

ACCE News

Vol. 11, No. 2 – March 2001



Bob Morris gives Mr. Tuvaan a helping hand

The Journey

Robert L. Morris, December 2000

I foresee a time when I must flee
Over land and sky and sea
To a place where fate, both known and not
Is there, awaiting me.
On a mountaintop, beneath an azure sky
I'll formally go round the oomra.
On the third time round when the rock falls down
I will slowly fade away.
My shadow and I neath that azure sky will simply cease to be.
Old Khayyam was partly right when he mentioned
"A veil through which we cannot see."
It is not a veil but a boundary
Between to be and not.
And on that day on that mountain top,
My shadow and me will cross that boundary.

Bob crossed that boundary on March 2, 2001

ACCE News

21 Bob's Lane

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

Jennifer C. Ott, MSBME, jennifer.ott@tenetstl.com

We are heading into conference season and I would encourage all of you to try to attend the two main 2001 conferences in which ACCE will be quite active:

1. HealthTech 2001 – Solutions for a New Century (see advertisement in this newsletter). There will be numerous presentations from ACCE members on critical issues affecting clinical engineering and technology.
2. AAMI 2001 – Leading the Way in Healthcare Technology Management and Support (see advertisement in this newsletter). ACCE will present its Fourth Annual Symposium. The topic this year is very important, though, unfortunately, somewhat downplayed in clinical engineering circles. When HIPAA finally comes, will Clinical Engineering be ready? I encourage everyone possible to attend so that you may be informed on this critical topic that will touch every aspect of the health care system.

I would like to extend many thanks to our Second Vice President Ray Zambuto who worked diligently on both of these programs.

Look for information regarding ACCE membership meetings at both conferences. I hope to see many ACCE members at HealthTech. Unfortunately, due to my 'delicate' condition travel to Baltimore is not allowed but ACCE will still have a strong presence and a lot more wine!

In our last issue I encouraged all of you to take a few moments to send a message of strength and faith to Bob Morris, please continue to do so but now extend these

messages to his family, friends and fellow Clinical Engineers. Bob Morris passed away on March 2 following a most courageous battle with cancer. He was a Charter Member of ACCE, easily achieved Fellow status, and was a former President. His international work gave him his greatest inspiration and he truly made ACCE the international leader of Clinical Engineering activities. I most enjoyed watching his mind work and feeling his passion for ideas. He will be sorely missed! Correspondence may be sent to: The Morris Family, 5033 SE 34th Street, Portland, OR 97202.



Jennifer Ott

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I dedicate this issue of *ACCE News* to Bob. I have reprinted here several the articles written about or authored by him. The many candid photos, and some not so candid, included herein show the ever inquisitive, introspective, inventive, happy and interesting individual with his friends and colleagues.



Robert L. Morris

Humanitarian, Bob Morris

Joseph F. Dyro, dyro@alum.mit.edu

My friend Bob Morris died a few days ago. I'll miss him. The world will miss him. Much can be said about the man. How he tirelessly crisscrossed the globe helping people and countries with his keen insight and knowledge of clinical engineering. How, in a compassionate response to a fax from Mongolia, he arranged for the care of a 16-year old girl, Enkhariun, who was suffering from acute lymphatic leukemia. The picture on the cover of this issue of *ACCE News* shows Bob with her father, Mr. Tuvaan, at their house in Mongolia. How clinical engineers young and old, who revered him, encircled Bob at meetings and gazed into his face with appreciation, admiration and awe. How we enjoyed quite evenings sipping cognac and smoking fine cigars engaged in discourse spanning space and time.

Bob enjoyed poetry. *The Journey*, a poem he wrote and shared with me, is printed on the cover. I marveled, as he was always the last one remaining awake and alert after discussions that went far into the night. How he gave his full energy to the ACCE from its inception, as Founding Member, President, *ACCE News* Editorial Committee member, Membership Committee Chairman, Past President and Nominating Committee Chairman. How he frequently contributed material for publication, material marked by typical Morris horse sense.

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Letters

ACCE News, 21 Bob's Lane, Setauket, NY
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Editor's Note: Many eulogies filled e-mail mailboxes over the past few days as the world learned of the passing of Bob Morris. Several of those expressions of sadness, appreciation, and thanks are printed here.

Estonia

What a great loss for the biomedical community and for every one of us. Indeed, Bob was one of the greatest in the international biomedical community by his words and in his deeds. He belonged not only to Oregon Health Science University, not only to the USA.

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He was an essential part of the whole world. Due to him Oregon became for us important not only for its Oregon nuts (which I have heard about, not seen), but also as Bob's home state with a well-managed biomedical department at its University hospital. Bob was a great friend and supporter of the biomedical community in Estonia and other Baltic countries. His presentation at the Tartu BaltMedTech meeting was for most of us the first live contact with modern measurement-based medical equipment management fundamentals. He continues to support us through the many books, standards and other materials contributed to us from his library. His e-mail defining the requirements for a clinical engineer was the first acquaintance with Bob's excellent "*epistolaria*." We immediately translated it into Estonian. His "*fuseology*" and other training materials continue to help us identify the myriad kinds and shapes of fuses. Whenever I discuss well-managed technical departments and their benefits to hospitals, I refer to Bob's data presented at Tartu.

We had just made plans for the next meeting with Bob in Baltics for seminars for hospital administrators. His "*children*," his ideas and skills on different topics are scattered all over the world from the USA to China and Singapore, to Russia, NIS and the Baltic countries. What Bob planted is spreading and growing for the benefit of our profession and human health.

I offer my condolences to all our community and my sincerest sympathies to Bob's family. We in Estonia have the fondest memories of him and are missing him greatly.

Siim Aid
State Agency of Medicines, Estonia

New York

The world has lost a great clinical engineering missionary and ambassador and we have lost a good friend.

Sam Miller

Venezuela

Los ingenieros clinicos lamentamos profundamente la muerte de nuestro colega Bob Morris. Paz a sus restos.

Prof. Luis Lara Estrella, Ph.D., CCE
Universidad Simon Bolivar, Caracas, Venezuela

California

This is indeed a sad day. Health care lost a pillar and a wealth of experience in the passing of this giant in health care technology.

