ACCE News

Newsletter of the American College of Clinical Engineering

May — June 2017 Volume 27 Issue 3

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President's Message

Hot, and sunny, greetings from Austin Texas! The 2017 AAMI Conference and Exposition just finished, and I am preparing to travel home to a somewhat less hot central Canada. This year's meeting marked a special occasion for AAMI – they celebrated their 50th anniversary, and I am really pleased that ACCE was able to make a strong showing of support for one of our key partner organizations in the broad field of health care technology management. Those of you fortunate enough to take in the meeting in Austin will have had a chance to participate in numerous receptions/celebrations hosted by AAMI including the signature event at Maggie Mae's on Sunday evening. Austin's live music capital of the US reputation was on display as was a host of delicious BBQ meat. Throughout the events, everyone got to meet the new AAMI President and CEO, Robert Jensen. Mary Logan, Robert's predecessor, did a lot of work strengthening the relationship between AAMI and ACCE. When I learned a few months ago that Robert is an engineer, I was thrilled because I knew that the built-up momentum would continue, and with a shared understanding rooted in the technical world, ACCE and AAMI would be positioned very well for the future.

Many articles and vignettes will be published in the coming months about the AAMI meeting in Austin so I will resist the temptation to write too much here. I do want to recognize the hard work of ACCE members and staff for their contributions to making the meeting a great experience for all attendees. The annual ACCE Clinical Engineering Symposium, sponsored by PartsSource, held on Saturday focused on imaging as a new frontier. The number of presentations arranged for the morning, and their quality was truly impressive. Whether you were a veteran clinical engineering professional or just beginning your career, there was something to be learned from the knowledgeable speakers. The education committee co-chairs, Jennifer DeFrancesco and Rodney Nolen were assisted by Austin Hampton in putting the program together. Jennifer is rolling-off the Committee as co-chair and will be replaced by Austin. Thanks for picking up the torch, Austin.

The Annual ACCE Members Meeting and Reception was a resounding success. I had the privilege of acting as master of ceremonies and what a pleasure it was. The event was sponsored by 5 generous partners, Enlighted, Phoenix Data Systems, ISS Solutions, MDISS and RPI; many thanks for helping to make the reception possible. Our Committee Chairs provided updates on their work – I am always impressed by how much they do. Of particular significance were the awards organized by the Advocacy Committee chaired by Steve Juett. He is stepping down from the Committee this year and has done a fabulous job. I would like to extend thanks also to Jennifer Ott for her leadership of the CE Hall of Fame Committee; she is stepping down after three years in the position. Congratulations go to the Class of 2017 CE Hall of Fame Inductees, Dr. Larry Fennigkoh and Dr. Binseng Wang. As witnessed by all the amazing achievements recognized, the depth of talent that exists in our clinical engineering community is inspiring and never fails to humble. While it is

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President continued

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significant that we recognize our colleagues, I think that as a community we need to find ways to make people outside of clinical engineering aware of the significance of the work done to benefit society. Something to think about.

The ACCE Board held its annual face-to-face meeting on Friday night, June 9th following the AAMI's welcome reception. The 3 hour Board meeting was a very good one. In addition to the set agenda, the Board embarked on the first steps of a strategic planning initiative wherein the strengths, weaknesses, opportunities and threats to ACCE were discussed. The Board is fortunate to have amongst its members a clinical engineer who works actively on strategic planning in her day job. So we have that expertise available to guide us through the needed steps and work. If the first step is any indication of how the rest of the process will go, then it will be a very exciting time in the coming months. Stay tuned for more information. Also at the Board meeting, a new committee was launched called the CE-IT committee. This area of clinical engineering practice is more significant than ever, and having a formal committee within ACCE will provide the structure we need for the future.

I want to reflect on a topic that came up during the AAMI meeting, value vs volume in healthcare. I think that as engineers and technicians, we inherently recognize the importance of focusing on "value". Some other areas of healthcare practice will either have to learn it or will have to convert their focus to it be successful. It is my observation that the health system will be moving to adopt various permutations of the "value vs volume" question or principle in the coming years, and many decisions that were made on a different basis will be based on this principle in the future. I've been able to attend another meeting this year that was largely attended by C-Suite people, and this meeting was filled with this issue. Reimbursement formulas are changing to motivate providers to put a higher emphasis on value than on volume. I think this trend will continue and will fundamentally change health care provision. Clinical engineers are positioned very well to work in this new environment because our inherent critical thinking capacity naturally seeks to understand the value that technology brings to healthcare. Getting that message out and taking leading roles is the challenge for our community.

I am going to end on special note of thanks. Many of you have regular contact with Suly Chi, our ACCE secretariat for day-to-day matters related to ACCE work and your membership. But you may not be aware of just how much Suly does for ACCE and how committed she is to the success of the organization. I cannot think of another person who so consistently and enthusiastically promotes ACCE, clinical engineering and clinical engineers. Thank you Suly!

In addition to all her other ACCE duties, Suly inspects fish prior to the ACCE reception.

Petr Kresta

President@ACCEnet.org

Candidates Announced for ACCE's Upcoming 2017 Election

The June 9th Board meeting was held in person during the AAMI conference in Austin, Texas.

The complete slate of nominations for the 2017-2018 ACCE Board of Directors was presented by Paul Sherman, on behalf of the Nominations Committee. The slate was presented as follows:

President: Arif Subhan

President-Elect: Ilir Kullolli

Vice-President: Alan Lipschultz

Treasurer: James Panella

Current Secretary and Members At Large will be returning for 2017-2018 to complete the second year of their two year-term

Petr Kresta will automatically become immediate Past President upon election of the new President.

This slate was approved by a unanimous vote by the Board and was presented at the Annual Members meeting on June 10, 2017.

Elections will be held in July, with the new Board taking office at the board meeting on August 25, 2017.

