is recognized as a trusted source of guidance and consulting on new and emerging medical technologies, procedures, genetic tests, and clinical practice guidelines. ECRI monitors developing technologies to provide insight into the forces that shape the healthcare of tomorrow using all the available evidence from around the world.

Technology Decision Support. The nation’s only independent medical device evaluation organization, ECRI continuously issues safety and performance ratings and guidance reports from testing and evaluating thousands of devices. Real-time pricing databases enable members to compare products and benchmark pricing on nearly two million supplies and more than 100,000 capital equipment items.

Free Resources for COVID-19 Outbreak Preparedness

In response to the global threat of COVID-19, ECRI Institute has developed a COVID-19 Resource Center. This compendium of resources is freely available to the public—no membership or other payment is required to access it. Explore a broad range of frequently updated resources to help protect your healthcare workers and patients from coronavirus and other outbreaks, including:

- Preparation and patient handling checklists
- Equipment and alternative suppliers
- Evaluations of patient care equipment, including portable ventilators
- Recommendations for infection control
- Resources from the CDC and WHO

Ismael Cordero
Senior Project Engineer
Health Devices Group, ECRI Institute
icordero@ecri.org
Welcome New Members

We welcome our newest members, approved by Membership Committee and supported by the Board of Directors:

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<thead>
<tr>
<th>Name</th>
<th>Class</th>
<th>Job Title</th>
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<tr>
<td>Perry Kirwan</td>
<td>Institutional/Individual</td>
<td>Vice President, Technology man-</td>
<td>Banner Health</td>
<td>AZ/USA</td>
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<td>Christopher Hsieh</td>
<td>Institutional/Individual</td>
<td>Biomedical Engineer</td>
<td>VA San Diego Healthcare System</td>
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<td>James Piepenbrink</td>
<td>Individual</td>
<td>Deputy Executive Director</td>
<td>AAMI Foundation</td>
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<td>Ernie Oates</td>
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<td>Renovo Solutions</td>
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<td>CA/USA</td>
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<tr>
<td>Andrew Kusters</td>
<td>Institutional/Individual</td>
<td>Biomedical Engineer</td>
<td>Dept. of Veterans Affairs</td>
<td>WI/USA</td>
</tr>
<tr>
<td>Dorothy Hodges</td>
<td>Institutional/Associate</td>
<td>Clinical Systems Analyst</td>
<td>Lucile Packard Children’s Hospital</td>
<td>CA/USA</td>
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Congratulations goes to Carlos A. DeSousa Jr., Clinical Systems Engineer II, Stanford Children’s Health, who was upgraded to Individual Level.

Welcome to our newest Corporate Member: RENOVO SOLUTIONS

April Free webinar! Sponsored by Armis.

Topic: Discovering and disclosing vulnerabilities

Description: Sensitive information putting millions at risk. How do companies like Armis find the vulnerabilities that affect billions of devices across the globe? What do you do with information that could be used for sinister means? Join us in learning how Armis finds these vulnerabilities and how they safely communicate them to manufacturers and the public at large.

Speakers: Curtis Simpson, CSIO & Dor Zusman, Senior Researcher, ARMIS.

Date/Time: Tuesday, April 28/ 12-1 pm (ET)

Pre-registration required. To register, click here
American College of Clinical Engineering: COVID-19 Advisory

**Topic:** Professional Advisory on COVID-19 from American College of Clinical Engineering

**Current Situation**

As the outbreak of novel coronavirus (COVID-19) continues in US and most of the world, it is very hard to focus on anything else at this time. We recognize that there is great deal of anxiety about what is yet to come. The CDC has issued a directive related to daily monitoring of personnel for symptoms concerning COVID-19. ACCE strongly encourages all Clinical Engineering/HTM Departments to perform daily checks for their staff, in order to help prevent the spread of COVID-19.

We also recommend having a COVID-19 Preparedness Plan, which should include some or all of the items listed below.

**Daily Monitoring and COVID-19 Preparedness Plan**

### ASK YOUR STAFF TO REPORT SELF MONITORING SYMPTOMS FOR POSSIBLE COVID-19

- Influenza-like illness **or**
- fever (subjective or \( T \geq 100^\circ \text{Fahrenheit/37.8}^\circ \text{Celsius} \) **or**)
- active cough **or**
- shortness of breath **or**
- sore throat **or**
- uncontained secretions (runny nose)

### COVID-19 STAFF PREPAREDNESS PLAN

- Spread out technicians in 3 shifts in order to limit close contact (less people in the shop)
- Separate technicians in clusters working in different areas. If someone gets infected from one of the clusters, you can have other clusters jump in to help
- Identify positions that can work from home or from a remote site, and implement an onsite/offsite schedule
- Utilize Skype/Webex/Zoom or other video communication tools for meetings
- Implement a 10-hour shifts/4 days to limit amount of time onsite
- Eliminate/postpone all non-essential projects
- Do not have vendors/others onsite during this period
- Identify devices that may be a shortage on during this time (Patient monitors, ventilators, CRRT, Heart/Lung Machines, CAPR, etc.) and communicate with vendors for a backup plan
- File a Medical Necessity Document with vendors who have such a program – that way you can get access to certain equipment during the emergency