Pieter du Toit
San Diego

Estonia

March 2, 2001 is truly a sad day in the clinical engineering field. We all have lost a true giant in the healthcare technology field. The loss of Bob Morris will be acutely felt in Estonia, where he lectured at the Tartu University and provided direct support and advice on numerous occasions to the Medical Technology Center. The Estonian Medical Technology Working Group will hold its next meeting in March. We will honor Bob's passing with the lighting of a candle, a moment of silence and will discuss appropriate ways to honor Bob's contribution to accelerating medical technology advancement in Estonia.

With great sadness,
Estonian Medical Technology Working Group

InfraTech

We are sad at the loss of dear friend Bob Morris. He was a tremendous inspiration to all of us as a clinical engineer and also as person willing to help others. We will miss him very much.

Dr. Andrei Issakov
World Health Organization

Antonio Hernandez
Pan American Health Organization
Alfred Jakniunas, InfraTech Coordinator
American College of Clinical Engineering

Venezuela

Estimado Bob Morris

Te conocí en México hace dos años, y nos distes varias charlas sobre la ingeniería clínica. Te puedo decir que ese conocimiento gerencial se multiplicó en Venezuela. Lo interesante de todo, es observar el amor y el cariño que le imprimías a tus charlas, y a la forma en que te movías en el escenario, como un niño enamorado de lo que expresaba. Estoy seguro que en estos momentos, en cualquier lugar en que te encuentres, estarás satisfecho de tu contribución al mejoramiento de la calidad de vida en nuestro planeta.

Con todo aprecio y en nombre de los venezolanos.

Rodrigo Mijares Seminario

Arkansas

ACCE is small, but has a lot of recognition internationally. That is probably because Bob always said that we were a bunch of "*prima donnas*". However, in his quiet and mild mannered way, he was the "*el primo don*."

James Wear
North Little Rock

Mexico

Our friend Bob Morris passed away last March 2nd. On behalf of the Mexican Society of Biomedical Engineering and all Bob's friends in Mexico and in Latin America, I would like to thank Bob (wherever he is) for living such an extraordinary life of sharing knowledge and experience and joy.

We had the honor to have him in Acapulco in November last year and then in Panama in what were his last trips teaching and spreading clinical engineering internationally. He helped solve a problem in a hospital when arriving in Panama. He was always willing to give, expecting nothing in return but to have a better healthcare infrastructure.

We will continue to hear from him in our meetings, because we should encourage establishing a prize in his name for the best contribution in clinical engineering in our national meetings.

We all remember his teaching also in Mexico City and in Mazatlán. He is an example. We should try as much as possible to cultivate the seeds he planted during his life time and will be sure to see them blooming in all the corners of our countries as we decide to help the ones in need to have a better health care system worldwide.

May he rest in peace and serve as an inspiration to our never finishing work. Sincerely,

Adriana Velázquez

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Mexico

As a representing member of the Ministry of Health in Mexico (SSA) I wish to express the sorrow for the loss of Bob Morris to the large family of biomedical and clinical engineering. In our conditions, a great deal of his teachings persist in many of the technical manuals we were able to translate from his work to be used with our trainees thanks to his agreement to do so and by the good works of another great friend, Howard Metz. Rest in peace, Bob, and be assured that your work will be kept up by those that had the opportunity to learn from your teachings.

Héctor Brust
Ministry of Health, Mexico

Cameroon

The outpouring of grief and sorrow at Bob's passing is true testimony of what he meant to us professionally and personally in many cases.

Yunkap Kwankam
Yaounde, Cameroon

Nepal

We will honor Bob at the opening ceremony of the ACCE Advanced Clinical Engineering Workshop to be held here in Kathmandu in April 2001. Best regards

Roger Schmitt
Kathmandu, Nepal

Massachusetts

It was not my privilege to know Bob as well as many have known him. As a relatively new member of ACCE, I worked briefly with him on the Board and had some limited opportunities to get to know him as a person. Like many of his generation, Bob had a very common sense approach to life and to his work. He believed strongly in the obligation of the individual to "give back" to the profession. During the time that I knew him, he was never pretentious and was always looking for solutions. I wish I had the opportunity to know him better.

Ray Zambuto
Milford, Massachusetts

Peru

This is really sad news for we Peruvians who knew Bob. We lament deeply his passing. We still remember the lessons of Bob in Mexico and Dominican Republic.

Luis Vilcahuaman
Lima, Peru

Mozambique

I just got back for an in-land trip when I learned of the news. I am without words. I met him only twice, but to say that he was a great person is a big understatement.

Enrico Nunziata
Mozambique

Canada

Bob was my first boss, my mentor, and most importantly my friend. A lot of the skills I have today I owe to him.

Kevin Taylor
Yellowknife, NT

Robert L. Morris ACCE Humanitarian Award

In honor of Bob's unique international contributions, a perpetual annual award has been created in his name. The "Robert L. Morris ACCE Humanitarian Award" has been established to honor an individual humanitarian every year. The recipient will be a person who has used medical technology to benefit humanity and who exemplifies the special courage and compassion that Bob showed in everything he did. Donations should be sent to:

AAMI Foundation Robert Morris Award
1110 North Glebe Road, Suite 220
Arlington, VA 22201-4795

Please, write "AAMI Foundation, Robert L. Morris Award" on your check

ROBERT L. MORRIS: 1936-2001 George I. Johnston

I am saddened to report that on the morning of March 2 the clinical engineering world lost one of its greatest pioneers, educators, developers, contributors, adventurers, mentors, iconoclasts, conservatives, radicals – choose the adjective, they all fit. Truly a man for all seasons. Only a few days prior I had agreed to write a profile on Bob for the ACCE newsletter, wanting it to be a profile not a eulogy, as we knew time was short but never believing it was so short. It was to start out like this.

Bob Morris can top any of his colleagues when it comes to "we were so poor" stories, saying he never experienced indoor plumbing until he went into the service. That time in the Air Force gave him an early background in nuclear technology, which served him well in his later years as a biomedical and clinical engineer. Anyone who has worked with Bob will have a favorite Bob Morris story to share. After the service Bob pursued a degree in physics, first at Contra Costa Junior College, then at Reed College and finishing at Portland State University. Bob always argued that a physics degree was much more useful than an engineering degree to one working in as diverse a field as biomedical and, later, clinical engineering.