Paul Sherman, Past President and Chair of Nominations Committee

nominationschair@accenet.org

ACCE News

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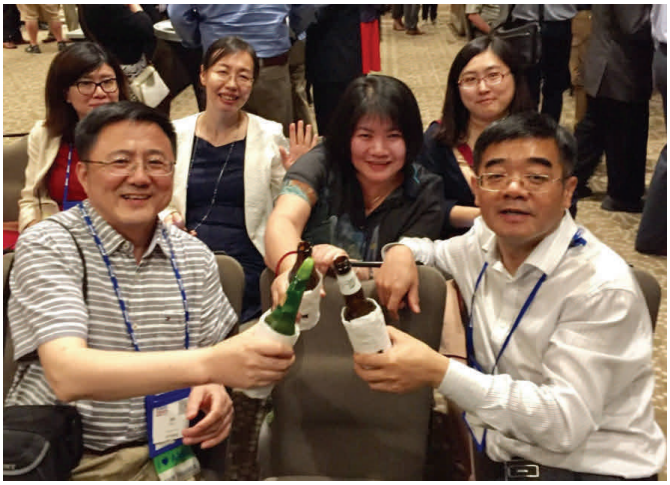
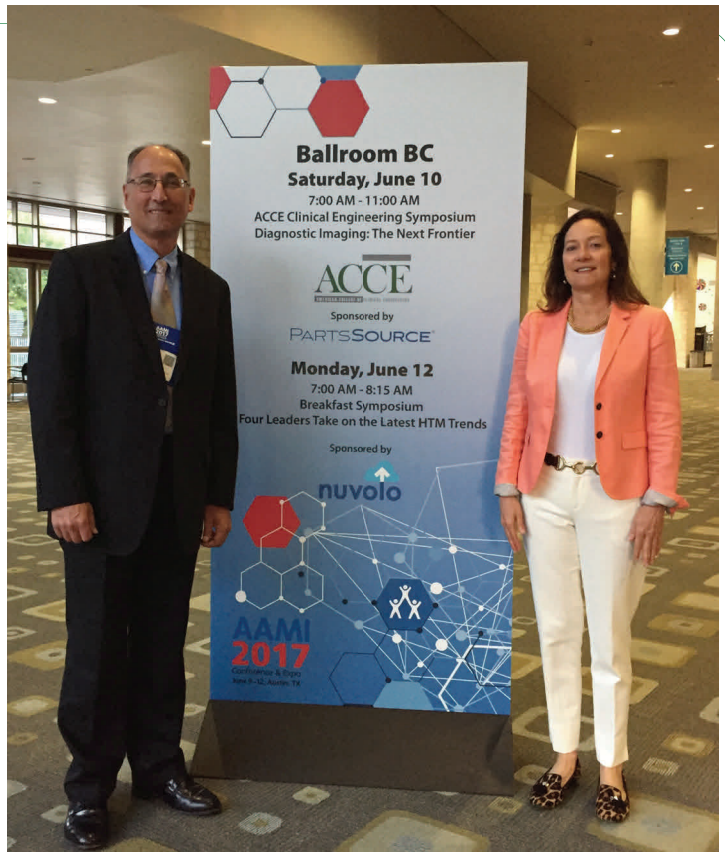
More ACCE at AAMI 2017

Magician, and ECRI Institute Clinical Engineer, Mark Bruley (right) demonstrating magic tricks with help from Mike Capuano.

Traffic at the ACCE Booth was heavy during the three AAMI exhibit days, with members visiting from the US and around the world! From left to right, front to back: Arif Subhan, Petr Kresta, Katsuji Otsuka(Japan), Jim Panella. Back row: Suly Chi, Michele Manzoli, Mery Vidal Vidal(Peru), Rodney Nolen, Antonio Hernandez and Hiroki Igeta (Japan).



The delegation from the Chinese Society for Clinical Engineering relaxes at the ACCE reception.



ACCE Symposium Keynote Speakers: David Berkowitz & Jennifer Myers, ECRI Institute.

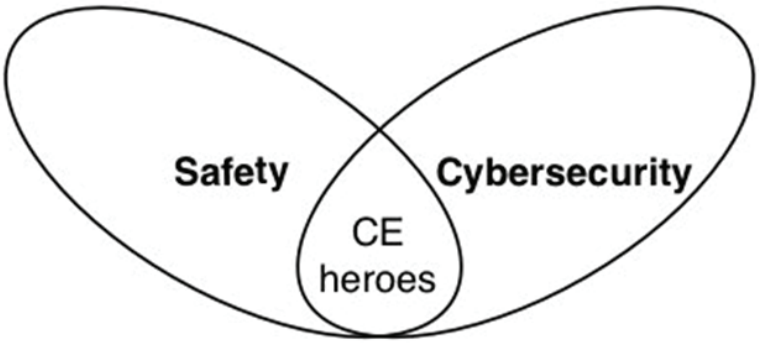
ACCE President Petr Kresta (left) and AAMI President and CEO, Robert Jensen at the ACCE Reception.

ACCE Reception and Awards Ceremony at AAMI 2017

Awardees receive congratulations and plaques from Petr Kresta, ACCE President. Left to right, top to bottom: Binseng Wang (with Jennifer Ott), Larry Fennigkoh (with Jennifer Ott), Manny Furst, Mike Busdicker, Jim Keller, Tim Ritter, Katrina Jacobs (for Tom Bauld), Tobey Clark, Tom Judd.

International members from Brazil, Fiji, Colombia, China, Mexico, Peru and more join the International Committee members at the ACCE reception.

How to Safely Divine Clinical Risk from Cybersecurity Risk



Editor's note: ACCE News is fortunate to have guest authors, and cybersecurity experts, Ben Ransford, PhD and Kevin Fu, PhD provide this article for our May-June edition. Dr Fu also gave the Harken lecture at AAMI earlier this month.

Many U.S. healthcare providers were caught off guard in May 2017 when ransomware went rampant in hospital facilities across Europe. But what warning signs did clinical engineering managers receive before the ransomware hit Europe? The sad answer is that most CEs depended on a bunch of indistinguishable forwarded emails, combined with a haze of unprioritized cybersecurity vulnerabilities without a clear mapping to clinical risk of medical device inventory. Providers who dodged the bullet this time should be asking: what can we do to minimize the chances of a UK-style outage happening here?

CEs have a long history of sorting out signal from noise when it comes to hyped problems such as Y2K. Medical device cybersecurity bears some resemblance to Y2K hype because not every cybersecurity problem affects essential clinical performance. However, some cybersecurity problems do have a direct impact on essential clinical performance. It's important to question cyber quackery, but also to recognize when a benign-looking cybersecurity problem carries a serious risk to clinical operations. Assessing cyber-clinical risk of a complete medical device inventory requires automated tools that can work safely on clinical networks, but a CE can with pen and paper effectively assess a single cybersecurity vulnerability claim to decide: signal or noise.

From a hacker's perspective, modern medical devices resemble glorified computers that often lag far behind enterprise systems in terms of software updates and security controls. These devices are commonly network connected and easy to find using off-the-shelf exploration tools once the hacker gains a foothold in a provider's network.

A CE should ask three questions when assessing whether a medical device cybersecurity risk presents a significant risk to clinical safety.

- Availability: How well would the core therapies and diagnostics continue to function in the event of a cybersecurity threat? To what extent would the cybersecurity risk affect essential clinical performance?
- Inventory: How well do you know the unpublished bill of software materials within a medical device and the cybersecurity risks of those materials, prioritized by clinical significance?
- Controls: What controls are in place for mitigating residual cybersecurity risks of clinical significance, and how are you continuously measuring the effectiveness of the controls?

In this short article, we will discuss one of the more neglected parts: Step 2. Feel free to browse our extracurricular library of tips for Steps 1 and 3 at virtalabs.com.

OK, let's get down to inventory. Cybersecurity preparedness is all about knowledge. At present, the bad guys know the cybersecurity risks of your clinical networks better than you do. It's not your fault; it's because the bad guys don't have to worry about safety when searching for crimes of opportunity.

