

# ACCE News

Vol. 11, No. 6 – November 2001

## ACCE Works to Restore Certification of Clinical Engineers

Frank R. Painter, [frpainter@earthlink.net](mailto:frpainter@earthlink.net)

A team of ACCE members has been working diligently for nearly thirty months to put the clinical engineering certification program back in place after the AAMI Board recommended that the program be suspended in June 1999. The progress to date is described in the "Report to the USCC on the Activities of the US Board of Examiners for Clinical Engineering Certification" that you will find on page four. ACCE and the Board of Examiners are working to design the new CCE program and all its components so that it will meet the accreditation standards of the National Commission for Certifying Agencies (part of the National Organization for Competency Assurance, [www.noca.org](http://www.noca.org)). This group develops standards to measure organizations that provide certification programs. One of the outcomes of meeting these new standards will be that at least one non-clinical engineering individual will be on the CE Board of examiners. It is hoped that a nurse, physician, healthcare administrator or other healthcare professional will be able to join the Board. Another improvement in the process will be the addition of periodic updates in the exam to insure the question bank accurately tracks the clinical engineering 'body of knowledge'.



Caroline Campbell  
Chairman, USCC Board

Although it appears that the new US CE Board of Examiners will not be able to formally accept applications for CE certification until 2002, a description of the exam process, application fees, requirements for certification, application form, reference form, sample questions and reference materials used to verify the questions will be added to the ACCE website over the next month. To view these materials as they are posted, go to the website at [www.accenet.org](http://www.accenet.org) and click on the "CE Certification" link.

If you are interested in receiving an application form when they are ready for distribution please send your name and address in an e-mail to [certification@accenet.org](mailto:certification@accenet.org). ACCE hopes that the first exam will be able to be given in conjunction with the ACCE annual meeting June 3, 2002 during the AAMI Conference in Minneapolis, MN. Please look for further updates in the "Certification Column" that will appear in all future issues of the *ACCE News*.

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# ACCE News

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Setauket, NY 11733

American College of Clinical Engineering

# ACCE News

## ACCE Mission

1. To establish a standard of competence and to promote excellence in Clinical Engineering Practice.
2. To promote safe and effective application of Science and Technology to patient care.
3. To define the body of knowledge on which the profession is based.
4. To represent the professional interests of Clinical Engineers.

Web - Accenet.org

## President's Message

Elliot B. Sloane, Ph.D., [absloane@villanova.edu](mailto:absloane@villanova.edu)

As we reach the end of this tumultuous year, I would like to amplify on my message at ACCE's annual meeting during the AAMI Conference in June: Clinical engineers must make the time to remember that *we live in, and have helped create, an age of true medical miracles*. When we take that for granted, it detracts from the career satisfaction and pride that we should feel.

At the International Thoracic Surgical Convention in Germany in October, 2000 I saw multiple vendors' beating-heart surgery and similar minimally invasive techniques. These innovations fuse surgical expertise with clever instruments, robotics, computer image processing, and virtual reality interfaces to enable the surgeon to do something that is otherwise humanly impossible! I marveled at the quantity of heart assist devices, replacement heart valves, artificial grafts, medical sutures and adhesives. They represent great technological strides that enable the medical miracles our hospitals perform.

I know that it isn't all "peaches and cream," and I won't try to candy coat the ongoing problems of defective technologies and incompetent operators. My 15 years at ECRI provided rich and continuous collaboration with clinical engineers, technicians, physicians, nurses, manufacturers and regulators. I know all too well that medical technologies have also caused, or have been used to cause, unnecessary death and suffering. I cannot glibly try to dismiss that by saying that "you must break a few eggs to make an omelet." Though there may be some hard truth to that perspective, we're talking people here – real children,

moms, dads, and friends – not eggs. Unnecessary death and suffering is not acceptable. ACCE is focusing on those issues, too, so let's hold that discussion for another day (though not too far in the future, I promise).

**Do yourself a favor: pause right now and take a deep breath or two. Allow yourself to take just a single full minute to drink in the amazing medical feats that you and your colleagues have created in just a few decades.** Stop taking for granted the premies up in NICU who would have died just ten years ago, the thousands of frail elders scooting by with clear intra-ocular lenses, new hips, and rebuilt hearts, and the non-stop flow of thousands and thousands of grateful patients and families who owe their lives to technologies like MRI, CAT, and complex blood and genetic diagnoses.

We should appreciate every engineer and technician for his and her valuable daily contribution to the medical miracles that we all enjoy. As you enter this holiday season, make the time to celebrate all that we have achieved. Clinical engineers have the same choice that everyone else has: I encourage you to toast to the half-full glass we have helped to fill! Make time to savor the precious nectar held in that half-glass: *millions of saved lives, and relief from pain and suffering*. Make time to personally thank and appreciate your teammates for their contributions, too; we haven't done it alone.

The ACCE board members and I would like to wish a Happy and Healthy New Year to you, your family, and your friends. Take a moment to say a prayer of thanks for Bob Morris and his family, too, OK? – Elliot



Elliot Sloane

# ACCE News

## The ACCE Board

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Membership	Steve Grimes
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ICC Liaison	Frank Painter
Nominations	Jennifer Ott
Education	Al Levenson
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AAMI Liaison	Ted Cohen

Engineering Inc. of Fort Collins, Colorado. With this addition, ACCE has centralized many services that were formerly provided by ACCE officers and volunteers. The objective is to provide enhanced coordination and continuity of services such as maintenance of the ACCE member database, processing of membership applications and renewals, administration of elections, distribution of official information, and other membership and support services.



Matthew Baretich, President  
Baretich Engineering, Inc.