While pursuing his bachelor's degree he was also working as a technician at the University of Oregon Medical School. It was here that we first became acquainted and formed a lifetime friendship. After his graduation from Portland State I was able to offer him a position in my department, Research Instrument Service at the Medical School, starting July 1. However, since his first assignment would be as a lab assistant in an electronics course to start at the beginning of July he would have to, on his own, run through and test all of the experiments beforehand. Not only did this not deter him, he seemed to actually enjoy doing all

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the experiments on his own time by himself. His thirst for learning covered a variety of subjects throughout his life. Not too many years ago he took a course in Japanese, *“Just because it seemed interesting and I hope to go to Japan one day.”*

His engineering contributions to Research Instrument Service throughout the sixties were enormous as documented by the numerous publications of original equipment developments. I counted eight publications or presentations in the “partial list” in his CV. His ability to engineer unique instrument solutions for research problems coupled with the availability of research grant money during those years caused the department to grow and actually double in size. Then there was the warm summer evening in the late sixties when he and I and another member of the department were enjoying a cool beer and Bob asked, *“How come the Medical School still does not have a computer service?”* And I responded, *“Perhaps because there is no one who knows how to run one.”* To which Bob said, *“We do!”* And within the year Research Instrument Service was offering a computer service managed by Bob and later to become the University’s main centralized computer service.

Bob left Research Instrument Service to become the Clinical Pathology Department’s clinical engineer in the early seventies. His activities there expanded to the role of technology manager, long before technology management was seen as the vital role played by today’s clinical engineers. The Clinical Pathology Department learned what a wise acquisition they had made when Bob was able to show them savings he generated each year far in excess of the salary he was paid. At one time he offered to take no salary, instead be given the amount he saved the department each year. They declined! His status as a clinical engineer became recognized in 1975 when he became one of the first forty-nine clinical engineers to be certified by The International Certification Commission. He went on to serve two terms on the Board of Examiners for Clinical Engineering Certification totaling eight years.

Bob’s technical prowess and breadth of knowledge never failed to impress. Some would he say he knew a little bit about a lot of things. I would say he knew a LOT about a lot of things. This became so recognized that people were forever saying, *“Ask Bob he will probably know.”* More importantly, however, was his ability and desire to share this knowledge as exemplified by his variety of teaching activities, first at the local level but quickly expanding to the national and then international level. From that first electronics course for graduate students at the Medical School he went on to develop an electronics and instrumentation course for medical technology students, which he taught for almost twenty years. Along the way he gave numerous seminars and conducted short courses on a variety of topics ranging from basic technology to technology management. During the seventies his didactic activities expanded nationally with presentations and short courses on safety, technology management and laboratory equipment. When in 1980 he was granted a four-month sabbatical Bob went international. He

served as a consultant in biomedical engineering for Project HOPE in Cairo, Egypt, giving lectures to graduate and undergraduate students as well as setting up laboratory experiments at Cairo University. His international teaching and training activities continued unabated from then until last fall when he participated in Advanced Clinical Engineering Workshops in Mexico and Panama.

Bob also felt a strong obligation/commitment to his profession. Early in his career he became a member of the Institute of Radio Engineers (later to become the Institute of Electrical and Electronic Engineers) and served at the local and regional level on committees associated with biomedical engineering. He was a founding member of the Northwest Association for Biotechnology and later a founding member of the American College of Clinical Engineering, serving in executive committee positions including presidencies of both organizations.

Bob will probably best be remembered for the combination of his adventurous and humanitarian sides in his international work. As examples, he’ll be remembered in China for his bicycling off into the countryside, losing his way, drawing a crowd (always happens with a foreigner), finding no one who spoke English and attempting to obtain directions while all they wanted to do was observe him. Eventually (as always) he figured something out and made his way home. In Egypt he survived a snack of fresh dates washed in a polluted Nile tributary (he had observed a dead horse in the canal) served by the parents of one of his students on a weekend visit to their farm. The irony there was that on his way home, with a layover in London, he felt free for the first time in four months to partake of a fresh vegetable salad and promptly came down with food poisoning. And who can forget his stories of sitting around a campfire with shepherds drinking fermented mare’s milk while camped on the steppes of Mongolia.

But it was here in Mongolia where his humanitarian side shone. It seems that the teenage daughter of the local chief of police was terminally ill with cancer that was treatable in the U.S. but not in Ulan Bator, Mongolia. Upon his return to the U.S. Bob had one of the physicians at the Oregon Health Sciences University work out a treatment protocol for the girl and put him in touch with the girl’s attending physician. The treatment was successful and the girl was cured. After that whenever Bob went there the chief, in his gratitude, met him at the airport and provided him a car (and lodging if he wanted it) for the duration of his visit.

In many parts of Bob’s CV, the various listing of his activities, publications, etc. are followed by (A Partial List). This write-up and tribute to Bob is also only “A PARTIAL LIST!” To cover the many aspects of this talented and complex person would require far more space and time. Sufficient to say he will be sorely missed.

Eulogy delivered by George I. Johnston at the memorial service for Bob, March 9, 2001, Portland, Oregon.

President Morris in Cuba

During the first two weeks of January 1999, Bob Morris was in Cuba consulting for an NGO interested in improving the quality of care at three pediatric hospitals in Havana. While there, he met some Cuban friends who are clinical and biomedical engineers. As a result, the Cuban Biomedical Engineering Society invited him to lunch so he could renew old acquaintances. As President of the ACCE, he extended warm greetings from their co-professionals in the USA.

The photograph below documents the event. Bob reports that our Cuban colleagues are very interested in establishing closer relationships with US clinical engineers. Many of them will submit papers for the Clinical Engineering Track of the Chicago 2000 World Congress of Medical Physics and Biomedical Engineering in 2000. With President Clinton's encouragement of scientific and cultural exchanges with Cuba, this will provide an excellent opportunity to meet and discuss issues of mutual interest.



Bob in Habana, Cuba with clinical engineering leaders

Dominican Republic Advanced Clinical Engineering Workshop

The Ninth Advanced Clinical Engineering Workshop was held in The Dominican Republic on March 13-17, 2000. Over 40 delegates came from Antigua, Colombia, Mexico, Panama, Peru, Venezuela, and The Dominican Republic. Faculty was comprised of Tom Judd (ACCE workshop coordinator), Frank Painter, Bob Morris, Joe Dyro, Antonio Hernández, Diógenes Hernández, Adriana Velázquez, Kok-Swang Tan, and Jonathan Gaev. Bob Morris spoke on unscheduled service, budgeting and financial reporting, setting up a new program, budgeting strategies, electrical distribution systems, and year 2000 lessons learned.