Now, we're going to suggest something heretical. Sit down. Ready? OK. Please collaborate with your counterparts in the IT department to assess inventory on clinical networks---including shadow IT. Yes, IT security staff using vulnerability scanners have disrupted your clinical operations and tipped over radiological systems. But so can the bad guys. The technical challenge is that unlike the bad guys, you have to ensure safety while assessing fragile medical devices on your clinical networks. It's not an impossible problem, but it does require mastery of unusual tools.

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Kevin Fu, PhD, is Director of the Archimedes Center for Medical Device Security at the University of Michigan and CEO of Virta Laboratories in Ann Arbor, MI.

Ben Ransford, PhD, is CTO of Virta Laboratories.

From the Editors Desk: AAMI 2017 Wrap-up

For most of each of the last 35 years I have attended the AAMI annual conference and once again, I attended AAMI, this year in Austin, Texas. This was a great conference with attendance exceeding all previous AAMIs. Needless to say, there is a lot going on at these events and one can only attend a small portion of the conference. I will focus this commentary on the presentations, events, exhibits and committee meetings that I was interested in and attended, including the following: Joint Commission and regulatory affairs, CMMS and data management, IT/medical device security and motorcycles.

Motorcycles? I digress. Downtown Austin on Friday June 9, first day for AAMI Austin, was the scene for the 23rd ROT motorcycle rally, aka Republic of Texas Biker Rally. Downtown streets were closed to cars, but open to motorcycles, and there was a motorcycle parade plus bikers performing various motorcycle acrobatics including hand stands, 90 degree+ wheelies, donuts and more. Bars and clubs were crowded with motorcyclists and it was quite the scene (see photo below). Personally, I prefer bicycles, but this was certainly entertaining, and noisy, as I walked Austin's Sixth Street and Congress Ave back and forth to my hotel room. Downtown Austin did calm down somewhat as the AAMI weekend progressed.

Back to Clinical Engineering and HTM at AAMI. As usual, George Mills' Joint Commission presentation was well attended for both the presentation and the following Q and A session. Mr. Mills once again described the new SAFER matrix scoring methodology. He focused his talk on the recent regulatory changes that mandate 100% PM completion rate (not including equipment that was not available or not located) and the mandate to follow manufacturer PM recommendations (procedures and intervals) unless you have an approved science/data-based Alternative Equipment Management program (AEM). Essentially, regardless of risk category, all devices that have a manufacturer requirement for scheduled maintenance are required to complete 100% of the required maintenance. That's 100% of the maintenance procedure at the specified interval and on-time.

Exceptions to the manufacturer maintenance procedures and intervals can be made for certain equipment as long as there is sufficient data to support the change. These are so-called AEMs. Certain types of devices including the following are never allowed to have AEMs: imaging equipment including, ultrasound (why ultrasound is restricted from AEMs has never been explained well), surgical robotics, lasers, and new equipment where there is insufficient repair data.

Mills also discussed his Joint Commission efforts to get CMS (the federal government's Center for Medicare and Medicaid Services) to allow non-high risk/non-life support equipment to maintain a minimum 90% (rather than 100%) PM completion rate. However, that effort failed with CMS mandating the 100% completion rate for all equipment. In my opinion and experience, 100% on time PM completion to manufacture specs, or AEM where allowed, is extremely difficult, albeit a worthwhile goal, for the thousands of low and moderate risk devices on a scheduled maintenance program at most large HTM programs. Mr. Mills also discussed some upcoming TJC standards that will be helpful to Clinical Engineering departments including a requirement for vendors to provide service manuals for new medical equipment acquisitions — similar to the NFPA-99 2012 standard, but with a little more clout.

A related area of interest to me is HTM quality metrics. Work has been completed on standardizing the definition for Cost of Service Ratio (COSR, reference AAMI HTM Benchmarking Guide). Additional work is being done to standardize the definitions for some of the more common quality metrics such as Turnaround Time, Response Time and Failure Rate or MTBF. George Mills even mentioned Repeat Repairs as a useful quality metric in a couple of his talks so it would seem like that would be a good metric to widely standardize and report. (e.g. repeat repairs within 7 days and/or repeat repairs within 30 days). In addi-

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Motorcycles line Congress Ave in Austin during the Republic of Texas Biker Rally. The Texas Capitol building is lit up in the background. Photo courtesy of Colleen Ward.

Editor's Desk

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tion, Dave Dickey gave a couple of presentations where he proposed to get rid of the old "sacred cow" metrics such a PM completion rates, and use some more clinically relevant metrics such as equipment problems impacting "increase in length of stay". A possible use of this metric would be to collect data by asking the requestor of each repair work order if the equipment problem caused an increase in length of stay. Then the metric would be the percent of repair workorders where the equipment problem caused an increase in the patient length of stay. It remains to be seen if this concept catches on.

Computer security is another theme that ran throughout the conference. With the recent WannaCry ransomware attack, and other malware events, computer security for networked medical devices is becoming an increasingly important and labor-intensive task for device manufacturers, clinical engineers and BMETs. Several presentations and the Dwight Harken Memorial Lecture by Kevin Fu, PhD highlighted the importance of malware mitigation, and patch management. Among Dr Fu's recommendations are that network-based security mitigation techniques are important for impeding "zero-day" attacks but longer term, built-in solutions that prevent attacks are needed. See Dr Fu's article on page 5 for more information on this important topic.

And now for an advertisement. AAMI just published a new book, Computerized Maintenance Management Systems for HTM, 3rd edition, co-authored by myself and Matt Baretich. This book is relevant to the topics discussed above in that computer security, and regulatory environment changes both require much more data analysis and sharing amongst HTM programs. In order for this analysis and sharing to occur, many of the data definitions need to be standardized and data collection, analysis and reporting need to be easy — ideally a "one button push" on the CMMS. To help manage the regulation changes, CMMSs need to collect, analyze and report PM yield and PM-preventable workorder data in a standardized manner. Development of AEMs using Reliability Centered Maintenance (RCM) and other alternative maintenance strategies require high quality and sufficient quantity of data. Standardized data definitions and standardized metrics are needed in order to accomplish statistically relevant comparisons, and for many products, particularly in smaller institutions, sufficient data will not be available internally to justify changes, so data sharing becomes even more important. The regulations do state that any AEM-based changes must not reduce patient safety, so a risk assessment of any change is also necessary.

From a computer security standpoint, data collection and reporting are important in order to share data with IT and to understand quickly the potential impact of any new malware threat. Knowing the operating system of a medical device, its IP address and MAC address and other details of the computerized portions of the medical device, make it much easier to determine if a new malware threat is relevant to that particular device. Also, some of the newer ServiceNow-based HTM CMMSs have automated methods to combine the CMDB (Configuration Management Data Base) on the IT side of the inventory, with the IT information from the medical device inventory on the CMMS. With accurate data, this can be very helpful in tracking potential impacts of new threats throughout the networked medical device landscape.