For more ACCE COVID-19 Resources visit: [https://accenet.org/Pages/ACCE%](https://accenet.org/Pages/ACCE%)
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Impact of COVID-19 on Clinical Engineering Departments

Editor’s note: As you all know, the coronavirus pandemic (COVID-19) is creating chaos for most everyone throughout the world, particularly in healthcare. ACCE leadership, and the editors of ACCE News, thought it would be valuable to highlight a few of the impacts of this rapidly spreading disease on the Clinical Engineering profession. Much of the material for this article was drawn from the Italian CE experience (https://ced.ifmbe.org/blog/covid19-resources.html) and informal interviews conducted over the phone with a few Clinical Engineering directors here in the US. Of course, this situation is changing very rapidly, and some of the information in this article will be outdated by the time you read this. References are listed at the end of the article.

From the Italian experience we see in the COVID-19 growth curve that within two weeks of the first few confirmed positive cases (2/15/20) there was an “explosion” of cases. Intensive care units were quickly saturated, and it was clear that a plan was needed to manage all the Emergency Room patients who were ill, but did not require ICU level treatment. This necessitated the setup of additional hospital beds, either isolation rooms, or other areas, on or off-site, to offload non-COVID-19 patients. Obviously, in order to determine who was positive for COVID-19, timely testing needed to occur. At the time this article is being written, similar catastrophic situations are unfolding in the greater New York City area, New Orleans, Madrid and elsewhere. This “apocalypse” is spreading throughout the world, and is expected to continue for several weeks or months.

In general, for Clinical Engineering staff, the first impact is being tasked with collecting equipment (e.g. monitors, ventilators, pulse oximeters, infusion pumps) and assisting with setting up new facility resources to handle patients (e.g. vacant hospital floors, currently unused hospitals, convention centers, hotels etc). Then, where the virus has hit hardest, it becomes clear that there are, or will be, insufficient internal resources and other equipment has to be obtained (i.e. purchased, rented, borrowed, provided by FEMA etc). Unfortunately, as the pandemic spreads, competition for these “outside” resources reduces their availability.

Some CE departments in the US learned early enough from the Chinese and Italian experiences and were able to do some projections and planning in order to obtain some additional supplies, equipment and other resources in advance of COVID-19 hitting their cities hard. Anecdotal information from a couple of the Clinical Engineering directors I spoke to in the US have indicated that they have been involved in the following from a planning and/or implementation perspective.

Testing: From both an individual patient perspective and population health perspective, testing is very important. Although still somewhat limited in availability in the US, testing is ramping up at outside laboratories, hospital labs and even drive-thru testing arranged by the HDOs, and in some cases Google’s subsidiary Verily. Rather than sending samples out for testing, some HDOs have now implemented, or purchased additional laboratory equipment, in order to run the COVID-19 tests in their hospital labs. There are a few companies (e.g. Thermo Fischer Scientific, Roche) producing newly-approved COVID-19 test kits that can run up to 1,000 tests in an 8 hour period if you have the appropriate lab equipment. There are a few more companies that are in the research and/or waiting for FDA approval phase, that are now, or “soon-to-be”, cleared for marketing for point-of-care testing (15 minute results) and home testing. Of course, it takes more than just a lab analyzer and test kits to test for COVID-19. You need the licensed clinical lab staff, and all the appropriate sample collection equipment (e.g. there is as shortage of swabs in some places), sample prep equipment, the analyzer and then the infrastructure to report the test results to the ordering physician, the CDC and whomever else is required to track the test results.

Clinical Engineering involvement is typically based on whatever their normal engagement was with Clinical Lab equipment purchases and support. CE may be involved in pre-purchase evaluation, IT connectivity evaluation and implementation, incoming inspection and deployment aspects, and repair and maintenance, albeit in a much, much faster-than-normal manner.

Ventilators: In some areas of the world ventilator shortage has become a life-and-death matter. Two hospital CE departments that I spoke with were already in the process of evaluating replacement ventilators and accelerated that process and placed an order for 50+ new ventilators and hope they are delivered before the COVID19 surge hits their cities. But ventilator manufacturer capacity and their supply chain are limited, and hospitals in many major cities throughout the world are competing to get more new ventilators, or borrowing vents from wherever they can. Others are planning to use anesthesia machine ventilation capabilities when the surge hits them.