Tan, Hernández, Gaev, Velázquez, Painter, Morris, Judd and Dyro at Dominican Republic ACEW, April 2000.

Some in the group took not a casual interest in the shops featuring hand-made premium cigars.



Bob Morris, Antonio Hernández, and Tom Judd assessing and acquiring local products

Morris in Mexico

Hospital Angeles del Pedregal was the site of the highly successful ACEW held in Mexico City in November 1998. Ing. Claudia Cardenas, herself a former workshop participant, was hostess to the event, which drew over 80 participants from Mexico and Venezuela. Adriana Velázquez was superb in organizing and directing the ACEW. Special thanks go to PAHO Clinical Engineering Head, Antonio Hernández, for his tireless efforts to spread clinical engineering throughout the Pan-American countries.

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Enraptured Mexico ACEW attendees in the presence of the master

Following the ACEW in Mexico City, participants and faculty joined colleagues from around the world in Mazatlán for the XXI National Biomedical Engineering Conference, the First Latin-American Conference on Biomedical Engineering, and the IV International Conference on Clinical Engineering. Above, hard-working clinical engineers kick off their shoes for a little fun on the beach.



Barefoot Bob: All work and no play make Jack and Jill pretty dull

Morris in Moscow Slammer



Arriving in a foreign land without proper documentation can have some dire consequences as ACCE Past President Bob Morris discovered when he attempted to enter Russia without a visa. Of course, a seasoned traveler as Bob wouldn't do such a thing. On assignment in China and unable to obtain his Russian visa in time for the ACEW in Moscow, Bob counted on his buddy Al Jakniunas to pick up the visa for him at the Russian Embassy in Washington, DC. The plan was for Al to meet Bob at the Moscow airport upon Bob's arrival and hand him his visa. Al waited for Bob at Terminal 2 (flights arriving from the West). Bob arrived at Terminal 1 (flights arriving from the East). Ne'er the twain shall meet. No Al, no visa. Authorities threw Bob in the slammer, locked him up and booked him on the next flight back to Beijing. Hours later after scouring the airport the search party by chance spotted Bob peeping through his cell. Visa in hand, he was set free to teach at the Advanced Clinical Engineering Workshop.



Cheers to all my good friends, toasts Bob in Boston, 1999.

Clinical Engineering Profiles Robert L. Morris, PE, CCE Clinical Engineer, Humanitarian

Robert (Bob) L. Morris has been at the Oregon Health Sciences University in Portland, Oregon, for forty years. He considers Portland the best place in the world to live. He is currently Director of the Clinical Engineering Department. Up until last July he was also an assistant professor in the Department of Pathology and a tenured member of the primary faculty of the School of Medicine. In 1959 after a stint in the Air Force where he learned electronics and at a time when most electronic equipment utilized vacuum tubes, Bob began to work at University Hospital. He began as a technician, worked his way through college, and progressed through all of the positions of a modern clinical engineering department to become the director of the Clinical Engineering Department. A few side trips made life more interesting.

After obtaining a degree in physics, Bob did his internship and residency under George Johnston, designing and building one-of-a-kind devices for basic and clinical research. He did analog and digital design work, using vacuum tubes,

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transistors, and integrated circuits. Many systems also involved optics, fluidics, glass and mechanical subsystems. Morris taught graduate courses in physiological instrumentation and electronics to students from physiology, biochemistry, medical psychology and other departments at the University.



George Johnston checks Bob's work

After 10 years designing and repairing instruments, Bob moved to the clinical laboratory. For the next 10 years, he was instrumental in the computerization of the clinical laboratory, taught computer programming, system analysis and laboratory instrumentation courses to post-doctoral fellows, graduate and undergraduate students and medical technology students. He has taught electronics and instrumentation to medical technology students since 1967. In 1985, Bob was appointed Director of the Clinical Engineering Department in Hospitals & Clinics at Oregon Health Sciences University while still maintaining his position in the Department of Pathology.

Bob has been involved in professional activities (IEEE, AAMI, AAPT, ACCE, ISTAHC, etc.) since 1959. He is a founding member of ACCE. He is a licensed Professional Engineer (electrical) and is a member of the second group of clinical engineers to become certified. He served on the Clinical Engineering Board of Examiners for a record number of 11 years. He has actively participated in three of the four ACCE Advanced Clinical Engineering Workshops.

Bob likes to travel and has been actively involved in international activities since 1980. He has served as a consultant for various US governmental and international agencies and for many nongovernmental organizations (NGOs) and charitable organizations. He has worked in over 28 countries as a consultant and teacher. Bob has taught courses on trouble-shooting and repair of US, European, Chinese and Russian medical equipment. Lately he has focused upon the establishment of equipment support systems

and various aspects of technology management. He holds visiting faculty appointments at several foreign universities.

Bob Morris has a broad range of interests and views himself as a generalist in the field of clinical engineering. His hobbies are traveling and reading history, philosophy, poetry and historical travel biographies. Bob is a mediocre but hopeful poet, a person who loves music but has no musical ability, a repository of miscellaneous trivia only vaguely relevant to anything and a middling storyteller. He is falsely reputed to have one of the slowest arms in the United States when it comes to picking up a bar tab.

Bob Morris officially retired from Oregon Health Sciences University last July, but continues doing clinical engineering and is busier than ever. He still serves on the Institutional Review Board Committee on Human Research. His lifetime goals have been to do work that he enjoys, to teach and mentor others and to travel. Those are still the goals that guide him.

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ACCE President Bob Morris congratulates Jennifer Ott on her nomination as ACCE's next President. .
ACCE Board members Brian Porras (l) and Dennis Minsent (r) share the good news.



Dyro © beams with delight at Mongolian Tarbuck hat presented by Elliot Sloane and Bob

ACCE News

Advanced Clinical Engineering Workshop in Russia

They came from Duvna and Kazan, from St. Petersburg and Novgorod, from Samara and Stavropol, even as far away as Vladivostok. Top-level health care professionals joined their peers from Moscow, September 13-18, 1999, at the Advanced Clinical Engineering Workshop in Svenigorod, a 200-acre estate just outside of the Russian capital. The theme of the ACEW was *Effective Planning, Acquisition and Utilization of Healthcare Technology*. The ACCE faculty, lead by Yadin David, ACEW Program Chairman, comprised Bob Morris, Al Jakniunas, Jim Wear, Frank Painter, and Joe Dyro. Morris lectured on *Maintenance and Service Management*. Morris finished with *Budgeting and Financial Reporting*.