In closing, AAMI this year included many other interesting vendor exhibits, networking with peers and committee meetings (most interesting, a few boring). We are certainly in interesting times.

Hope to see you next year at AAMI 2018 in Long Beach CA.

Ted Cohen, ACCE News co-editor
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Cybersecurity Risk continued

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Next, conduct an asset inventory. There has never been a better time to ask management for resources to conduct a complete asset inventory. The best-run inventory processes track clinical priority, manufacturer, model, serial number, owner, location, whether devices contain PHI, MAC addresses if devices are networked, disaster-recovery priority, whether devices are backed up, and links to in-house security assessments. There are even ways to automatically populate databases like ServiceNow, Four Rivers, and Maintenance Connection with MAC addresses without having to manually scribble down ethernet hardware addresses. Once you have this basic data, you can begin to integrate with data from IT, ECRI, FDA, and various cybersecurity threat services to prioritize preventative maintenance such as the Microsoft Windows patch that could have closed the door to the WannaCry ransomware that can and has shut down entire health systems.

Treat network-connected inventory as a first-class concern. Some providers conduct periodic inventory to count and catalog devices, but omit crucial network information such as IP addresses and MAC addresses, both of which can be used to identify devices during a network inventory. Recording one or both of these identifiers for each networked device gives IT an ability to identify, catalog, and monitor these devices during normal activities, reducing the chance of interrupting clinical operations.

Once your inventory better captures these basic cybersecurity risks, you can graduate to using automated tools to prioritize risks and recommend remediation plans. That's still a big challenge, but it will be difficult to succeed with any cybersecurity risk management and prioritization plan until your inventory adequately captures cybersecurity risk.

For a deeper case study on how to decide when a claimed cybersecurity risk elevates to a safety risk, read our full-length article in the Pacing and Clinical Electrophysiology medical journal.

Be safe!!

AAMI Update: AAMI 2017 Draws Record Crowd

A record-breaking 2,603 healthcare technology professionals journeyed to Austin, TX, in June for AAMI's Annual Conference & Expo, gaining practical insight into some of the biggest trends and challenges in the industry.

The four-day event featured an array of speakers and topics, including cybersecurity, big data, and accreditation requirements. It also provided attendees with a host of opportunities to further develop their professional skills, network with colleagues, and learn from one another.

"Attendees made this conference the success that it was," said AAMI President and CEO Robert Jensen. "For four days, they inspired and taught one another, showcasing the crucial and growing role that healthcare technology management professionals play in healthcare."

The presentations and educational sessions touched on both the challenges that HTM professionals face today and the many opportunities ahead. Some highlights follow.

Predicting and Preventing Illness with 'Big Data'

What if we could foresee a patient's deterioration and take action to prevent it? What if the impending illness was so severe and the patients so vulnerable that this prediction would save their lives? And what if all we needed to do this was little more than the medical devices and data that we already have?

This is a reality at the University of Virginia (UVA) in Charlottesville—"a part of the not-so-distant future pulled into the present," according to Jensen.

During the opening general session, J. Randall Moorman, a clinical cardiologist and UVA professor of internal medicine, physiology, and biomedical engineering, explained how he and his colleagues have turned more than 100 terabytes of data collected from continuous electronic monitoring into a "risk estimation device" for deadly conditions, such as sepsis in premature infants.

"The new reality in some places is that a continuous monitor at the bedside shows the clinicians the risk of sepsis in the next 24 hours—a truly predictive kind of information for them," Moorman said. "They are able to suspect sepsis before clinical signs appear, do tests, administer therapies, and in many cases, avert the illness part entirely."

By putting a doctor or a nurse "in the right room at the right time," Moorman's team has shown that their tool, called CoMET (continuous monitoring of event trajectories) to monitor infants for sepsis, can save one life per 48 infants monitored with very low birthweight (less than 1,500 g) and one life per 23 infants with extremely low birthweight (less than 1,000 g).

"If we can do this for infants, why aren't we doing this for everyone?" Moorman asked. "There is information in medical devices that can help doctors and nurses take better care of patients, improve outcomes, and now is the time to get involved in doing that."

He and his team have also developed analytics that can help predict serious illness, such as hemorrhage and acute lung failure, in adults.

Improving Medical Device Security

In the wake of the May 2017 WannaCry ransomware attack, considered among the largest cyberattacks in history, cybersecurity was a hot topic at the conference, drawing standing-room only crowds to many sessions.

"[WannaCry] has knocked out SPECT-CTs. It's knocked out entire imaging departments. It's put organizations on diversion. For those organizations, they're quickly pushed into the cyber realm from an HTM perspective," said Benjamin Esslinger, a clinical engineering manager at Eskenazi Health in Indianapolis, IN. "So it's not the 'if,' it's the 'when.' If you don't have the program and you're not in front of it, it's going to hit you."

During the Dwight E. Harken Memorial Lecture, cybersecurity expert Kevin Fu urged medical device makers to more vigorously design security into their products and called on hospitals to take a prioritized and focused approach to dealing with cyberthreats.

"If you try to build security after the fact, it is going to fail," Fu said, as he made the case for cybersecurity to be front and center in the design and development of medical devices. Fu is the CEO and chief scientist of Virta Labs,

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J, Randall Moorman, MD, talks about risk estimation using Big Data and its application to the care of low birth weight newborns at the AAMI 2017 opening general session.

AAMI 2017 Update continued

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Inc. and director of the Archimedes Center for Medical Device Security and the Security and Privacy Research Group at the University of Michigan.

As for healthcare delivery organizations, Fu said they are too distracted by the general threat posed by hackers, as opposed to taking a "clinically relevant" approach to the problem.

"Are we secure? The answer is 'no.' What's your next question?" Fu said.

That question, he said, should either be how quickly could a hospital recover from a cyberattack or how well will the system tolerate threats. Stakeholders, he stressed, should "focus on availability of care" when it comes to evaluating the importance of any given cyberthreat.

"We have too much attention on treating the symptoms," he added.

Fu urged the crowd to "take a look" at an AAMI technical information report, TIR57, which deals with medical device risk management. He described it as a tool that could help healthcare facilities and manufacturers take a proactive and comprehensive look at the problem.

George Mills of The Joint Commission, speaks about recent clarifications, and upcoming changes to the medical equipment-relevant Joint Commission standards.

Changes in Joint Commission Standards

Just as HTM professionals are starting to wrap their heads around stricter requirements for medical device maintenance that went into effect early this year, The Joint Commission is gearing up for another round of changes, according to the accreditation organization's director of engineering.

"In January 2018, you're going to see another large population of EPs coming into your standards, and then we should be pretty stable for a while," said the commission's George Mills as he laid out several of the new elements of performance.

Two of these new EPs are:

- EC.01.01.01, EP 3: The organization has a library of information regarding inspection, testing, and maintenance of its equipment and systems. Note: This library includes manuals, procedures provided by manufacturers, technical bulletins, and other information.