Some hospitals are testing the use of one ventilator on two, or even more, patients, hopefully just on a temporary basis until other ventilators become available. Reports from those testing these techniques report that for a vent to work on two patients, the patient has to be sedated, the vent has to be in CMV mode (continuous mandatory ventilation), or similar, and pressure cycled, because settings cannot be individualized (same settings for both patients). Ideally, a written protocol, staff training, and external monitoring of etCO2, pressures, and other parameters for each patient is needed. Others are using BiPAP or CPAP machines to assist ventilation in the less severely ill patients that still need respiratory assistance. These are all crisis-only interventions and there are a lot of patient and staff safety concerns, so read the latest reports and proceed with caution.

The FDA has relaxed some of its guidelines and regulations in order to help with the shortage of equipment, particularly ventilators. They have also relaxed some of their guidelines to allow more remote (outside the room) control of ventilators to help reduce staff exposure, although the technology for that has limited availability.

Again for the CE department, depending on their normal involvement with ventilators and anesthesia machines, CE staff are work-
AAMI Updates on Coronavirus

The health and safety of our global community is our highest priority. As the situation involving the COVID-19 coronavirus outbreak continues to evolve, AAMI is working to ensure a seamless experience for our members and customers. No matter the circumstances, we remain committed to supporting you in carrying out our shared mission of advancing patient safety.

For the latest updates, including rescheduled or reconfigured events, visit www.aami.org/coronavirus.

2020 AAMI Exchange Cancellation

After carefully considering the impact of the COVID-19 pandemic, AAMI made the difficult decision to cancel our annual conference and expo, the AAMI Exchange, which was to be held at the New Orleans Ernest N. Morial Convention Center from June 12–15, 2020. We made this decision to protect the health and safety of our community.

We share in your disappointment, and we understand that many of you will have questions about our next steps, including refunds and the potential for alternative educational opportunities. For answers please visit here.

Coronavirus Standards and Resources

AAMI has released three standards and technical information reports (TIRs) at no cost. These resources address the production, selection, and use of personal protective equipment (PPE) and surgical drapes for the healthcare environment and the effective disinfection of medical devices, patient-care equipment, and sterile processing environmental surfaces. For a full list of available coronavirus resources from AAMI, visit www.aami.org/Coronavirus_Resources.

AAMI Names 2020 Award and Scholarship Winners

Several members of the health technology community will receive an AAMI award or scholarship. Each year, AAMI and the AAMI Foundation recognize health technology’s best and brightest for their leadership, dedication, and contributions to AAMI and their fields.

“Together, these clinicians, healthcare technicians, engineers, standards volunteers, young professionals, and students are advancing the field of healthcare technology and improving patient outcomes,” said AAMI President and CEO Rob Jensen. “It’s the honor of AAMI and the AAMI Foundation to celebrate these individuals for their achievements and to thank them for inspiring us all to push harder for safe and effective health technology.”

This year’s winners are:

- The AAMI Foundation’s Laufman-Greatbatch Award: Michael Scholla, DuPont Medical Packaging
- The AAMI Foundation & ACCE’s Robert L. Morris Humanitarian Award: Frank Painter, University of Connecticut
- The AAMI Foundation & Institute for Technology in Health Care Clinical Solution Award: Samuel Gurmu, University of Maryland Medical Center
- The AAMI Foundation & TRIMEDX John D. Hughes Iconoclast Award: George Mills, Jones Lang & LaSalle
- AAMI & Becton Dickinson’s Patient Safety Award: Michelle Jump, MedSec
- AAMI’s HTM Leadership Award: Kurt Finke, U.S. Department of Veterans Affairs
- AAMI & GE Healthcare’s BMET of the Year Award: Nicholas Grecco, Baycare Health, Morton Plant North Bay Hospital
- AAMI’s Young Professional Award: Angela Bennett, TRIMEDX / Ascension Borgess Health
- The Spirit of AAMI Award: Steven Baker, Oregon Health and Science University
- AAMI’s HTM Association of the Year Award: New England Society of Clinical Engineering
- Standards Developer Award: Daniel J. Cooke, Boston Scientific; Theodore Heise, MED Institute, and Dennis Jenke, Triad Solutions; and Changfu Wu, Food and Drug Administration
- The AAMI–HSEA Health Systems Engineering Scholarship: Rima Viradia, Bayside Medical Center, University of Connecticut
- AAMI Foundation Michael J. Miller Scholarship: Isha Arora, Cornell University; Mutecki Baguma, South Hills High School; Jacqueline Bertan, University of Connecticut; Taylor Dade, Columbia University; Shelby Johns, University of Connecticut; Jona-

(Continued on page 17)
than Low, St. Petersburg College; Darian Napolean, Harvard University; Joseph Rowan, Texas State Technical College; Emily Sizemore, University of Connecticut; and Rudolph Wagner, Texas State Technical College.

More information about the AAMI Awards Program can be found at [www.aami.org/awards](http://www.aami.org/awards). For scholarship information, visit [www.aami.org/scholarships](http://www.aami.org/scholarships).