The ladies of Russia flock to Bob

ACCE Freeloaders Cheer Bob

Just three weeks ago, in an effort to put a dent in Bob's supply of fermented Mongolian mare's milk, Cuban cigars, and Coho salmon, Yadin David, Joe Dyro, Jerry Anderson, Tom Judd, Frank Painter, Elliot Sloane, Antonio Hernandez and Marv Shepherd flew into Portland for a weekend with Bob. The keen and animated Bob captivated the freeloaders, shown at right with Bob's wife, Colleen, with globe-spanning stories far into the night. We thank Bob and Colleen for their warm and gracious hospitality.



Fulfilling a life-long ambition Bob helps behind the bar in Moscow



Advanced Clinical Engineering Workshop Panama 2000

The 12th Advanced Clinical Engineering Workshop (ACEW) was held in the tropical city of Panama, November 13-17, 2000. Bob Morris, Tom Bauld, Kok-Swang Tan, Jonathan Gaev, Adriana Velásquez, Oscar Misla and Antonio Hernández were the



Tackel, Gaev, Tan and Morris (l. to r.) inspect the Canal

members of the faculty. Bob Morris provided helpful advice to the Ministry of Health and its forensic investigation of an incident in the Santo Tomas Hospital in Panama. At the request of the Ministry of Health authorities, Bob and Ira presented a module on Medical Equipment Accident Investigation to the directors and administrators of the Public and Social Security Hospitals in Panama.

Advanced Clinical Engineering Workshop Baltics 2000

The 11th Advanced Clinical Engineering Workshop (ACEW) was held in Vilnius, Lithuania on September 25-29, 2000. A historic event occurred, the signing of the agreement to establish BaltMedTech, a cooperative effort to advance health care technology management in Lithuania, Estonia and Latvia. Morris presented Installation of Medical Equipment and the entire faculty joined in a panel discussion of Utility Systems. Many delegates remained for a final presentation by Morris on Medical Equipment Troubleshooting.



In Vilnius Bob humors Heimann, boasting he can drink the lot.

While dining one evening, Bob challenged the well-recognized excellent Lithuania vodka when he proffered a bottle of Mongolian vodka. Bob had acquired the bottle while in Mongolia just before the Workshop. It proved to be as delicious as it was ephemeral.



Believe that and I'll tell you another.

Bob's mastery of storytelling is legend.

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President's Message

Robert L. Morris, PE, CCE, May 1999

The past year (since the AAMI Meeting in 1998) was replete with momentous events that impacted our profession. It appears that the meetings with the FCC dealing with issues of digital television and interference with medical telemetry may result in the establishment of a dedicated frequency band for medical telemetry in the USA (Keep your fingers crossed). The accomplishment is due to dedicated, proactive participation by members of ACCE and ASHE. Other countries are working on similar issues.

In meetings with the FDA concerning proposed establishment of regulations governing non-OEM medical device refurbishers, remanufacturers and maintenance providers (including in-house operations), ACCE members were among the leaders at meetings with the FDA. The FDA has, for the moment postponed any decision and appears to be leaning toward a voluntary registration approach.

Dave Francoeur succeeded in changing the policies of the College of American Pathologists with regard to mandatory schedules for testing laboratory equipment for electrical safety. I estimate this change in the CAP requirements has saved my hospital 350 technician-hours per year. Dave actually got the CAP to change over a year ago, but the real impact of the change has been in the past year.

A formal agreement was signed with Health Tech that provides registration discounts to ACCE members and strengthens Clinical Engineering programs at Health Tech meetings.

The current year already includes significant activities and events affecting the profession of Clinical Engineering. AAMI has announced that no new applications for Clinical Engineering

Certification will be accepted after July 30, 1999. The AAMI Board will meet in November to determine the final fate of the CE Certification Program. Since Certification is important to the ACCE, a committee has been formed to assess the US Clinical Engineering Certification program. All identifiable Clinical Engineers, certified or not, will be contacted and surveyed to determine attitudes and opinions about CE Certification. The American CE Certification Board of Examiners and AAMI have formed a Task Force to study the same issue. To ensure minimal duplication of effort, a member of the ACCE committee is also an official member of the AAMI Task Force. I urge everyone to voice his or her opinion on this important issue.

Some BMETs have an identity problem. It would appear that there is a percentage of BMETs who are not willing to be recognized as such or are ashamed to be so recognized. This is a terrible state of affairs. BMETs are essential members and often leaders of groups responsible for the maintenance of medical devices. Any activity or group that denigrates or does not recognize the key roles of BMETs denigrates and fragments the professional identity of all. AAMI has also recognized the peril in denying one's working identity.

Speaking of AAMI, there is a new attitude of collaboration and cooperation between ACCE and AAMI. The Clinical Engineering Symposium, held prior to the AAMI Annual Meeting, was a great success. AAMI played a significant role in that success. Already new collaborative ventures are being discussed that will build upon recent successes. It behooves all of us to work toward improving relationships with AAMI and other related professional groups.

There is a new spirit of internationalism in the ACCE. The

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ACCE International Committee has come forth with a plan that allows ACCE members to contribute to a fund that will provide a "dues scholarship" for qualified foreign Clinical Engineers for whom the annual dues fee is beyond their means. The program has already generated funds beyond everyone's expectation.

Your ACCE is known and respected around the world. We cooperate with the World Health Organization (WHO) and the Pan American Health Organization (PAHO). The ACCE has close relations with the Clinical Engineering Association in Mexico and contact with Clinical Engineers around the world. Last year the ACCE provided faculty for an Advanced Clinical Workshop (ACEW) in Mexico City. This year the ACCE, (at the request of WHO) will provide faculty for Advanced Clinical Engineering Workshops in Moscow, Russian Federation and Cape Town, South Africa. ACEWs during the year 2000 in Chicago, the Caribbean, and Lithuania have been requested. There is always room for more qualified faculty to lecture in ACEWs held around the world. If you are interested and think you would be qualified, please send your name, *curriculum vitae* and a list of subjects you would like to teach to me.

This is my last *Message from the President*. A new slate of ACCE officers will soon be elected and you will have a new President. Thank you all for your assistance and support. Remember! Old Presidents never die. They just become Chair of the Nominating Committee and a Past President.