EC.03.01.01, EP 1: Staff responsible for the maintenance, inspection, testing, and use of medical equipment, utility systems and equipment, fire safety systems and equipment, and safe handling of hazardous materials and waste are competent and receive continuing education and training.

Mills said that he wrote these EPs not to add additional requirements but to "help out" HTM professionals by giving them stronger footing when making requests for needed tools and resources.

"My intent was to provide something that HTM can point to when requesting information that historically was not readily available," Mills said, earning him a round of applause. "Don't be afraid of this, but truly embrace it."

For additional coverage of the conference, including a slide show of images, please visit www.aami.org/news.

AAMI Staff

Journal of Clinical Engineering Call for Papers

The Journal of Clinical Engineering prints selections of the ACCE News in each issue and is interested in papers from you. If you have an urge to write and have activities or ideas to share, please consider JCE as one of your outlets. One type of article not seen recently is the Department Overview which presents how your department is structured and how it performs its functions. Shorter "Perspective" pieces are also welcome. You can discuss manuscript ideas with fellow ACCE member William Hyman, w-hyman@tamu.edu., who is one of the editors of JCE, or send them to Michael Leven-Epstein at: michael.levinepstein@gmail.com.

Perspectives from ECRI Institute: Leadership Summit on Health IT Safety

I had the privilege to participate in a fascinating ECRI Institute Transformation Leadership Summit in May of 2017. The purpose of the summit was to engage in conversation with a carefully selected group of industry leaders to examine ways to transform health IT safety through private sector collaborations.

The results of the summit will play a key role in shaping ECRI's work on a major grant from the Gordon and Betty Moore Foundation and ECRI's ongoing work in health IT safety. The grant is entitled "Building a Sustainable Private Sector Infrastructure for Effective Health IT Patient Safety Practices". It is linked to the Partnership for Health IT Patient Safety that ECRI Institute initiated four years ago. The Partnership established a multi-stakeholder infrastructure for shared responsibility and collaboration with health IT safety. It collects health IT-related safety hazards, leads the development of solutions, and disseminates safe practices. An important output of the grant is to scale up and extend the reach of the still nascent Partnership to greatly accelerate implementation of health IT safe practices and sustainably embed HIT safety in the medical culture.

The meeting had an amazing list of participants. Some of the most notable included Paul O'Neill, former Secretary of the US Treasury and CEO of ALCOA; Ken Kizer, MD, founding CEO and President of the National Quality Forum and former head of the US Veterans Health Administration; Paul Tang, MD, Chief Health Transformation Officer at IBM Watson; and Raj Rajkumar, PhD, George Westinghouse Professor of Electrical and Computer Engineering and Robotics Institute at Carnegie Mellon University. Dr. Rajkumar co-directs autonomous automobile research at Carnegie Mellon University.

Meeting participants were selected for their experience in leading high-level safety and quality transformation in healthcare and other industries. They were asked to share perspectives on how lessons learned from their efforts could be applied to building a sustainable mechanism for safety-related culture transformation and improving overall health IT safety.

I was most intrigued and probably a little star-struck by the comments from Secretary O'Neill. He provided an overview of how he transformed the struggling Aluminum Company of America – or ALCOA – after becoming CEO in 1987. At the beginning of his tenure O'Neill identified one key performance measure to use as the driver for the company's much needed transformation. Surprisingly he did not focus on traditional business improvement measures like revenue generation or cutting costs (e.g., through sales restructuring or employee layoffs). Rather, his focus was on worker safety.

Secretary O'Neill explained that he was looking for a way to transform company-wide culture by providing an initiative that no one could argue against—that of safety. He surmised that by focusing on decreasing worker injury (his goal was to actually eliminate it), employee morale would improve, the number of days that workers were available would increase, and overall productivity would significantly improve. The new mindset also encouraged employees to speak up and make suggestions for improvement – for safety or other reasons. O'Neill believed that the financial bottom-line would organically grow out of the focus on safety and its more open and sharing culture. It worked. One year after taking over, ALCOA's income reached a record high (http://www.huffingtonpost.com/charles-duhigg/the-power-of-habit_b_1304550.html). When Secretary O'Neill retired in 1999 ALCOA's stock value had risen over 200% from when he started and its annual net income was five times higher (http://www.businessinsider.com/how-changing-one-habit-quintupled-alcoas-income-2014-4).

Other summit participants shared very impressive transformation-related success stories. Dr. Ken Kizer who led the transition of the VA health system to the VISN model currently used today spoke about the importance of leadership being the driver for change. He noted that it is critical for leaders to recruit enthusiastic change agents and to get "corporate" buy-in about the change being the new normal. Dr. Kizer emphasized the need to focus on one or a few easily understandable and explainable change-related goals. Once transformation efforts have begun, their results need to be measured. He pointed out that if measurement shows lack of results – either initially or over time, then transformation plans should be reevaluated and possibly modified.

The summit's emphasis on transformation and overall change reminded me of the current state of clinical engineering, which I see as being in transition. We are in a much needed transformation from the historical fixer and technology supporter model to becoming institution-wide leaders for technology decision-making. I wrote about this in a blog a few years ago. I pointed out that "the planning and support of newer, integrated technology can be very complicated – and risky if it's not done right. It needs a dedicated technology leader who understands medical devices and systems – inside and out – from a clinical, safety, technical, and cost point-of-view. This is a perfect role for the clinical and biomedical engineering professional."

One of the coolest moments of the summit happened during a break. Secretary O'Neill mentioned that a quote from Theodore Roosevelt that was provided with the summit materials reminded him of President Nixon's resignation speech. Secretary O'Neill was a White House staff member during the Nixon administration. He was at a high enough level to actually be summoned to the White House Green Room for Nixon's historic announcement. Secretary O'Neill shared some of his memories from that day, which was amazing and a bit surreal.

(Continued on page 11)

International Report: WHO's 3rd Global Forum on Medical Devices

The World Health Organization's (WHO) Third Global Forum on Medical Devices, see http://www.who.int/medical_devices/global_forum/3rd_gfmd/en/, drew 700 participants from 85 countries, held in beautiful Geneva in early May. The event was coordinated by Adriana Velazques, MS, CCE, Senior Advisor for Health Technologies for WHO and a recipient of the 2017 AAMI Foundation/ACCE Robert Morris Humanitarian Award (http://accenet.org/About/Pages/BobMorris.aspx).

Adriana developed and oversaw the 3-day, 10-track program whose content was about half Clinical Engineering related. Topics ranged from CE-HTM, ICTs in Health (aka CE-IT), Disaster Preparedness, Medical Imaging Requirements for Rural Health Facilities (CE partnering with medical physicists), Healthcare Technology Assessment (HTA), Innovation, and Human Resources for Health Technologies and more. This effort flows from WHO's 2007 Resolution regarding Health Technologies and their importance in global healthcare delivery, and builds on two earlier Global Forums.