Updated Resource Answers Wireless Technology’s Frequently Asked Questions

With more and more medical devices going wireless, there are bound to be questions—from what to look for in a wireless medical device to the importance of wireless bandwidth.

That’s why AAMI has released The Medical Connectivity FAQs, a free resource developed to help healthcare technology management (HTM), IT, and facilities management professionals understand the state of wireless tools and technologies, their use in healthcare, and how they can best be managed based on each profession’s responsibilities.

“We hope that this document serves as a medium for HTM professionals to increase their understanding of wireless topics, enabling them to participate more fully in conversations about hospital network decisions that have a clinical impact, leading to increased communication and cooperation, and ultimately, improved patient outcomes,” said Steve Baker, PhD, clinical assistant professor at Oregon Health and Science University in Portland, OR, and editor of the FAQs.

To that end, the FAQs provide answers and actionable tips from the WSTF to 81 questions submitted by subject matter experts, including security and network architects, HTM professionals, software and device manufacturers, and healthcare providers.

The FAQs were developed by AAMI’s Wireless Strategy Task Force, which was recently integrated into the Health Technology Alliance, a partnership consisting of AAMI, the American College of Clinical Engineering, and the Healthcare information and Management Systems Society. The first edition was published in 2014.

The Wireless FAQs are available for free download in the AAMI Store.

AAMI Mourns the Passing of Cesar Caceres, Father of Clinical Engineering

Cesar Caceres, cardiologist and former AAMI Board of Directors chairman and president, passed away on Feb. 9, 2020. Caceres was one of AAMI’s first members. He joined the association while employed at the Public Health Service (PHS) Medical Systems Development Laboratory. There, he and his colleagues developed the first functional computer electrocardiographic interpretive system in the U.S. During an interview about his work at PHS, Caceres used the term “clinical engineering” to describe the combination of computers and healthcare.

In 1983, Caceres founded and served as the executive director of the Institute for Technology in Health Care (ITHC). The nonprofit group encourages the use of technology to benefit health or the delivery of health-related services. In collaboration with the AAMI Foundation, ITHC offers an annual Clinical Solution Award to a healthcare technology professional or group that has applied innovative clinical engineering practices or principles to solve patient care problems.

“On behalf of all of us at AAMI, we send our sincere condolences. Our heart goes out to his friends and family. Dr. Caceres’ legacy will live on with the annual AAMI Foundation and ITHC award,” said Steve Campbell, AAMI chief operating officer and executive director of the AAMI Foundation.

CCE Prep Column (continued)

Devices which mislead the user into assuming it worked correctly, even though a mistake was made, were poorly designed from a human factor’s perspective. In the case of the scenario in the fourth question the device user interface was misleading. A well-designed device, however, will prevent mistakes from happening, or reduce the likelihood of mistakes being made. Problems with training, failed components and maintenance are not human factors issues.

References:

[https://www.fda.gov/media/84709/download](https://www.fda.gov/media/84709/download) - “FDA Perspectives on Human Factors in Device Development”, Molly Follette Story, PhD

Do It By Design – An Introduction to Human Factors in Medical Devices, Dick Sawyer, Office of Health and Industry Programs

Designing Usability into Medical Products, Michael E. Wiklund & Stephen B. Wilcox

Frank Painter
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IFMBE CED: Clinical Engineers respond to COVID19

Background

Now is an abnormal and rapidly changing time. The IFMBE Clinical Engineering (CE) Division is joining many others in providing information to address COVID-19 issues that are specifically challenging to the CE profession. Part of our efforts is establishing an information resource page at our website; see https://ced.ifmbe.org/blog/covid19-resources.html. As with many others in healthcare, this is a work in progress and we will update the information as it becomes available.

We have previously developed Seminars and Training about Disaster Preparedness (DP) Plans specifically aimed at the CE profession and medical physicists. These trainings were provided at the IUPESM World Congress and in collaboration with the World Health Organization (WHO). Now we realize that part of the overall preparedness for disasters must include events like the current global COVID-19 crisis.

So like any disaster, when CEs want to be prepared, they should be part of an overall plan that requires establishing protocols, training of personnel, and provision for staff staying in place and getting back-up as needed. We encourage you therefore to have a DP Plan for your Department, and to practice it even if you are not in typically naturally occurring disaster locations. This means that you should have complete understanding of what the mission of your Department is under such conditions, and what the priorities are regarding equipment and related supplies. This discussion and decisions should have already been taken with your superiors. Don’t forget to have vendors involved in the plan and clearly inform them of your expectations.

Two Global Resources ... and more coming

Today, assuming you do have a DP Plan, the emphasis should be on protecting patients and healthcare personnel (and their families) and keeping medical equipment clean. How can we do this? For CED, the answer is daily communication through WhatsApp and curated information on our website resource page.