As a result, the lines of communication for ACCE now include all of the following:

- 5200 Butler Pike, Plymouth Meeting PA 19462-1298
- Telephone Voice Mail: 610-825-6067
- E-mail: [ACCE.Secretariat@baretich.com](mailto:ACCE.Secretariat@baretich.com)
- Web Site: [www.accenet.org](http://www.accenet.org)

ACCE members and anyone interested in ACCE activities can use any of these means for contacting ACCE. The new e-mail address ([ACCE.Secretariat@baretich.com](mailto:ACCE.Secretariat@baretich.com)) provides the quickest way to deal with membership issues (e.g., change of address) and other communications that can be handled electronically.

ACCE is grateful for the continued support from ECRI in providing ACCE Secretariat services. ACCE also welcomes the additional services provided by Baretich Engineering.

## ACCE Welcomes New Members

The following are the new ACCE Members elected during the period June 2001 through October 2001. Congratulations and welcome!

- Michael Phelps AS BS CBET
- Art Augustine BS
- Roger Schmitt MS
- Robyn Frick CCE CBET
- Loren Taylor BS MS
- Eduardo Jimenez
- Bruce H. Barkalow PhD PE CCE
- Louis Schonder CBET
- Frank L. Boals BS
- Ricardo J. Silva MSc CCE

## ACCE News

**ACCE News** is the official newsletter of the American College of Clinical Engineering (ACCE).

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## Expanded ACCE Secretariat Services

For many years, ECRI has generously provided, and continues to provide, Secretariat services for ACCE. These services have allowed ACCE to establish a permanent mailing address (5200 Butler Pike, Plymouth Meeting PA 19462-1298) and telephone number (610-825-6067). Along with the ACCE web site ([www.accenet.org](http://www.accenet.org)), these services have strengthened the lines of communication available to ACCE members and to other individuals and organizations interested in ACCE activities.

In June 2001, ACCE Secretariat services were expanded through an agreement with Baretich

## **Report to the USCC on the activities of the US Board of Examiners for Clinical Engineering Certification**

The newly formed US CE Board of Examiners first met at the AAMI annual meeting in June 2001. Beginning in July the group met every two to three weeks thereafter.

The newly formed US CE Board of Examiners consists of Bruce Barkalow; Caroline Campbell, Chair; Richard Congdon, Secretary-Treasurer; Greg Davis, Chair-elect; Joseph Dyro; Gary Evans; Paul Ostrowski; Joseph Skochdopole; James Wear and Ray Zambuto. Eight of the ten members previously held positions on the US CE Board of Examiners at some point over the past 20 years. There are three additional openings for Board members, which will be filled prior to the annual meeting.

Accomplishments to date are as follows:

Revision of the Bylaws to reflect the request by the USCC to remove any conflicts with the USCC or ICC's bylaws and constitution. This was done based on recommendations received at the USCC meeting 6/12/01 and on research into the USCC & ICC Bylaws and Constitution. A revised set of Bylaws and Constitution was submitted to the USCC Secretariat and the USCC Chair on 8/31/01. Additional feedback from the USCC and AAMI will be incorporated.

The CCE application form, including eligibility requirements, description of the exam process, information required to be submitted and references form were revised. This will be ready for distribution in December 2001

The question bank for the examination is now in the process of being restructured and repopulated with current questions. The distribution of the questions is based on an analysis, by the CE Board, of the "Body of Knowledge Survey" conducted by the ACCE CCE Committee in January 2001, presented at the AAMI annual meeting in June 2001 and published in the May-July-Sept 2001 issue of ACCE News. Many of the 120 clinical engineers who responded to the survey are being asked to participate in providing and developing examination questions in each of the primary and secondary areas that constitute the body of knowledge. It is expected that the majority of the questions to fill the question bank will be obtained in the first quarter of 2002.

Software is being evaluated for the purpose of managing the question bank database and generating examinations. The evaluation and purchase of this software will be completed in January.

A consultant and/or methodology and training for the purpose of psychometrically evaluating each test question for appropriateness is in the process of being researched. The method of performing this analysis will be determined and implemented in the first quarter of 2002.

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ACCE is an educational partner for Clinical Engineering Sessions at HealthTech 2002, in Baltimore Maryland on April 21-23. Sessions are planned to cover topics in JCAHO, HIPAA, ISO9000, Managing Radiology Service Contracts, Disaster Planning, and the Future of Clinical Engineering. ACCE will also have a booth at HealthTech and a general membership meeting.

To learn more about HealthTech 2002, go to [www.healthtechnet.com](http://www.healthtechnet.com) Baltimore is a great conference venue. Mark your calendars now! When registering, be sure to identify yourself as an ACCE Member to assure the lowest registration fee.

## Come To AAMI 2002 With ACCE



Come join ACCE for 4 days of learning and fellowship at AAMI 2002 in Minneapolis MN. ACCE is an educational partner of the AAMI annual meeting and ACCE members have been heavily involved in the planning committee for the annual meeting, to assure that the educational program will be relevant and timely for clinical engineers.

The highlight of ACCE's activities will be the Annual Symposium on Saturday, June 1st. This year's topic is of critical importance to clinical engineers.

### **Perspectives for Successful Leadership in Clinical and Information Technology Services**

ACCE will also be hosting a reception and annual meeting for members – a great chance to catch up with old friends and to make new ones! ACCE has arranged for its members to receive a discount on registration fees. For more information on the Annual Symposium or the AAMI 2002 annual meeting, go to [www.aami.org](http://www.aami.org) or [www.ACCEnet.org](http://www.ACCEnet.org). See you in Minneapolis!