One final word. You all ARE the American College of Clinical Engineering. What the American College of Clinical Engineering accomplishes is what YOU ALL accomplish.



Bob, the Visionary

President's Message

Robert L. Morris, PE, CCE, March 1999

The following is a copy of a letter I have sent to the Editors of 24X7 magazine.

To the Editor:

In the April 1999 issue of 24X7 magazine there is a petition to establish a "Biomed Week". I find this a most interesting document. The petition apparently originated from a BMET named Robert Broussard from Houston, Texas.

While I appreciate Mr. Broussard's efforts to get the Federal Government to honor engineers, I find it curious that there is no mention of BMETs in the petition. After all, if we are talking about maintaining and supporting medical equipment there are many more BMETs working in hospitals than engineers.

The altruism of Mr. Broussard is striking. It is not often that a member of a majority goes out of their way to ensure honor to a minority without even including a reference to the majority.

There are significant differences between engineers and BMETs. They have different knowledge and education bases. There are different professional societies. There are separate certifying

bodies. The accepted, published, formal definitions of the two groups are different. Tests and requirements for certification are different. I spent 12 years as a member of the Certification Board for Clinical Engineering and have proctored many BMET examinations. Many engineers could not pass the BMET certification examination. The reverse is also true.

In general, engineers and BMETs serve different functions in the hospital. BMETs spend most of their time hands on performing corrective and scheduled maintenance functions. Their daily focus is equipment oriented. They are rarely required to perform Present or Future Value calculations or to prepare detailed departmental budgets. Most engineers working in hospitals spend the majority of their time doing analysis and technology management. They seldom provide direct, hands on maintenance. Of course there is overlap but such overlap is becoming less and less common. One independent illustration of the difference in function is illustrated by the fact that hospitals have differing salary scales for the two groups. Neither group is "better" than the other. The best support of medical equipment in hospitals occurs where there is an atmosphere of mutual respect and understanding between the two groups.

BMETs are a crucial and respected element in the total health care equipment maintenance system. They are the people who do most of the hands on repair in hospitals. BMETs have played a significant role in my professional development. BMETs should not be slighted by exclusion from any petition to establish a "Biomed Week" to honor those who support the equipment in hospitals. Any such petition should specifically include the names of those occupations to be recognized.

President's Message

Robert L. Morris, PE, CCE, January 1999

It seems that everyone is busy with Y2K in his or her hospital and/or organizations. Y2K has created a great deal of work for most of us and we have not been granted more hours in a day to complete the task. Y2K issues are interesting from a couple of perspectives. First, Y2K is truly a global problem. It affects every country, every region and every government. Problems of this breadth are extremely rare. Second, there is a deadline that is absolute. It cannot be changed or delayed by individuals or governments, regardless of their power. These aspects of the Y2K problem provide more than passing philosophical interest.

How interdependent are we members of the planet earth? We may find the answer to at least part of that question next year.

There is one significant benefit of the Y2K problem for hospitals and organizations that has not been frequently mentioned. As of January 2000, every organization that has completed its Y2K project will have an inventory of equipment that is unique in our history. The inventories will be more complete and error free than ever before. Such an inventory is the basis (particularly when linked with maintenance history) for effective management of the technology represented by the inventory. Those organizations that are wise and plan ahead will recognize the strategic value of such an inventory and will put in place by year 2000 procedures and policies to ensure the continued integrity of the inventory and database.



If you can't measure it, you can't manage it!

For Clinical Engineering Departments, an accurate inventory will mean closer coupling to the processes of acquiring new devices and the processes of decommissioning old devices. To be successful, these processes must be tight and supported by the highest levels of the organization. It will also mean better management.

The first rule of management is "If you can't measure it, you can't manage it." The unprecedented accuracy of the inventory and, hence, the associated maintenance data should lead to better strategic planning in Clinical Engineering Departments as well as better day to day decisions. Of course if the inventory is accurate and the maintenance history is not, all bets are off. Look therefore to your internal department processes to ensure your ability to take advantage of the one great positive offered by all of the effort going into Y2K. Have fun.

Morris Works the Convention Floor



Quarterback Bob in the huddle with Al, Joe and Frank



Bob points Hashem to the right path as Ira and Stan look on



Bob gives gas to Bill Frank the gasman

David Harrington & Bob Morris

On the last weekend of June, two teams left the United States for Calcutta with a plan of action to install a cardiac cath lab, a 10-bed ICU, and an operating microscope in 10 working days. What

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we didn't know at the time was that the dedication ceremony was set for the 8th working day. The team from the left coast arrived first on a Monday afternoon after over 30 hours in transit to find the cath lab in pieces scattered over several rooms in the basement of the hospital. They set about getting it a little organized. Bob Pagett, President of Assist International who organized the trip, headed this team. He was made an Honorary Biomed several trips back, Bob Morris from Oregon, Mike Persaud from Washington and Ruben Valdez, a nurse from Salinas Valley Hospital in California. On Tuesday morning the team from the right coast arrived, Bill Kelleher and Dave Harrington and the work started at a frantic pace. What was a little scary was that the team had no pre-trip meetings, just phone conversations. Bill Kelleher and I had worked together at the New England Medical Center 20 years ago, Bob Pagett and Bob Morris had done several projects together in the past, as had Bob Pagett and I.



Bob Pagett, Bob Morris and Dave Harrington

Bill and Mike, being the radiology experts, attacked the cath lab. This was no small unit and everything was on the floor. In addition there were no power lifts available to pick up the units and put them in place. So with block and tackle,

bamboo levers and a lot of muscle power the L arm was put in place, about 3,500 pounds. Next the C arm had to be mounted to the L arm, again using the same methods. It was a wonder that someone was not hurt in the process. There was at least two dialects plus English being spoken in the room, often at a considerable volume. But everything got into place.



Calcutta crew crowds in with Bob and Dave Harrington

Since the ICU installation was so simple we delayed starting that for a few days so we all could be in the cath lab working. Once we started on the ICU and physical labor was required, one well-known engineer went down with a bad back that got him a day in bed while the rest of us struggled on.

The microscope went in with no problems and Ruben was asked to look at several other units that they were having problems with. On one the optics were so dirty the surgeon had the light source turned to maximum. Once the optics were cleaned the surgeon could not believe that it was the same unit. We trained the hospital staff on how to clean the optics.