As input into our website, CED has operated a WhatsApp group for several months. So far, over 60 members of our Board and Collaborator teams have joined this group – we now have a 12-person board and 130 Collaborators from 60 countries, see https://ced.ifmbe.org/about-us/who-we-are.html, and two part-time staff (Secretariat & Webmaster). In the last several weeks, as the COVID-19 crisis has unfolded, our WhatsApp daily traffic has increased significantly. Lessons from China, Italy, and elsewhere have been pouring in. For more information about this group, contact CED at info@ced.ifmbe.org.

This led to the creation of our ever-updating Website resource page, with curated information from WhatsApp. Countries like Italy have set up their own national CE society web resources, and we link to them and others like ECRI. See the other article in this issue of ACCE News detailing the response of our Italian colleagues from AIIC to the crisis.

Next Steps

The World Health Organization (WHO) Medical Device Unit, led by CE colleague Adriana Velazquez, is performing a mighty task addressing the need for ventilators, monitors, diagnostic kits, and many other ICU and other relevant treatment area devices. Adriana has asked CED to establish a ‘rolling Global CE Day-like video’ giving snapshots into our colleagues lives in China, Italy, Africa, Latin America and elsewhere showing challenges and solutions in this difficult time. We hope to provide this by the time of this publication, stay tuned.

References


USA CDC: https://www.cdc.gov/coronavirus/2019-ncov/

USA NIH: https://www.ncbi.nlm.nih.gov/pubmed/31067733

Yadin David & Tom Judd, with AIIC CE Colleagues
CE Departments Responding to COVID-19

Banner Health:
“Kudos to our Technology Management/ENTECH staff for putting in extra hours to make sure medical devices are operational during this critical time. Leaders remain engaged with clinicians to ensure we have all the necessary devices (ventilators, infusion pumps, vital signs monitors, anesthesia machines, etc.) in response to the expected surge activity! All service functions within the department have been briefed on their roles and how to maximize throughput, at the same time caring for themselves and their family members.”
— Perry Kirwan, VP

TM/ENTECH staff Kyle Wagner, Tanner Wright, Robert Branch, Cesar Santos, Steve Sponhouse, Michael Romito, David Rosales, putting in extra hours to make sure that medical devices are operational during this critical time.

Devin Diaz and Justin Ricketts soldering batteries to make BIPAPs operational.
CE Departments Responding to COVID-19

Holland Hospital, Holland, MI:
The Holland Team helped create a COVID-19 patient surge floor. This “Flash” project comprised of 18 monitored beds with a central station. Hospital beds were also relocated to the floor. Both the beds and patient monitors were earmarked for a June project. The team helped coordinate network ports with our IT teammates. The team configured the central station and tested a secondary alarm nurse notification system. The project took just two days from planning to completion.

At the time this picture was taken we were finalizing our plan to operate in two 3-day weekly shifts. This will help protect our team and help ensure support to our front-line Clinical staff. We are now also an all mask all the time environment.

I encourage my fellow HTM leaders to be there for your respective teams. Listen to their ideas, concerns, and their fears. We are an incredible community. Every one of you are amazing. Continue to be safe and strong out there!

By member Jeffrey Ruiz (CHTM)
Technology Manager
Holland Hospital Biomed

One of the last days that our team would be all together until the COVID-19 crisis subsides.
CE Departments Responding to COVID-19

Brigham and Women’s Hospital, Boston, MA:
Biomed has a special team ready to be deployed at a moment’s notice when a special pathogen unit (SPU) is identified or an additional ICU must be set up. The team collaborates with clinical leaders on the unit to develop and implement these patient care strategies.

Kaiser Permanente, San Diego Medical Center, San Diego, CA:
In addition to established guidelines, our 100% CBET team at Kaiser Permanente, San Diego Medical Center are actively evaluating creative solutions to help combat COVID-19. We implemented additional guidelines to keep our workspace virus-free by following strict requirements when moving in and out of the shop, minimizing travel of carts, tool, and equipment, and limiting access to authorized personnel only. Additionally, we secured a secondary shop that is centrally located in the facility; it will be our “contaminated” workspace to prevent cross-contamination. We are also identifying and ordering repair/spare parts and PM kits for critical equipment. There’s a strong push to increase awareness through online trainings, webinars, and publications. Stay safe and be an advocate for each other’s well-being. #wearestrongertogether #IamHTM

Biomed staff are actively involved in COVID-19 preparedness activities as they help to ensure that patient rooms are set up with technology and devices to support high-quality, and safe patient care wherever it’s needed.
CE Departments Responding to COVID-19

Children’s Hospital of Eastern Ontario (CHEO), Ottawa, Canada:
By Kim Greenwood, Mark Asbil & Mugdha Manerkar

We are team members with the regional Clinical Engineering Service based out of the Children’s Hospital of Eastern Ontario (CHEO) located in Ottawa, Canada and are currently under a State of Emergency in Ontario due to the COVID-19 outbreak which compels everyone except essential workers to stay home. So far the “stay at home” policy is working fairly well but this may be partially due to the fact that government has reinforced this measure with stiff fines to encourage compliance. Our hospital has put into place a COVID-19 Incident Management Team to keep our hospital functioning. Since we operate a regional CE service in Eastern Ontario we have to focus on keeping our medical technology operational both in our hospital and the other 19 healthcare facilities we support.