## On the Move and In the News

### Marv and Jonathan at the Center of the World

After a week of hard work in Quayaquil, Ecuador presenting an ACEW Workshop, Jonathan Gaev and Marv Shepherd journeyed to the center of the world. They flew from Quayaquil to Quito where their guide, Mario Gonzalez, met them and gave them the grand two-day tour.

Quito is a pretty city and seems to have more visitor sites than Guayaquil. The three traveled the winding roads from Quito to Otovalo markets and could enjoy the beauty of volcano alley. Mario is a fast driver, and noting that there are no speed limit signs along the road, they asked if there were any speed limits? He said *"Yes there are speed limits...but we don't pay any attention to them."* At the center of the earth, they were able to straddle the center and feel the energies of the ages enter our bodies. The Inca's thought Quito to be the center of the world. At the same location, they saw exhibits of various indigenous peoples. Jonathan demonstrated another clinical engineering talent by using a 12' blowgun to place an arrow in a cactus from 50 feet. Hasta luego, Baby!



### Tom O'Dea Under the Weather

We learned recently that Tom O'Dea, Chairman of ACCE Advocacy Committee, suffered a mild stroke. We wish him a speedy recovery and a quick return to action.

### Patail Teams Joins Astronaut to Fight for Patient Safety

After 14 wonderful, productive years as Director of Clinical Engineering at Beaumont Hospital, Royal Oak, Michigan, Brian Patail has joined the team lead by former astronaut, James Bagian, M.D., P.E. Bagian is director of the National Center for Patient Safety, Ann Arbor, Michigan. NCPS oversees patient safety issues for approximately 200 government hospitals. His new coordinates are [bryanne.patail@med.va.gov](mailto:bryanne.patail@med.va.gov). NCPS, 24 Frank Lloyd Wright Drive, Lobby M, P.O. Box 486, Ann Arbor, MI 48106-0486. Phone 734-930-5852. Congratulations, Bryanne!



### Virtual Instrumentation Maven Rosow Speaks

Eric Rosow, Co-founder PREMISE Dev. Corp. and Director of Biomedical Engineering at Hartford Hospital was invited speaker on Virtual Instrumentation: Health Care Solutions at the Bioinformatics Symposium sponsored by BEACON, The Biomedical Engineering Alliance & Consortium in Hartford, CT on October 12, 2001.

### Maguire is Wireless in Healthcare

Barbara Maguire chaired the Wireless in Healthcare session at the recent HealthTech conference held in Cleveland, Ohio last April. Barbara is Director of Biomedical Engineering at New York Presbyterian Hospital.



## ACCE Teleconferences 2001

- December 20, 2001 "Managing the successful (and profitable) maintenance insurance program" - Robert Ferone, Staten Island University Hospital, Staten Island, NY
- January 17, 2002 "Keeping your clinical engineering staff and device users trained and competent" - Nancy Lum, Massachusetts General Hospital, Boston

Registration - contact Alan Levenson at 800-222-4776 x5310 or e-mail to [levenson@gti.net](mailto:levenson@gti.net)

The cost of each one-hour noontime (12 EST) Teleconference including handouts is only \$125 for four participants.

## ACCE Teleconference Series Wants You

Suggestions for Topics and Speakers for the 2002 Series Needed

Contact Alan Levenson with your ideas!

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## THE VIEW FROM THE PENALTY BOX

David Harrington, [davesbt@kersur.net](mailto:davesbt@kersur.net)

Well another year is rapidly coming to a close. Looking back over the year we find more questions than answers. The year started off with an election that was not clear, an economy that was starting to show signs of problems and healthcare drifting without clear leadership.

As the year progressed and the economy started to tank more people lost jobs and benefits, we had interest rates dropping with little or no effect and gas prices at an all time high. In early summer gas prices were close to \$2.00 a gallon in some parts of the country, (I paid \$1.15 a gallon on November 18).

Our budget surpluses at both the federal and state levels suddenly turned into deficits. More companies downsized staff, as did hospitals. Fewer business opened, home sales declined, as did selling prices in many markets.

At the conventions the topics on most people's minds were about our futures and if we would all be working for only a few companies and hospital systems. It is getting real hard to remember who owns who, what hospitals are in the same system, owned by others or just working together for marketing reasons. For the first time in my memory this year brought no new technology into the general healthcare marketplace. Some may disagree on this point but the artificial heart has been around for years, most of the new drugs are repackages of existing drugs and while PACS and digital x-ray made inroads they also have been around for a few years.

Just as we thought things couldn't get worse September 11 occurred. Being chronologically challenged I remember the events of World War II, Korea, Viet Nam, Lebanon and Ulster. Yes, I lost 3 people that I knew on the planes and at least 2 in the towers, but this year I have also lost 4 people that I played hockey with, 8 that I have worked with and 5 that I was friends with. At my age you expect that you will lose friends and acquaintances each year but I was not prepared for 5,000 at once.

What bothered me more than anything was the people that were supposed to know what was going on have no clue. It was like everyone in power turned into a hospital administrator, smiled and kept saying, "we are looking into the problem". Our government can find a fruit fly in 600 square miles but cannot find a person on their "watch list" of suspected terrorists. To add insult to injury we find out that several of the

terrorists were actually informants to the FBI. Most recently we find that some 60 illegal aliens trying to board planes at airports have been picked up by police and National Guard personnel only to be released by INS for some unknown reason. We had people screening passengers at our airports who had criminal backgrounds, were residing in the country without permits, were unable to speak English, and abandoned their posts whenever they felt like it.