ACCE was well represented with first day workshops led by Tobey Clark, Yadin David, Tom Judd, Mario Castañeda, Elliot Sloane, Tracy Rausch, Ismael Cordero, and Bill Gentles, as well as at second and third day presentations and plenary sessions. ACCE partners closely with IFMBE's Clinical Engineering Division (CED), with several ACCE members serving on CED's board and collaborator group. Together, CED and ACCE drove global CE leadership meetings and activities during this important time together.

Two Forum highlights for me and other ACCE colleagues were a chance to connect with current friends and meet new ones with over 100 friends and colleagues, old and new, from over 50 countries. Included were two, one hour long CE-only ("family") meetings. Both of those meeting were to highlight global CE issues, and to continue to draw us together. Another highlight

Mulugeta Mideksa receives the ACCE/HTF International ACEW award (on behalf of the Ministry of Health of Ethiopia) from Tom Judd representing ACCE) .

was the presentation of the ACCE/HTF 2017 International ACEW Award to our CE colleague Mulugeta Mideksa who received the award on behalf of the Federal Ministry of Health- Ethiopia in front of the entire Forum at the CE plenary session.

What's next? The ACCE International Committee – whose robust activities are a model for many countries – will work in closer partnership with WHO and IFMBE/CED between now and the next Global Forum to address burning issues identified at this Forum. Topics like the CEs role addressing cybersecurity, CEs helping to do on-line CE-HTM training around the world, CEs identifying the most sustainable CMMS tools for developing countries, and the list goes on. India volunteered for the 4th Global Forum. Stay tuned as plans for this program emerge.

Tom Judd,
ACCE International Committee member
IFMBE CED Secretary
judd.tom@gmail.com

ECRI Perspectives continued

(Continued from page 10)

President Nixon used part of the summit's Roosevelt quote in his resignation speech. He spoke about the man in the arena "whose face is marred by dust and sweat and blood, who strives valiantly, who errs and comes short again and again because there is not effort without error and shortcoming, but who does actually strive to do the deed, who knows the great enthusiasms, the great devotions, who spends himself in a worthy cause, who at the best knows in the end the triumphs of high achievements and who at the worst, if he fails, at least fails while daring greatly".

Transformation, whether it is in health IT safety or clinical engineering is hard work and it may not always succeed. But we can't get there without trying. I would be happy to talk with any of my clinical engineering colleagues about how lessons learned from the summit can be applied to transformation in our profession.

Jim Keller, MS, FACCE

Vice President, International Market Development, ECRI
Past President, ACCE
jkeller@ecri.org

Healthcare Technology Foundation News

Improve healthcare delivery outcomes by promoting the development, application and support of safe and effective healthcare technologies.

HTF Healthcare Technology FOUNDATION

New Board Members

Elections were held in conjunction with our annual meeting. Elected for a second term were Qusai Shikari, Erin Sparnon, and Jim Wear; elected for a third term were Izabella Gieras, and Steve Merritt; Elected for their first term were Bridget Moorman, Joanne Phillips, and Halley Ruppel; and Elected for a First Term Advisory was Jim Pipenbrink.

HTF Annual Meeting

The HTF Annual Meeting was held on June 8th. We had a small group who were able to arrive prior to AAMI and a few joined via conference call. The Alarms group continues progress to get the 2016 survey results published in the Journal of the American Association of Critical-Care Nurses. The Patient Education and Home Health group are reviewing the results of the literature search on materials. Much discussion revolved around the best method to provide educational materials both within the hospital for patients and visitors and for those transferring home. Some great ideas were generated and this dialogue will continue at future meetings. Like all organizations, relationships between other groups are vital and we hope to continue to foster many we have developed over the years.

HTF Thanks Marcia Wylie

Marcia Wylie has rotated off the Board following six years of service. We sincerely thank her for her participation on the alarms group, managing risks and other Board activities.

HTF Future Projects

Have a great idea to share? Please let us know if you have any suggestions on projects for HTF that will meet our mission.

Be sure to visit the HTF website, www.thehtf.org to see our programs and resources. While you are there, feel free to hit the **DONATE NOW** button. We will accept them anytime and they are always tax deductible!

Paul Coss, RN, HTF President
president@thehtf.org

Jennifer C. Ott, MSBME, CCE, FACCE
HTF Secretary
secretary@thehtf.org

ACCE 2017 Membership Dues Due Now

ACCE Membership Dues for January through December 2017 is due now.

To renew your 2017 membership online, please click here, or mail your renewal check to: ACCE, 5200 Butler Pike, Plymouth Meeting, PA 19462.

From left: Erin Sparnon, Marge Funk and Jennifer Ott brainstorming HTF plans.

Save a Life. Stop the Bleeding!

Save a Life; What everyone should know to stop bleeding after an injury

I was recently at a conference for The Special Operations Medical Association where attention was once again given to how dramatically lives are being saved using tourniquets and other methods to control hemorrhage. How in emergencies in our communities, regular people are using the tools at hand to make tourniquets and to use common items to save the lives of people who otherwise would of bleed to death.

It turns out about 15% of the people, stay and help rather than go for safety when things go bad. These people have made the difference in many small and large situations. From events like the Boston Marathon bombing, the recent events in London, to motor vehicle accidents or work place accidents, knowing how to stop bleeding saves lives.

There is a program here in the US, called. "Stop the Bleed." The goal is to train as many people as possible to know what to do when there is an injury with bleeding. Like CPR, this has already saved lives and there will soon be Bleeding Control Kits where there are AED's.

If you are already working in healthcare, I believe you have already declared that you care, that you are committed and that you part of the group that will stay and help. Like learning CPR, I encourage you to go to www.bleedingcontrol.org, and sign up for a class, learn what to do, and be ready to save a life.

This is part of a program that has been and is being rolled out across the US. I was just certified as an instructor and have personally used a tourniquet in a car vs motorcycle accident to save a life.

This program is supported by the American College of Surgeons, The Committee on Trauma, Pre-Hospital Trauma Program and organized by the Department of Homeland Security. You may find that your hospital has a program teaching this material. It takes an hour or so to learn what you can do, and I promise you it is time well spent.

Uncontrolled bleeding is the number one cause of preventable death from trauma. You can save a life: Learn what you can do to stop bleeding after an injury.

If you have any questions about this you can reach me through the HTF website or at coss.paul@gmail.com. I encourage you to consider this, you can save a life.

Thank you

Paul Coss. President The HTF

Additional information at:
www.BleedingControl.org

http://bulletin.facs.org/2015/07/the-hartford-consensus-iii-implementation-of-bleeding-control/

https://www.otacgyr.com/pages/stop-the-bleed

Thank You ACCE Volunteers

Thank you to all of our member volunteers!

Thank you for taking time from your busy conference scheduling to either man the booth, or to help set-up or to dismantle/packaging or to ship booth material.