Staff at our main site, are now working different shifts to increase physical separation in the small work space we have. This planning includes scheduling techs based upon expertise so they do not cross paths. For our off site locations physical space limitations are not as concerning. We conduct daily mandatory t-con huddles with our entire team to gain operational awareness across our 19 thousand square kilometer working area.

Within CHEO our Operating Rooms (OR) have temporarily changed their Personal Protective Equipment (PPE) process completely. The hospital has also cancelled all elective surgery until further notice. There are two levels of OR room access precautions that have been put into place “airborne/droplet precautions” and “COVID-19 Positive cases”. It is an either or situation for the near future. (For COVID-19 positive cases the OR are intubating patients in a PICU negative pressure room using an anesthesia machine.) When OR staff request our help CE staff will only enter the OR if it is absolutely necessary. We will do what we can without entering the room or correct the issue between cases when room/equipment has been cleaned and removed. If we enter a clean OR afterward to perform repairs, we are still required to dress in “droplet” PPE to keep the room at the same level. Before COVID-19, we would go into an OR on a routine basis as normal process in standard OR dress. (Very rarely were droplet precautions utilized).

Our CE “OR techs” and several other techs have been trained on the new OR procedures/process. This has included recertification of N95 fit testing.

In terms of having to go into “a patient room” that is or suspected to be COVID-19 positive the expectations are the same as the OR- no entry unless it is absolutely necessary. (Life or death patient/equipment-related situations which is a very rare situation). Otherwise we don’t touch equipment until it is appropriately cleaned and removed.

We will provide a further update in the next newsletter. We encourage everyone to stay safe for yourself and your loved ones.

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Members on the Move

Eric Aring, BS, MBA, CBET, CLES

New Organization: Mayo Clinic
New title: HTM Program Manager
Department: Health Technology Management at Mayo Clinic, Minnesota
Role: Oversee and coordinate product support, and other strategic initiatives across the Mayo Enterprise organization for Connected Care

Arleen Thukral, CCE

New title: Healthcare Technology Manager.
Role: Arleen is responsible for maintaining and implementing the Healthcare Technology management program and confirming that it meets or exceeds the Joint Commission, NFTA, OIT, FDA, and other requirements.
World Health Organization Collaborating Center for HTM Update

The WHO Collaborating Center for Health Technology Management at the Technical Services Partnership at the University of Vermont (UVM) offered the Healthcare Technology Planning & Management course for the third time on the Pan American Health Organization (PAHO) Virtual Campus for Public Health. The course ran from September 23 – December 15, 2019. The course leadership included academic coordinators and professors from the collaborating center: Tobey Clark - English course, Rossana Rivas – Spanish course and tutors Tatiana Molina Velasquez from Colombia and Maria Sol Maldonado from Argentina. Sixty-four students successfully completed the course with 31% passing with excellence – the highest level. The professions represented included 40% Engineers, and 16% Physician Executives, and other participants in the fields of Information Technology, Pharmacy, Purchasing, Laboratory, Dentistry, Nursing, Physics, and Architecture. The course evaluations were positive with the biggest advantages noted to be: Access to diverse sources of information, Autonomy & freedom of schedules, Exchange with colleagues, and Variety of communication tools.

Following the PAHO 11th Annual Meeting of the Health Technology Assessment Network of the Americas in November, the collaborating center was formally invited to be a member of PAHO’s RedETSA which is the Network for Evaluation of Health Technologies in the Americas. RedETSA includes 34 members from the Americans from various entities including the Ministry of Health, WHO collaborating centers, and other public health technology assessment groups. We are the only member from the USA and are currently focusing on the medical device working group formulating a protocol for medical device assessments. RedETSA also has a valuable resource of over 1,500 health technology assessment reports at the Regional Database of Health Technology Assessment Reports in the Americas (BRISA).

In Peru, Rossana Rivas, WHO Collaborating Center for HTM Senior Advisor, is working with a number of health technology stakeholders at the Ministry of Health, ESSALUD, Comptroller’s office (administrator of hospital accreditation surveys), and the professional organizations - Peruvian College of Engineering and the Peruvian College of Physicians.

In 2020, three new international interns started work with the Technical Services Partnership (TSP). They include Vadisha Peru and Matthew Tung from the University of the West Indies, St. Augustine, Trinidad & Tobago campus, and Julian Pinzon from Universidad EIA in Medellin, Colombia. Vadisha and Matthew, who have biomedical engineering technology degrees, are focused on medical equipment quality assurance and service at the UVM Medical Center while Julian, a fifth year BME student, is working on several data analytics projects including a re-evaluation of our AEM program, report development, and data cleansing. TSP also employs five undergraduate BME students from UVM.