After the initial shock wore off, I started to hear that the event was the fault of Americans or globalization, of religious precautions, everything but what it was, a criminal act by criminals, nothing more, nothing less. To some people placing blame is intellectually impossible and accepting blame is unheard of. Unfortunately many of these people are in positions of power or influence. One last statement on this topic, terrorism has to be stopped in all countries, especially in my ethnic homeland where thousands have been killed for "religion". We Irish are noted for sad loves and happy wars.

What is next? We, as members of a profession have to get more involved with what is happening. We, as a profession know the difference of being aware versus being beware. We, as a profession know that people and objects have to work together for the betterment of the human race. We, as a profession have proven we can get people and objects to work together and fix either of them when something goes wrong.

Last point, we need clinical engineers in positions of power because we know how to get things done with little or no budget and little or no co-operation from those in charge. Just think how great we could make this world if we were in charge. Well, maybe I should stay here in the penalty box as the game goes on and not get involved. Nah!!!!

Happy Holidays to all!



# ACCE News

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## Puff's Mighty Roar

Richard Schrenker, [raschrenker@partners.org](mailto:raschrenker@partners.org)

With a few exceptions, I've been happy to remain below radar when it comes to the existential issues facing clinical engineering. I broached the subject as part of a presentation at a 1987 IEEE EMBS meeting, and I delved into my own spin on the way out of it in a 1996 diatribe in a *BI&T* column entitled *Engineers in Clinical Engineering: Does the Need Remain?*. I got back into it a bit this year by helping put together the session, *Where is the Demand for Clinical Engineers?*, for the AAMI Meeting. But generally, I don't get involved in the efforts to address the decline of clinical engineering because my interests beckon in other directions.

I decided to come out of hibernation and help put together that session for AAMI as a result of a few of the responses to Ethan Hertz's *BI&T* column advocating a professional response to the Institute of Medicine's Report entitled *To Err is Human: Building a Safer Health System*. The way I read it, Ethan was advocating for clinical engineering to assume a leadership role in addressing some of the issues raised in the report via the proactive application of systems engineering skills. Subsequently published letters to the editor in response to Ethan's suggestions lead me to believe at least some clinical engineers would prefer to remain in a reactive role, waiting for someone else to take the lead in addressing whatever issue is at hand. At about the same time, Michael Fraai and I were kicking around developing a presentation on new roles for engineers within clinical engineering, with the implication that the profession can support more than one type of engineer.

I thought that would be the end of it. I won't be at AAMI, but instead will be happily attending to family activities associated with my daughter April's high school graduation. With Mike and Ethan in control, I was, like Puff the Magic Dragon, slipping back into my cave. I had almost made it when I learned that ACCE had published a survey to try to assess the skills of practicing CEs in order to develop a new certification process. Let's just say I expressed my criticism of the

approach in an email to ACCE. To be precise, I believe I likened focusing on certification to rearranging the deck chairs on the Titanic. Unfortunately, I was treated with truly undue respect in response and then challenged to offer suggestions on ways the profession could avoid demise. Truly a low blow, and on top of that calling my bluff. OK, here goes:

In my EMBS presentation, I described an engineering group that I helped develop in the mid-80s. One of our goals in forming the group was to effectively partition the department's technician and engineering roles, and I set forth the hope that 10 years later the differences would be so evident as no longer to be an issue. But just about 10 years afterward (which Dave Barry would consider a great name for a rock band), in my *BI&T* column I offered evidence that the distinction had still not been made. Again, I tried to convey the importance of differentiating engineering from technical roles.

Tick-tock, tick-tock, and what do you know? It's five years later...

Those of you who subscribe to biomedtalk may recall a thread from a few months ago where a questionnaire was distributed asking for feedback regarding the differences between CEs and BMETs. The gist of my off-line set of responses to the questioner was that comparing CEs and BMETs was, or should be, akin to comparing apples and oranges. This led to an email discussion where I agreed that indeed one way of looking at the structure would be to model a continuum of roles between a BMET and CE. However, I continued to argue that the two professions could also be seen as distinct in at least two ways. First, there are problem sets that an engineer could

address for which the technician is not equipped. Second, there are problem sets outside the scope of the continuum between engineers and

technicians, some of which are best approached by technicians, some best approached by engineers. As I see it, the professions intersect, but neither maps fully into or onto the other. I have to admit to some frustration from my sense of not being able to convey that in my conversation. But it was not a new feeling;

***“Focusing on certification is like rearranging the deck chairs on the Titanic.”***

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over the years it has been evident to me that many if not most in health care, both inside and outside clinical engineering, see the differences between CEs and BMETs reflected in emphasis and focus as opposed to *substance*. And indeed, if there is not a substantial difference, there is no need for separate professions.

Are there substantial differences? It would be hard to detect any in my colleagues' perceptions. Who in the business has never heard a nurse, physician, or administrator call a BMET an engineer, or vice versa? A rose by any other name would smell as sweet. If customers see no difference between practitioners, then can the difference be said to exist? The only conclusion one can draw is the identity of clinical engineering has been so closely tied to medical equipment maintenance management that they are considered one and the same. And indeed if they identical, there is no need for them to be called by other than one name.

You may or may not agree with me that the association with equipment maintenance is *a* if not *the* primary cause for the decline in the clinical engineering profession. However, you will be hard pressed to cite evidence that continuing, let alone growing, that association is likely to improve the outlook. If that thought strikes just the quietest of internal chords, then you cannot but consider that new associations need to be explored (and not in terms of "Can we maintain that?"). But what is the foundation on which to build these relationships, if not equipment maintenance? Through what new lens should clinical engineering view its world?