Our great appreciation to the following wonderful volunteers as we couldn't have done it without their volunteering time: Jim Panella, Petr Kresta, Antonio Hernandez, Rodney Nolen, Elena Simoncini, Joe Ouellette, Jennifer Boudreaux, Christopher Arciga, Helen Cheong, Paul Sherman, Cathy Weitenbeck, Jim Caporali, Clarice Holden, Julio Huerta, Alicia Smith-Freshwater, Austin Hampton, Jeanette Thielen, Colleen Ward, Steve Juett, Alan Lipschultz, Arif Subhan, Kevin Ferguson & Binseng Wang.

Thank you all, from ACCE Board of Directors and ACCE Secretariat

ACCE Job Website Job Postings

For posting job opportunities, contact Dave Smith at advertising@accenet.org

Contributions to the ACCE Newsletter are always welcome.
For ACCE Newsletter Guidelines, please go to:
http://accenet.org/publications/pages/newsletterinfo.aspx

The View from the Penalty Box

Many years ago when I first started writing this rant I said the title was selected because it was the best place to watch a hockey game. Yes, I did spend time there over the years of playing but nothing like the 12 days spent in the hospital and rehab recently. There I got a totally new view of healthcare and its problems.

Before midnight one night I was in bed and nature starting calling, but I could not get out of the bed. I started screaming and banging on the wall to get my wife to help me. She had problems getting me up and wound up calling 911 to get an ambulance as she felt I had a bit of a fever. It was only 105.4! They get me into an ambulance with some struggle and off to the hospital. The responders smelled gas in the house and called the fire department, who determined that there was a leak and my wife had to get out of the house. They shut the gas off at the street so she was OK and headed to the hospital to be with me.

Arriving at the emergency room just after shift change was not a problem, at least one that I could detect. The electrodes were put on, lead wires tangled, and blood drawn. This was a problem as my blood pressure, which is normally low, was 90/55 and a pCO2 in the 80's. There were all sorts of people working on me and somehow they got me stable and calm. Once a bed in the ICU was available, I was shipped off. Since I had blood in my urine they "inserted" a Foley which is probably the male equivalent of giving birth. I don't want to seem unforgiving, but if I find the people that designed the item and those that inserted it, I will have more time in the Penalty Box for fighting. The diagnosis came down as a UTI and C-Diff so the anti-biotics were pushed with a vengeance.

One morning they could not wake we up. I am not sure why, but they worked on me for over an hour until I finally came out of it. I was complaining like a politician - that is saying stuff that made no sense.

I eventually moved to a step-down unit and had a lot of trainee physicians talking to me and trying to figure out what happened. It was fun talking with them and seeing how they reacted to my sense of humor. Some must have had on starched underwear as their expressions never changed but some were willing to interact with the patient. Those are the ones I want treating me in the future as they seem to care about the patient.

As my brain came back together, I started asking the staff about equipment problems, what they would like to see in the devices and why. Somehow we, as clinical engineers, have to get information from the users to the designers of the devices so improvements can be made. Talking to the sales people is not the answer. We have to get to the product managers of the companies to listen to the concerns and suggestions of the users and patients. Alarm fatigue is real and can be solved easily by shutting off most of the cardiac alarms and relying on the pulse ox as the main alarm. It responds to both high and low heart rates along with oxygen levels. Also patient monitor screens have too much information on them to be of clinical use. When a person's life is involved we need that KISS (keep it simple, stupid) factor in the design and use of a device.

Finally, I got shipped to a Rehab facility where they tried to keep me calm. I must have set off the bed alarms many times as I could not wait for the care provider to get there when I had to go. "Mr. Harrington, here is your diuretic and hit the button when you have to go". No time to wait when you got-to-go. While the staff was good, they did not have a lot of technology to work with. I have no idea what is out there for that level of care. Maybe we should get someone from that type of a facility to do some presentations or articles to inform us what is there and what is needed.

In closing, seeing health care from that angle has given me a scare. With so many people "aging out", we need to developed better and simpler equipment for us more senior people. We're not just "old farts", but people with needs. Take some time and think about it as you will be aging out before you know it.

Dave Harrington
dave@sbttech.com

CE-IT Committee

In 2008, AAMI, ACCE and HIMSS joined forces to advance the timely and critical issues facing the clinical engineering/IT community. The purpose of the collaboration was to advance the interests of CE-IT issues in healthcare including: fostering a united voice for IT and clinical engineering concerns, developing resources, sharing best practices and providing networking opportunities.

In the recent past, this initiative has lost some energy and focus. The ACCE Board has decided that there is still critical work to be done in this area and so, in conjunction with HIMSS and AAMI, ACCE has recommitted to support this initiative and renew interest on this topic. This includes creating a new vision surrounding the CE-IT Community.

To help move this community forward the ACCE Board has created a CE-IT Committee that reports directly to the ACCE board. Steve Grimes is the new chair for this committee and will be responsible for reporting progress of this committee at the bi-monthly ACCE board meetings. The purpose of this committee will be to represent ACCE on any CE-IT initiative and to renew focus on this topic.

To help kick off this new committee Steve Grimes attended the Austin Face to Face ACCE Board Meeting. This committee is soliciting new members to help shape the future vision of CE-IT Community. If you're interested in joining the ACCE CE-IT Committee, please complete the volunteering form or contact Steve Grimes at ce-it.chair@accenet.org

Samantha Jacques, PhD, FACHE, ACCE Board Member at Large and CE-IT Committee Member

Thank You from the Education Committee!

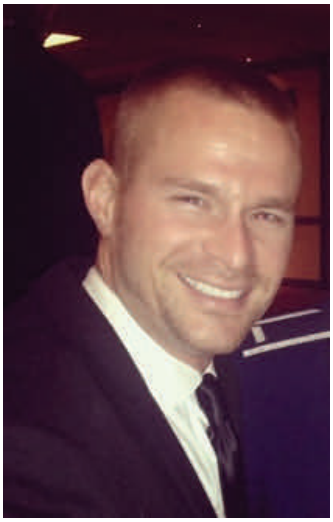
The Education Committee would like to take some time to thank our speakers from the **2016-2017 Webinar series**. They made it possible to have a very successful Webinar Series. We had a lot of distinguished speakers from all over the country, representing manufacturers and hospital staff. We had registered/Practical nurses, clinical engineers, IT representatives, managers, directors, professors, administrators, etc. We would like to thank all of them for taking time out of their busy schedule to share with us their knowledge and help us advance the Clinical Engineering profession. These volunteer speakers took time out of their busy schedule to support ACCE through the Webinar Series.

From all of us – THANK YOU!

Education Committee co-chairs
Jennifer DeFrancesco & Rodney Nolen & Austin Hampton
Arif Subhan, President-Elect

For information on the upcoming 2017-18 Educational Webinar series, please visit the ACCE website

New Education Committee Co-Chair



Austin Hampton, new ACCE Education Committee co-chair.

And a big THANK YOU to Jennifer DeFrancesco, outgoing education committee co-chair.

Join us in welcoming Austin Hampton as the new Education Committee co-chair. He'll be joining Rodney Nolen.