Lastly, Ilir Kullolli, ACCE President, made a virtual guest presentation in the UVM course BME 296 – Clinical Engineering covering the value of ACCE, membership and activities at Stanford Children’s Hospital. Other guest presenters in the course taught by Tobey Clark have been Rossana Rivas, Sue Schade, CTO UVM/AMH, and the TSP UVM Medical Center clinical engineering team.

Tobey Clark
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L-R: Matthew Tung, Vadisha Peru and Julian Pinzon – International interns
Health Technology Unique 2019 Partnership in Peru: Leading the Change

On November 12-13, 2019 over 350 on-site and 100 remotely-connected professionals attended the Health Information & Communication Technology (HICT) 2019 International Congress in Lima, Peru. The event was organized by Health Technology Committees of the Peruvian Engineers College, led by Eng. Rene Mitma and the Peruvian Physicians College, led by MD Gabriel Castro. The event was attended by representatives from Peru’s MoH, Social Security System, Ministry of Transportation and Communications, and the Presidency of Ministry’s Council.

Also attending were representatives of a number of non-profit organizations, industry corporations, professors and students. The HICT’s 2019 International Congress program included round tables, entrepreneurs’ presentations and research posters. Among the faculty were Stephen Grimes (Strategic Healthcare Technology Associates, LLC and ACCE member), César Galindo (Health Information System National Center-CENS and University of Valparaiso-Chile), Rossana Rivas (WHO Collaborating Center-Senior Advisor, CED-IFMBE member), and Luis Vilcahuaman (APBIO leader, ACCE & CED-IFMBE member). Last 2 are members of the Peruvian Engineers College Health Technology Committee. Among topics addressed at the Congress were Health IT, Telehealth, Health Technology Policy & Regulation, Health Technology Innovation, and Interoperability. A list of interviews (and links) with some of the presenters can be found below (english sub-titles are available):

- Health Technology Impact: [https://www.youtube.com/watch?v=w-NP5xRZrIBY](https://www.youtube.com/watch?v=w-NP5xRZrIBY)
- Health organization & Innovation: [https://www.youtube.com/watch?v=M2c6-CCmS58](https://www.youtube.com/watch?v=M2c6-CCmS58)
- Technology Transfer Relevance: [https://www.youtube.com/watch?v=sRH3_Bo8A1M](https://www.youtube.com/watch?v=sRH3_Bo8A1M)
- Health IT Projects: [https://www.youtube.com/watch?v=JCTK_ujcy20](https://www.youtube.com/watch?v=JCTK_ujcy20)
- Patient Safety and IT: [https://www.youtube.com/watch?v=kSyORUOy87g](https://www.youtube.com/watch?v=kSyORUOy87g)

One of the Congress’s highlights is “Lima’s Statement” / “Declaración de Lima,” an agreement to “promote a comprehensive approach to health and welfare of Peruvian society supported by health technology,” it was signed by the Deans of the two Professional Colleges in December 2019 ([https://www.youtube.com/watch?v=jinhHmM07x8&list=ULP0aipW5bjzM&index=4240](https://www.youtube.com/watch?v=jinhHmM07x8&list=ULP0aipW5bjzM&index=4240)). The Peruvian Professional Colleges’ agreement is a milestone in the Peruvian health sector; the value of the high impact partnership received special mention at the Peruvian Professional Colleges Annual Ceremony in January 2020.

According to Dr. Liliana Cabani, Dean of the Peruvian Physician College, the biggest challenge related to the use of Health Technology in the country is the number of barriers to access health services. She also remarked: “health is everyone’s job”. By his side, Peruvian Engineers College of Lima’s Dean, Eng. Oscar Anyosa remarked that the unique partnership’s value to promote professional collaboration focused on health technology in benefit of Peruvian population. Eng. Jorge Cueva, Electronic Chapter President of Peruvian Engineers College remarked on the strategic value of the professional partnership to promote the change. November 2019’s milestone was successfully achieved, and Stephen Grimes-Strategic Healthcare Technology Associates, LLC, USA, and CENGETS successfully supported the event’s objectives. A key partner in health technology activities in Peru over the past 15 years is the Technical Services Partnership at the University of Vermont. Tobey Clark, Director of WHO Collaborating Center for HTM stated, “We applaud the landmark meeting and agreements reached between the professional medical and engineering organizations and look forward to continue our collaboration with Peruvian entities through the efforts of Rossana Rivas, Senior Advisor for the collaborating center.”

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L-R: Stephen Grimes, Rossana Rivas

L-R: HICT 2019 International Congress closing ceremony
Impact of COVID-19 on Clinical Engineering Departments

(Continued from page 15)

Working closely with physicians and Respiratory Therapy staff on testing new ventilator strategies, conducting accelerated incoming inspections (make sure the new/borrowed machines function correctly), deployment, and making sure that the RT staff know how to use them. They are also testing, repairing and placing older ventilators that were in storage back into use.