I would suggest it adopt a lens described, I believe, by the founder of the field near the time of its inception. If I'm giving credit to the wrong editor, I apologize, but I'm pretty sure the following comes from somewhere early in Dr. Cesare Caceres' textbook, *The Practice of Clinical Engineering*. As I remember it, in one chapter an author notes the primary nature of the clinician-patient relationship in healthcare delivery and argues that technology has intruded into that relationship, in some measure separating the clinician from the patient. The author then cites clinical engineering's primary role as removing technology from its disruptive role in the

clinician-patient relationship while leaving the benefits in place. Clinical engineering is asked to see where technology is causing problems, and then envision and implement solutions. This vision is not of a passive organization waiting to react to problems as and after they occur but rather one that is charged by a realization that problems will occur and that this requires proactive and systematic actions taken to minimize their impact. This, indeed, is the kind of stuff that differentiates engineering from technical services. Realizing a business function around this vision would result in an organization that is substantially different from equipment maintenance (or equipment management, or technology management, or whatever else you choose to call it).

That begs the question as to where technology is setting itself between patients and caregivers. The classical locations have not disappeared; technology still wreaks havoc at the bedside and in the lab. Other

***“clinical engineering's primary role ... removing technology from its disruptive role in the clinician-patient relationship while leaving the benefits in place”***

areas have risen to the level of obvious; information systems departments

immediately come to mind. So, too, do nursing and pharmacy. We can expect the home will present significant challenges in efforts to make transparent the caregiver-patient link. If clinical engineers could see why they are needed to provide whatever engineering services are required at the point of delivery of care, wherever that may be, maybe then they could understand the need to be proactive and insistent that they be charged with addressing systems engineering issues of any ilk facing health care, even those that don't involve a medical device.

Certainly this would give the profession an identity all its own, independent of maintenance, obvious not only to its customers, but also to itself.

OK, that's it. Thanks for the soapbox. One, two, three strikes, and I'm out of the old ball game. You folks spruce up those deck chairs at the AAMI Meeting, while I bed down in this nice, cold cave....

## Workplace Profiles

### Shands Hospital at the University of Florida

*Craig Bakuzonis*

Shands Hospital, a tertiary care teaching hospital, was established in 1958 as the teaching hospital for the University of Florida College of Medicine in Gainesville. In 1980 the hospital became a private not-for-profit corporation. In 1996 Shands purchased the hospital group of the AvMed Health Plan and became a healthcare system called Shands HealthCare.

#### Clinical Engineering Department History

##### *Beginnings*

When part of the University of Florida, Shands Hospital obtained its medical equipment support from the Bioengineering Services department of the Health Sciences Center. After becoming a private corporation the Clinical Engineering department was born on October 18, 1982. The department was managed under contract with Sigma, a division of the Carolinas Hospital and Health Services. This original group eventually became a component of Sun Health Services which has since merged with Premier. We continue to recognize this history today with the word SIGMA printed on all of our equipment identification tags.



##### *Clinic and community hospital involvement*

In 1990 Clinical Engineering began the support of the outpatient clinics of the University of Florida Faculty Group Practice. Initially this began as nine

clinics all within the hospital and Health Science Center complex. Currently we support about forty clinics within a sixty-square mile area.

The Clinical Engineering department is an internal department of Shands at the University of Florida (UF) and currently provides consulting services to three of six Shands-owned community hospitals. The remaining three community hospitals (all located in Gainesville) are supported from the UF site with two technicians on site at Shands at Alachua General Hospital (AGH).

#### Clinical Engineering Department Role and Organization

##### *Customer base*

The Clinical Engineering department of Shands at UF and Shands at AGH is directly responsible for the evaluation, installation, inspection and repair of what is classically called general biomedical equipment. We also keep the patient care (medical) equipment inventory for each hospital for all departments regardless of our level of support. The department oversees the general activity of an independent service organization (ISO) that services many imaging systems and the general biomedical equipment of three community hospitals. We integrate the equipment management information of the separate Radiation Oncology support group and act as a consultant to the community hospitals for their patient care equipment management. For equipment that we support directly we use everything from full department support to a mixture of first call, parts only, vendor backup, time and materials, and inspection only vendor contracts depending on uptime requirements and cost.

##### *Department organization*

Administratively the Clinical Engineering department is a part of Facilities Operations, which includes Telecommunications, Electronics, and Facilities Maintenance. Facilities Operations is grouped into the Operations Division, which includes all other non-nursing hospital departments.

Within Clinical Engineering there is a department director (a Certified Clinical Engineer), an assistant director responsible for day-to-day operations, three senior BMETs called Coordinators, one BMET

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Specialist, eight BMETs, one junior BMET, one BMET assistant, one business assistant, and one clerk. The BMET assistant is responsible for ordering, shipping, and receiving while the business assistant and clerk support purchasing, data abstraction, and electronic image scanning.



The department is split up into three functional groups – Main shop, Satellite shop, and PMs. The PMs group does just that; they are responsible for completing the inspection workload and any minor repairs that result from a failed inspection. All other failures are sent to either the Main or Satellite shops. The Satellite shop handles all customer calls for the Operating Room (O/R) and Anesthesia departments, the intensive care units (ICU's) on the nearby floors, and some inspections for the O/R, Anesthesia and all of Perfusion services. The Main shop handles all other areas – acute care floors, all diagnostic and therapeutic departments, dialysis, outpatient clinics, and some remaining ICUs.

## **Documentation system**

### *Paper*

The department starts all of its documentation with paper forms. All work is broken into one of fifteen categories and must have an identification (ID) number. All devices, including separate components, must have an ID number. There are also two ghost ID numbers for each department, one for equipment work that does not have an ID number (small battery chargers for example) and one for non-equipment work (helping a department purchase equipment). Additional ghost ID numbers are assigned for filter cleanings, equipotential tests, and other specific wide area tasks.