With Bill and Mike doing most of the wiring in the cath lab, along with two of the hospital engineers Bob Morris and I worked other parts of the lab and repaired other items that were brought to us, along with completing the ICU installation.

At the end of the first week the cath lab was standing and most of the power was in place and the rest of the equipment was installed and being used.

On Monday an old friend, Ken Wade, late of Spacelabs, came out of the hills of India, where he is living and working with a group of hospitals to join the team for a few days. We were at a critical point in that the dedication of the Cath Lab was Wednesday afternoon and the unit had to look good and the room had to be painted, new floor put down and all the wiring covered. So it was two long days of getting as far along as possible before the covers went on.

On Wednesday afternoon the dignitaries descended on the hospital for the dedication of the cath lab in honor of Mother Teresa. Many of them had participated in her funeral, last year and it was a great feeling to know that we had accomplished something in her honor.

On Thursday the covers came off and the final wiring, startup and calibration began. Everything was going well until a missing 12-volt power supply was discovered. For two days we tried to work around the missing power supply and were somewhat successful, but the final calibration could not be completed until the missing supply was installed.

On Friday afternoon we went over what was left to be done with the local service organization, organized the documentation and cleaned up as many loose ends as possible. The two engineers at the hospital were left with a list of items to be done and everything is being supported by e-mail. The first patient into the cath lab will be about the first of August. The ICU is fully operational and the nursing staff was comfortable with the equipment. The microscopes were all working so we left the hospital in better condition than when we arrived.

As the team said their goodbyes we talked about where we all were heading. Bob Morris headed directly to China and from there on to Mongolia. Mike Persaud learned that the job he applied for in Germany came through which

meant he had to pack up his family and move. Bob Pagett is scheduled to do projects in Albania in August, plus several others later in the year. Ruben used all his vacation time so he had to return to work. Bill returned to retirement and I have projects in Romania, Hungary, Egypt and Russia to keep the frequent fliers piling up.

In closing, two semi-retired clinical engineers, a retired radiology engineer, a working radiology expert, a nurse, and the President of a Foundation came together, along with a design engineer working in a hospital, and did a project that will help thousands over the next 10 years. Clinical engineers have again made a difference in the world but like a tree falling in the forest, nobody heard. It is time to spread the word that clinical engineers do make a difference in health care.



Manny Roman and Bob talk shop

Reflections The Road to Arvecheer

Robert L. Morris

In July of 1995, I was in Mongolia, as a consultant for the Ulan Bator Foundation to perform a technology needs assessment at the Maternal & Child Research Centre. I asked my Mongolian friends if I could visit a hospital away from the capital of Ulan Bator. I wanted to observe health care in the provinces to see how it compared with that in the capital. A trip was arranged to go to Arvecheer, a provincial capital about 350 miles from Ulan Bator. Since it was a paved road all the way, I was told that it would only take 16 hours or so. That meant that our average speed would be about 35 Kilometers per hour (22 mph). We would go by Russian army jeep. The party consisted of a driver, two anesthesiologists, one surgeon and myself.

One of the anesthesiologists was going as guide and translator. The surgeon and the other anesthesiologist were going to Arvecheer to do surgery on an 11-year-old boy. The surgeon in Arvecheer had asked for assistance on a complex case.

In Mongolia even the paved roads have potholes that can hide a vehicle. It makes driving a real challenge. Since every driver wants to go as fast as possible but does not want to lose the vehicle's undercarriage, one drives to

avoid potholes rather than the more prosaic task of staying on one side of the highway. This entails weaving back and forth with sudden short turns and with attention focused on the road surface. When meeting another vehicle, the technique is to continue as fast as possible dodging potholes until at the last second one of the drivers will suddenly hit the brakes and dive into a pothole letting the other have the smooth portion of the highway, in this Mongolian version as in the traditional American game of chicken, I could never determine who would give way.

About 90 kilometers out of Ulan Bator, we came across a highway accident that had occurred about 20 or 30 minutes before our arrival. A truck carrying people and sheep had collided head-on with a mini-van filled with people. The van was demolished. The truck had rolled completely over and the cab was smashed flat.

There were dead sheep, suitcases, belongings and people scattered all over. Of course we stopped to see what we could do. There were eight people dead at the scene, including two children. Passersby had taken survivors to the next town, Lün, about 20 kilometers on down the road. We got back in the Jeep and took off. Lün was a small town. It did not have a hospital but did have a medical dispensary, staffed by a midwife, a medic (no doctor) and a couple of other health workers. Sanitation facilities consisted of a pit toilet out back.

Fifteen injured people had been brought in. They were lying about on the floor, as there were only four beds. One person had died shortly after being brought in. Things were pretty hectic as the three doctors assisted in treating all of the injured. These included children as well as adults. There was only one stethoscope in the place, no x-ray or lab facilities and no anesthetics. Fortunately, one of the doctors had brought her



Bob tries his hand and shoulders at advertising on the streets of Warsaw

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surgical instruments with her.

The buckets of blood and waste were taken out back and dumped into the pit toilet. The toilet had no seat, just a board missing in the floor that you straddled. I held the arm of a 10-year-old boy out straight with tension while the doctor took some wooden sticks and made a splint after stitching and wrapping where the bone had protruded. The child cried but stopped as soon as we were done. It was amazing. There were groans and moans but no screaming or hysterics.

One lady had a broken pelvis, both legs with multiple fractures and undetermined internal injuries. Every few minutes we would straighten her out a bit, blocking with small rolled rugs. She was in great pain so we could only straighten her incrementally. There was one telephone at the town post office and a call was made to Ulan Bator for medical assistance, which would not arrive for many hours.

It took about four and one half hours to take care of everyone. Of the 15 people brought in, one died, 11 were very seriously injured and three had minor injuries (they could still stand or walk.). That meant that in the one accident the toll was nine dead, 11 seriously injured and three with relatively minor injuries: a terrible, tragic accident. Some of the injured were from Arvecheer or nearby. We took their

names so we could pass on word of the accident to family and friends.

After finishing caring for the injured, we had a late, quick lunch and headed out again for Arvecheer. Several days later as we were returning to Ulan Bator, we stopped in LOn to find out what had happened. All 11 of the seriously injured had been transported to hospitals in Ulan Bator where they were recovering. No one else had died. Considering this non-statistical sample, the US rule for serious trauma survival, that says if you survive the first two hours your chances of ultimate survival are good, held true in Mongolia under very primitive circumstances.