**Other equipment:** Procurement of other additional equipment may also be necessary. Pulse oximeters, patient monitors with end tidal CO2 capability, and large volume infusion pumps, as well as all the accessory equipment that goes with the ventilators (e.g., Air/O2 blenders, heated humidifiers) are all in great demand.

**Telehealth:** Where Clinical Engineering staff are closely associated with IT, they are helping set up more telehealth capabilities as more and more health care services (COVID-19 and otherwise) are moving to phone and on-line video clinic “visits”. Technology for remote monitoring of vital signs at home is being deployed, as well as remote monitoring in the hospital to reduce the contact between staff and COVID-19 patients.

**New physical spaces:** Clinical Engineering staff are also asked to assist with deploying equipment in new areas set up for additional beds for patients. For example, using operating rooms as ICUs, occupying previously unoccupied floors or wings, or even unoccupied hospitals, same day surgery centers, hotels, convention centers etc. Some of these areas can be a real challenge for special utilities (e.g. medical gases) and isolation, and depending on the area’s role, may or may not need a significant amount of equipment beyond beds.

3-D printing: A few Clinical Engineering departments are involved in 3-D printing and are testing their internal, or locally contracted, 3-D printing capabilities to manufacture personal protection equipment (PPE) such as goggles and face masks.

Of course, all of this equipment has to be kept working. Most of the above mentioned work roles are common Clinical Engineering tasks, although the scope of the pandemic is HUGE, and the timing accelerated, compared to other more “local” disaster preparedness. Also, Clinical Engineering staff, like all hospital staff, are concerned about their own health and the health of their families. Most of the CE BMET work requires CE staffing on site, so staffing all this additional work is a big concern. And PPE is limited so CE staff are trying to stay out of patient rooms, and not use PPE unless they have to go into an isolation room or area.

As is typical in Clinical Engineering work, some other technical problems have already occurred that were not thought of beforehand. One example is as follows:

PAPRs are powered respiratory protection systems for staff. They use a blower instead of lung power to draw air through a filter. This lets you breathe more naturally while feeling a constant airflow. They allow men with facial hair protection, which is not the case with N95 masks, to go into COVID-19 isolation rooms. Clinical Engineering departments typically are responsible for maintaining PAPRs, which are often kept in storage. These devices need to be periodically tested, and their batteries maintained, similar to other medical products. One hospital mentioned that they were maintaining their PAPRs, but, soon after the PAPRs were put into use in the ER due the first cases of COVID-19, they started to receive somewhat-frantic service calls regarding a few PAPR failures during use. Battery problems were causing the PAPRs to stop working even though the batteries were supposedly charged. It turned out that the cleaning process that the PAPRs were going through between uses was causing corrosion on the battery terminals which was causing premature battery issues. The cleaning process was revised, the PAPRs repaired and put back into use.

I’m sure there will be many stories like this as this disaster progresses.

Stay healthy!

**References:**

ACCE: [https://accenet.org/Pages/ACCE%20COVID-19.aspx](https://accenet.org/Pages/ACCE%20COVID-19.aspx)

Italy: [https://ced.ifmbe.org/blog/covid19-resources.html](https://ced.ifmbe.org/blog/covid19-resources.html)


Ted Cohen

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ACCE Calendar

For event details and links go here.

April 28, 2020
12:00 pm - 1:00 PM
Complimentary webinar: Discovering and Disclosing Vulnerabilities

29 April, 2020
12:00 PM-1:00 PM
CCE Oral Review Webinar
Join our faculty Frank Painter to prepare for your 2020 CCE Oral Exam.
Location: Online
Faculty: Frank Painter, CCE
Registration Form

14 May, 2020
12:00 PM-1:00 PM
Cybersecurity Tools in CE-IT
Tools that can be utilized for cybersecurity, not necessarily passive monitoring applications, low resources medium/small
Location: Online
Faculty: David Guffrey

May 28, 2020
12:00 pm- 1:00 PM
Complimentary Webinar: Real-world management of a medical device

11 June, 2020
12:00 PM-1:00 PM
Systems Level Analysis, Moving Beyond the Device
Systems level troubleshooting moves beyond the device, from electronics to communication and even into human factors.
Focusing on an individual device can create tunnel vision that isolates us from the true root cause of the problem. Moving beyond the Device we will take a step back and view systems as a whole.
Location: Online

June 12–15, 2020
AAMI Exchange
CANCELLED

14 June, 2020
Last day to submit your 2020 CCE renewal application package
Renew your CCE certification by June 14. Failure to submit a renewal application by this date will result in the cancellation of the certification.
https://accenet.org/CECertification/Pages/Default.aspx

01- 05 March, 2021
HIMSS 2021
Location: Sands Expo, Las Vegas, NV

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