Austin graduated with magna cum laude honors from NC State University for both bachelor's degree in biomedical engineering and master's degree in rehabilitative engineering. He is member of the Tau Beta Pi engineering honor society. He was a division I American Coast Conference scholarship athlete for NC State University from 2005-2009 and current record holder in the 3-meter event for the NC Swimming and Diving team. He obtained Eagle Scout honors. Currently, he serves as the Chief of Biomedical Engineering at the VA hospital in Biloxi and a member of the Education and Communication workgroup for the VA real-time location system project.

Austin replaces Jennifer DeFrancesco, PhD, CCE, who served from June 2015 to June 2017 . We thank Jennifer for her leadership and dedication!

ACCE Board and Secretariat

2017 CCE written exam review webinar series

10 weekly sessions

Date: Wednesdays – August 9 through October 11, 2017

Time: 12:00PM – 1:00PM (Eastern Time)

Faculty: Matthew Baretich, Tobey Clark, Ted Cohen, Frank Painter.




Registration Deadline: July 31, 2017

Sponsored by:

MediMizer Medical Compliance Inspection Software

PARTSSOURCE

Prepare for your November CCE written exam. This 10 session series will be presented by a group of ACCE Faculty who are CCEs. The class will outline and present the material in each of the main subject areas covered on the exam. The course will help you identify areas in which you need further review and help in preparing for the CCE examination. It will provide an opportunity to meet other candidates to form study groups.

Email your registration form to secretariat@accenet.org
Rates are pro-rated according to this World Bank classification table

	Countries/column 1	Countries/column 2	Countries/column 3	Countries/column 4
ACCE Members	US$ 150.00	US$ 100.00	US$ 70.00	US$ 50.00
Non-members	US$ 250.00	US$ 170.00	US$ 110.00	US$ 75.00

All attendees will receive a copy of the webinar series' presentation material.

Disclaimer: This course is prepared and offered by individuals who are not involved in the preparation of the CCE Exam.

2017 Certification Examination

The computerized written examination for HTCC Certification in Clinical Engineering will be available from November 4, 2017 thru November 18, 2017. The deadline for applications is August 5, 2017 for applicants testing within the United States & Canada and July 8, 2017 for applicants testing outside the United States & Canada. Arrangements can be made to take the written exam in most major cities around the world by contacting the Secretariat for HTCC at certification@accenet.org.

To apply, please download the **2017 Candidate Handbook for CE Certification** and the **2017 Candidate Application Form**

- **Pay application fee online.**
- If you are planning on sitting for the written exam outside of the US/Canada please complete the Request for Special Test Center and include it with your application. Submit the International Test Center fee with your application fee

For further questions, please contact Sandy Allen, Secretariat for HTCC at certification@accenet.org

2017 CCE Renewal

Is your CCE expiring? To check the expiration date, click here

Welcome New Members

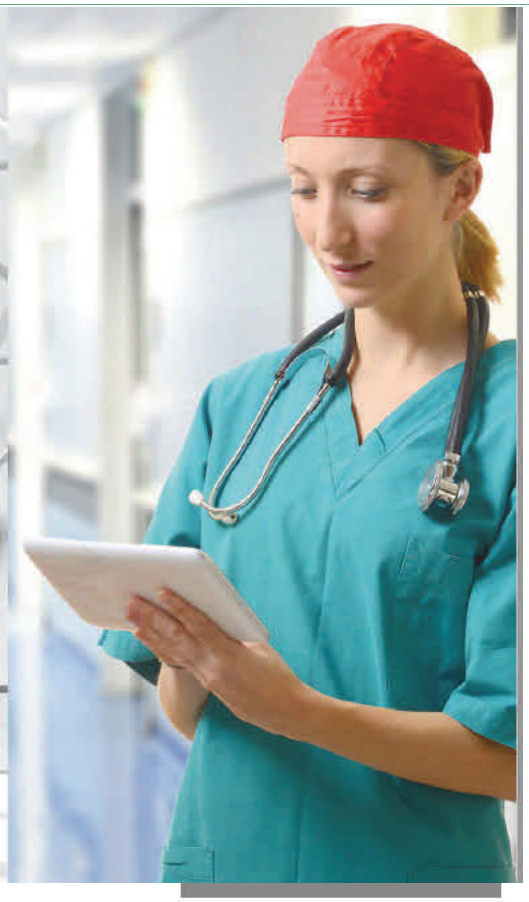
New Member Name	Member Class	Job Title	Organization	State/ Country
Kelvin Knight	Associate	Director, Biomedical Engineering	The Children's Hospital of Alabama	AL/USA
Courtney Nanney	Individual	National Quality Manager	Catholic Health Initiatives	KY/USA
John Romlein	Associate	Kaiser Permanente	Senior Manager, Clinical Technology	HI/USA
Dustin F. Smith	Institutional/Associate	Clinical Engineering Central Support Manager	Intermountain Healthcare	UT/USA
Jeff Koford	Institutional/Associate	Imaging Equipment Services Program Manager	Intermountain Healthcare	UT/USA
Mark Hodges	Institutional/Associate	Director, Engineering/Clinical Engineering	Intermountain Healthcare	UT/USA
Larson Holyoak	Institutional/Individual	Director, Clinical Engineering	Intermountain Healthcare	UT/USA
Louie Robert G. Flores	Institutional/Individual	Biomedical Engineer	VAMC Northern California Healthcare System	CA/USA
Mike Busdicker	Institutional/Individual	System Director	Intermountain Healthcare	UT/USA
Daishan Jensen	Institutional/Individual	Chief Biomedical Engineer	VA Boise Medical Center	ID/USA

Congratulations to the following who have been upgraded to individual member status:

Allie Paquette	Clinical Engineering Service Rep Specialist	Baystate Medical Center	MA/USA
Renee Huval	Biomedical Engineer	VA Greater Los Angeles Healthcare System	CA/USA
Danielle Cowgill	System Analyst/Clinical System Engineer	Lucile Packard Children's Hospital	CA/USA

Welcome to our newest institutional member: Intermountain Healthcare

Intermountain Healthcare
Healing for life®



ACCE Calendar

July 1-19: ACCE Officers Election

July 8, 2017
Deadline for 2017 CCE Exam applications - applicants outside of US & Canada
For more info, click here

July 31, 2017
** Deadline to register to CCE Review Webinar Series
Registration Form

August 5, 2017
Deadline for 2017 CCE Exam applications - US & Canada applicants
For more info, click here

August 9—October xx, 2017
** CCE Review Webinars
Series Schedule

September 21-22, 2017
II ICEHTMC 2017
Sao Paulo, Brazil
Program

October 25-27, 2017
XXI Argentine Congress of Bioengineering and CE Workshop
Córdoba, Argentina
For more info, click here

November 4, 2017
2017 CCE Computerized Written Examination
For more info, click here

ACCE

AMERICAN COLLEGE OF CLINICAL ENGINEERING

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