The rest of the trip to Arvecheer and return included many other adventures but none that so showed the resourcefulness, resilience and strength of the Mongolian character.



Enjoying a smoke with comrades



Mark Brody, Joe Bronzino and Frank Painter listen attentively as Bob expounds



Photo by Dyro

After the last beers, an hour passed as Morris talked about fermented mare's milk and laboratory analyzers. Finally, he picked up the tab confirming what many had long suspected that he did not have the slowest arm in the world.



Meeting Attendees in Tartu, Estonia

Morris in Estonia

Bob Morris

On the way back to the States after the September 1999 ACEW in Moscow and consulting in China, I stopped off in Tartu, Estonia. Al Jakniunas was to represent ACCE at a meeting to explore means for healthcare technology support in the Baltics. Unfortunately, Al took ill in Russia. Fortunately, I was able to juggle my schedule a bit to fill in for Al. What were one more stop and a few days anyway?

After Estonia, I got back to the USA at 0200 hours on 24 September after 26 hours of travel. There were several delays.

I think the trip to Estonia was successful. There was agreement to establish a Baltic Cooperative on Technology Support. They are looking forward to having an ACEW some time next spring to be held in either Lithuania or Latvia. They will have a meeting in Helsinki in January to further organize.

I'm sorry Al Jakniunas could not be there. I am certain that his knowledge of Baltic culture would have been very helpful. I have a copy of the agreement reach in Tartu and will mail it to anyone who requests and provides an address.

Advanced Health Technology Management Workshop Cape Town, South Africa



Health technology management leaders from twenty Sub-Saharan African countries participated in an Advanced Health Technology Management Workshop in Cape Town, South Africa November 8-12, 1999. Eight ACCE members were among the faculty presenting to some 65 attendees. Tom Judd (ACEW coordinator), Jim Wear, Frank Painter, Bob Morris, Binseng Wang, and Joe Dyro from the USA were joined by fellow ACCE members Andrei Issakov (Geneva, Switzerland) and Enrico Nunziata (Mozambique).



Greg, Binseng, Adel, Tom and Frank enjoy a moment with Bob



ACCE President Bob Morris presides over Board Meeting in Boston, 1999

ACCE News



It's Manny's Meeting. Find Bob! He's in there somewhere.

Mark your calendars now! ACCE General Membership Meeting at AAMI, Baltimore, MD Monday, June 11, 2001 Wine & cheese reception begins at 6PM followed by the Meeting

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ACCE's Annual Symposium on the Health Insurance Portability and Accountability Act (HIPAA) will be held at the AAMI conference on June 9th.

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 as well!

ACCE has arranged for its members to receive a discount on registration fees. For more information on the Annual Symposium or the AAMI 2001 annual meeting, go to www.aami.org or www.ACCE.org. See you in Baltimore!

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Registration - contact Alan Levenson at 800-222-4776 x5310 or e-mail to levenson@gti.net

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May 17, 2001 "HIPAA's impact on clinical engineering" - Steve Grimes, President, Gentech, Inc.

June 21, 2001 "New ventures in clinical engineering" - Ira Tackel, Thomas Jefferson University Hospital, Philadelphia

July 19, 2001 "Managing Electromagnetic Compatibility in the Hospital." Silberberg, Engineer, CDRH/ FDA

August 16, 2001 "Managing radiology successfully" - Patrick Lynch, Northside Hospital, Atlanta

September 20, 2001 "Virtual instrumentation applications in clinical engineering: - Eric Rosow, Hartford Hospital, Hartford

October 18, 2001 "How to Justify (to your administration) Additional Manpower, Increased Salaries, and attracting and retaining good help" - Barbara Maguire, New York Presbyterian Hospital, NYC

November 15, 2001 "What IS the difference between CEs and BMET Managers" - Dean Skillicorn, Kaiser Permanente

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

Mark your calendars now!

ACCE General Membership Meeting

at HealthTech in Cleveland, Ohio

Monday, April 23, 2001 at 6:45 - 8PM



Solutions for a New Century

ACCE is an educational partner for Clinical Engineering Sessions at HealthTech 2001, in Cleveland, Ohio on April 22-25. Session topics will include Medical Errors, Clinical Engineering Certification, Medical Telemetry, JCAHO Environment of Care Standards, Regulatory Issues Update, and Wireless in Healthcare. To learn more about HealthTech 2001, go to www.healthtechnet.com. **When registering, be sure to identify yourself as an ACCE Member to assure the lowest registration fee.**

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Calendar of Events

- Memorial Service for Robert L. Morris, Friday 2 p.m., March 9, 2001, Wilhelm Funeral Home, Portland, Oregon.
- ACEW 2001, Guayaquil, Ecuador, March 26-30, 2001. Contact James Wear at wearjam@lrn.va.gov
- ACEW 2001, Kathmandu, Nepal, April 9-13, 2001. Contact James Wear at wearjam@lrn.va.gov
- HealthTech 2001, April 22-25, 2001, Cleveland, Ohio, www.healthtechnect.com/HT2001/SPEAKAPP.html
- ACCE General Membership Meeting, HealthTech, Monday, April 23, 2001, 6:45-8PM, Cleveland, Ohio
- 8th Annual DITEC 2K1 Industry Conference, May 20-22, 2001, Cleveland, Ohio, www.DITECnet.com.
- II Congreso Latinoamericano de Ingenieria Biomédica, Mayo 23-27, 2001, La Habana, Cuba, www.hab2001.sld.cu.
- 4th Annual ACCE Symposium, Healthcare Insurance Portability and Accountability Act (HIPAA), June 9, 2001, Baltimore, MD, education@aami.org.
- AAMI Annual Conference, June 9-13, 2001, Baltimore, MD, education@aami.org.
- ACCE Annual General Membership Meeting, June 11, 2001, 6PM, Baltimore, MD, www.ACCEnet.org
- MEDICON 2001, June 12-15, 2001, Pula, Croatia, www.crombes.hr/MEDICON2001.
- Medical Physics, June 18, 2001, Moscow, Russia. www.medphys2001-msu.ru.
- 23rd Annual International Conf. of the IEEE Engineering in Medicine and Biology Society, Oct. 25-28, 2001. Istanbul, Turkey. www.ieee.org.
- ACEW 2001, Istanbul, Turkey, Oct. 21-23, 2001. Istanbul, Turkey. Contact Joe Dyro at dyro@alum.mit.edu.