### *Premier SAMM*

We continue to use the SunHealth-Premier equipment management software – it works, is stable and fast, and meets our needs. Currently this software package is called SunHealth Automated Maintenance Management (SAMM). It is equivalent to many of the available software systems and has typical equipment inventory, work order tracking, inspection scheduling, and productivity modules. It accepts both free text and codes for work order problem and resolution statements, and allows the work to be divided into different categories.

The work categories that are used include administrative, incoming inspection, calibration, emergency repairs, in-service education, modification, product evaluation, operator error, periodic maintenance, routine repair, benefits, travel, vendor supervision, warranty repair, and consultation. We have found these categories to be sufficient for broad classification of the work we do for our customers. They are also used to perform department and individual productivity analysis.

All scheduled inspections are printed monthly from the equipment history database onto standard letter-size paper. Each device requiring an inspection gets an individual sheet with the necessary inspection tasks listed. A series of preprinted forms are used for recording all unscheduled work. Each form has required fields. After a BMET documents the work on the various forms he handles no more paperwork. Work for the previous workday is submitted by 9:00 a.m. for data abstraction and image scanning. In the data abstraction process (a.k.a. data entry) the information contained in the required fields is entered into the SAMM database. It is then immediately available for all to use wherever a PC running SAMM is connected to the metropolitan area network (MAN).

### *OTG imaging system*

Since some of the work documented on the various forms cannot be abstracted (e.g., diagrams, extended notes or comments, particular vendor information) the forms are electronically scanned into an image management system from Online Technologies Group (OTG) and Shell Office Systems (a local document management company). This image management system contains records indexed by the ID number and the date the work was performed. Any additional information, e.g. vendor repair reports or packing slips,

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are also scanned and indexed by their respective ID number and date.

Each scanned image is a separate record and can be reviewed on any MAN PC workstation that has the viewing software package. Again, once the image is scanned and indexed it is immediately available for viewing.

Within two days of submission of all paper forms the data (both in abstracted and complete image format) is available for all in the department to use. The original paper documents are kept for 30 days and then destroyed. Therefore once the data is entered into the system we do not touch or use the original paper forms; the system becomes paperless. This hybrid system of initial paper forms coupled with paperless storage is extremely flexible, easy to use, and reliable.

## **Technician rotation program**

Each of the three functional groups in the department has an assigned coordinator and a specific number of BMETs. However, no one is permanently assigned to any group. All of the Coordinators and BMETs rotate on a staggered basis through each group continually. The Coordinators rotate at twelve-week intervals and the technicians rotate at staggered eight-week intervals. This rotation scheme provides overlap for all department groups and allows for many opportunities for complete cross training of all BMETs. The only exception to this is the BMET Specialist who is permanently assigned to the Cardiac Catheterization Lab and Neurofunction areas. Our philosophy is to provide cross training opportunities for all BMETs so that every BMET has the skills to handle 60 to 75 percent of all repair calls and 100% of all scheduled inspections. If the complexity of a repair is beyond the skills of a BMET, the Coordinator of this group asks for backup through the Coordinator who has the fully-trained BMET in their group. Of course, the Coordinators can use this opportunity for additional cross training.

Coordinators complete a full cycle every thirty-six weeks and BMETs every twenty-four weeks. In this way everyone gets an opportunity to do everything from the dreaded pump inspection duty to exposure to our newest equipment installations. We have used this concept for over twelve years with very good success.

If you have any questions about the Clinical Engineering department at Shands at UF, please contact Craig Bakuzonis, CCE at 352-265-0056.

## **ACCE Board Meeting Highlights August 15, 2001**

### **Outgoing President's Report (Jennifer Ott)**

Medical Errors paper referenced in recent issue of *Biomedical Instrumentation & Technology*.

Bylaws Revisions membership vote on-going.

The Board agrees that development of a business/strategic plan this is a worthwhile activity.

### **Incoming President and Outgoing First Vice President's Report (Elliot Sloane)**

Jim Keller has agreed to be the Newsletter Manager.

Board members are considering legal issues regarding foundation establishment

Jennifer Ott will lead the effort to form guidelines and criteria for Bob Morris Memorial Fund

Several Website updates will be addressed in September including obtaining feedback on website changes.

Elliot thanked outgoing Board members for their contributions and invited them to continue to be active in ACCE's activities. Elliot welcomed the incoming Board members and encouraged their active participation.

### **Incoming First Vice President and Outgoing Second Vice President's Report (Raymond Zambuto)**

WHO memorandum of understanding to be addressed by International Committee

HealthTech is interested in continuing ACCE's involvement in the conference. AAMI desires "partnership pavilions", i.e., organizations to have a booth instead of exhibit hall location. Symposium topic related to IT is still under consideration.

### **Past President's Report (Frank Painter)**

Al Jaknunas is gathering information to facilitate revision *Equipment Donation Guidelines*, last revised 8 years ago.

### **Secretary's Report (Caroline Campbell)**

Membership Directory will be distributed by Secretariat.

### **Treasurer's Report (Henry Montenegro)**

Teleconference income favorable.

## **CCE Committee's Report (Frank Painter)**

The Board of Examiners has approved a Constitution and Bylaws that have been forwarded to the USCC & ICC. Qualifications are still under consideration. Questionnaire has been distributed at AAMI conference last year with respect to interest in CCE certification.

## **Membership Committee's Report (Frank Painter)**

Louis Schonder recommended for associate membership. Bruce Barkalow recommended for individual membership.

## **Education Committee's Report (Jim Wear)**

ACEW curriculum is still with WHO for their review and recommendations for changes.

The 2001 ACCE teleconference series is going well and Al Levenson has increased the attendance over the last year.

## **International Committee's Report (Tom Judd)**

Workshops have been held in Lithuania, Nepal, Panama, Ecuador, Cuba and Saó Paulo. Costa Rica workshop will take place in Jan. 2002, Peru in March 2002, and Brazil (focus on Healthcare quality issues) tentatively in November 2001.

ORBIS may have workshops in the future that could benefit from ACCE involvement. ORBIS has offered to sponsor a significant number of international members and fellowships.

Elliot Sloane will host training on the PC-based software package, WHO Essential Healthcare Technology, in Philadelphia, February 2002.

## **Advocacy Committee's Report (Tom O'Dea)**

Tom wrote letters to the bosses of Advocacy Awards recipients.

Marv Shepherd will contribute \$250 for future DevTeq award recipients.

Nick Noyes, Tobey Clark, and Salil Balar are interested in working on the establishment of a clinical engineering week possibly joining forces with ASHE.

George Johnston has produced videos on Bob Morris and on Norm Welford for the ACCE Library.

The Advocacy committee will absorb activities previously addressed by the Root Cause Task Force that was looking at methodologies to help sustain the profession.

## **Clinical Engineering Is Enjoying a Rebirth in South Africa**

*Binseng Wang, binseng@alum.mit.edu*

Recently, I had the privilege of participating in the national biennial conference and exhibition jointly organized by the South African Federal of Hospital Engineering (SAFHE) and the Clinical Engineering Association of South Africa (CEASA). SAFHE has been in existence for quite a few years, but CEASA is a brand new organization created to advance the field of clinical engineering in that country. Some of the prominent CEASA founders are Riaan van der Watt (Netcare), Kevin Poggenpoel (Medi-Clinic), Johan Van Roon (Pretoria Technicon), John Ruiter (Afrox), and Paolo Boschetti (Dräger Manta).

The meeting was held at the Sun City Hotel from Oct. 3 to 5 and was attended by about 270 persons. Each day there were several plenary sessions attended jointly by SAFHE and CEASA members. On Thursday and Friday, there were also parallel tracks with sessions focused on facility management and clinical engineering. The Opening Ceremony was presided by the Chief Director, Hospital Services, Dr. Thabo Sibeko, of the Department of Health, representing the Secretary of Health (who was travelling overseas with the Prime Minister at the time). Numerous other government officials participated in the meeting, including the Deputy Director, Health Technology Management, Mr. Gcobane Quvile, and the CEO of Baragwanath Hospital, Dr. Reg Broekman.

I had the privilege of sharing the keynote address with Graham Perry of UK's National Health Services' Estates division. He spoke about the differences in facility management between the First and Third World countries, while I did the same for clinical engineering. On Thursday afternoon, I presented an overview of MEDIQ/PRN's Quality Assurance program and on Friday morning I conducted a workshop on strategic planning for CE departments.

After attending all the CE sessions, I am happy to report that the high quality of the presentations and the enthusiasm of the participants greatly impressed me. It is clear that the private hospitals are gaining a firm grip on technology management issues, ranging from in-house repairs to negotiating major equipment acquisitions. It is even more encouraging to witness the

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public hospitals regaining the high level of standards that South Africans enjoyed for many years before the peaceful political transition. It is probably not an exaggeration to say that CE is being “reborn” in South Africa.

A good example of the rebirth is the fact that CEASA is actively developing a registration framework within the Engineering Council of South Africa to enable the CE practitioners to register professionally. If they succeed in this difficult endeavor, it could serve as a model for many other countries, including the US.

Now that South Africa’s political system has proven to be stable and progressive and its economy is growing steadily, I have the impression that our South Africa colleagues will regain the worldwide importance and prestige they had previously. I look forward to cooperate more intensely with them in the future.

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## Advanced Clinical Engineering Workshop Health Care Technology Management Kathmandu, Nepal

*James Wear, wearjam@lrn.va.gov*

The American College of Clinical Engineering (ACCE), World Health Organization (WHO) and HSSP/Physical Assets Management Project (PAMP)/GTZ organized an “Advanced Healthcare Technology and Its Management” workshop in Kathmandu, Nepal from April 9 to 13, 2001. There were participants from Cambodia (3), India (3), Laos (1), Vietnam (1) and Sri Lanka (4) as well as Nepal (37).

The objectives of the workshop were:

1. To discuss the importance of healthcare technology (HCT) management for health service delivery; and
2. To share experiences on how to go ahead in integrating HCT management in health service delivery

The international faculty included:

Dr. James Wear, Dr. Elliot Sloane, Dr. Binseng Wang, and Ms. Barbara Maguire for the ACCE.

Dr. David Porter and Dr. Anna Barnes from United Kingdom

Dr. Hans Pfeiff and Hans Halbwachs From Germany  
Roger Schmitt representing GTZ in Nepal

The workshop was opened by Dr. Andrei Issakov, WHO and the Director General, Nepal Department of Health Services. There was then a brief memorial for Robert Morris, who was originally to have been on the ACCE faculty.

The lectures were presented with a lot of participant interaction since almost all of the participants spoke English. At the end of each day there was a discussion of the situations that existed in the participants countries relevant to the that day’s topics. These discussions were led by a professional facilitator. The participants evaluated the workshop on a daily basis using a mood barometer. The evaluations improved each day. An overall evaluation was done at the end of the program. The participants who completed the evaluations rated the presentations as good to excellent and as useful to very useful.



This was a very pleasant experience and makes one appreciate even the worst of our hospital engineering conditions. The workshop was at the Hotel Yak & Yeti, which was excellent and was the only hotel with its own emergency generators. Emergency is not a good term since Nepal had a real electrical shortage during that time. The generators provided power for most of the time of the workshop. Breaks were sometimes determined by power outages and projection equipment would not work. Most shops in the city only had power from 7 PM until 10 or 11 PM so many of them had small generators which they turned on when a customer came in.

The workshop was near the old part of the city with narrow streets with shops and temples. We were only a

few blocks from the palace where the king and queen were murdered a couple of weeks later.

We visited hospitals with dark halls and equipment that was in very questionable condition. However the level of healthcare delivery was good for the conditions. Maintenance of equipment was a problem with regard to parts, but the technicians were innovative. In one case, we were told about an x-ray machine in a rural area where there were no roads that needed repairs. They packed the machine a few miles to a road to put it on a truck for a ride of 100 miles (16 hours) to Kathmandu for repairs. It is a wonder that it worked when it was returned to the hospital.



After the workshop, Barbara Maguire went on a trek. James Wear and Elliot Sloane and wives went to Pokhara in central Nepal for the weekend. We were fortunate enough to have a stunning view of the Himalayas after an evening rain.

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## ADVANCED CLINICAL ENGINEERING WORKSHOP

### Saó Paulo, Brazil

James Wear, [wearjam@lrn.va.gov](mailto:wearjam@lrn.va.gov)

The 16<sup>th</sup> ACEW was held at the Hospital Sirio-Libanês, Saó Paulo, SP, Brazil on June 4 –6, 2001. The curriculum for this workshop was developed with the American College of Clinical Engineering (ACCE), the World Health Organization (WHO), the Pan American Health Organization (PAHO) and local organizers. The local organizer was the Brazilian Clinical Engineering Commission (CBCEC). The CEP- Syrian-Lebanese Hospital of Sao Paulo and the ABIMO – Brazilian Healthcare Products Manufacturers Association provided support with PAHO and WHO. The workshop was at the same time as the Hospitalar Show

was in Sao Paulo. This is the largest show for medical and hospital equipment and supplies in South America. It is different than shows in the US in that purchases are made by hospital at the show. There were products including medical equipment from all over the world.

The ACCE provided a four-member team for faculty, which included Dr. Binseng Wang, the lead faculty person, Dr. Yadin David, Dr. Tan Kok-Seng and Dr. James O. Wear. Brazilian faculty included Dr. Eduardo Guerrero, consultant, OPS/OMS –Brasilia, Dr. Sergio Muhlen, presidente, CBCEC, Eber R. dos Santos, Hospital Sirio Libanes, Sao Paulo, Paulo Palombo Camargo, Hospital Oswaldo Cruz, Sao Paulo, Jose Carlos da Cunha, Hospital das Clinicas, Curitiba, PR, Antonio Gilbertoni Junior, Hospital, Albert Einstein, Sao Paulo, and Lucio Brito, Engenharia Clinica Ltda, Sao Paulo (a member of ACCE). In addition, presentations were made on the first day by representatives of Angola, Mozambique and other parts of Brazil on technology management issues in their country or area. This mix of faculty allowed for the presentation of technology management issues and solutions that could be relevant to the participants. Input and questions from the participants were used to drive the presentations.

The program was supported by simultaneous translation, which was very good. The local audiovisual support was excellent and the class was moved at one point in order to provide web support. In this manner, the faculty was able to demonstrate web sites that could be used to support technology management.

The issues for the participants were mostly for Brazil since there were only one participant from Angola and three from Mozambique. Also the participants from Brazil were from urban areas so the issues discussed were related to urban hospitals. Since most of the participants were technical personnel, they were concerned about how they could become more involved in technology management. Certification was one way that was discussed to give them more status in the hospital. The process of becoming involved in the strategic planning, equipment planning, selection and procurement of equipment was discussed. They also have problems with spare parts and different ways to address this issue were discussed including finding sources of parts from used equipment. Some of the participants stated that they could send someone to the

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US to buy a part and bring it back and save more than the cost of the trip.

Training was a major issue, especially continuing education. They have an infrastructure to do videoconferencing and to deliver education by distance methods. One of the universities has a grant to deliver training in this manner to biomedical engineering staff. The faculty presented ideas on approaches to this training and sources of materials.

The attendees were mostly technical personnel and mostly engineers. There were a couple of company representatives and a physician from Angola. The engineers represented the larger hospitals in Brazil and a couple of universities. The three representatives of

Mozambique were from the ministry of health and at least one was an engineer who had attended the workshop in Cape Town, South Africa.

After the workshop, Binseng Wang, James Wear and Lucio Brito (ACCE member from Brazil) presented a one hour live video-conference at the Hospitalar Show. This was on Clinical Engineering and Technology Management and was broadcast to about 400 sites in Brazil by SENAC. SENAC is a non-profit training school system. This was a very professionally produced program and gave ACCE some publicity. If anyone want to hear James Wear's presentation on training in Portuguese, send him a request for the tape.

## Calendar of Events

- 11<sup>th</sup> Annual Event of the American Institute for Medical and Biological Engineering, Feb. 28 – March 3, 2002, Washington, DC. [www.aimbe.org/meetings\\_2002.htm](http://www.aimbe.org/meetings_2002.htm)
- HealthTech 2002, April 21-23, 2002, Baltimore, MD. Contact Ray Zambuto, [www.techmed.com](http://www.techmed.com).
- 5<sup>th</sup> Annual ACCE Symposium, June 1, 2002, Minneapolis, MN. [www.accenet.org](http://www.accenet.org).
- AAMI, June 1-4, 2002, Minneapolis, MN.
- 2<sup>nd</sup> European Medical & Biological Engineering Conference, Vienna, Austria, Dec. 4-8, 2002, [www.embec.org](http://www.embec.org).

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