ACCE News

Vol. 7, No. 2 - March 1997

American College of Clinical Engineering

ACCE Workshops In 1997

San Diego and Washington, DC, are the sites of two Advanced Clinical Engineering Workshops presented by ACCE. The five, half-day sessions will focus upon the topics most critical for the clinical engineer in today's health care environment.

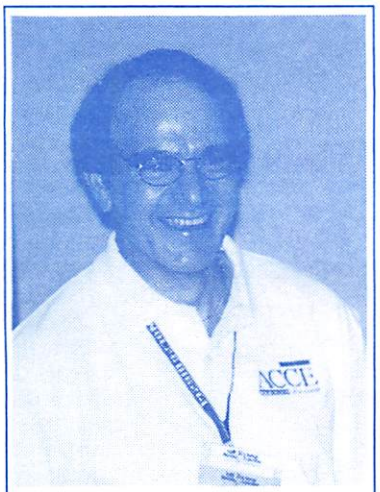
Assess, Acquire, & Manage Technology

This 4-hour course gives you the tools needed to manage the life cycle of medical technologies. Topics include: Value of Technology Assessment to Health Care Providers, Components of Technology Assessment, Capital Acquisition Processes, Service/Asset Management, and Expansion of Program into Non-Traditional Areas.

Continued on page 7.

ACCE Annual Meeting

Tuesday, June 10, 1997, at the Sheraton Hotel in Washington, DC, ACCE will hold its Annual General Meeting. Preceded by a wine and cheese reception at 6PM, the meeting is set for 7PM.



Why is this man smiling?

Dr. Yadin David (left) cannot restrain his enthusiasm for the ACCE. Shown sporting his ACCE polo shirt, Yadin encourages all clinical engineers to unify behind ACCE for their good and the good of the profession. Clinical engineers working together under one banner will have maximum impact in influencing health care policy in the years ahead.

ACCE Teleconferences '97

The ACCE Teleconference Series for 1997 is set to begin on April 17. This year's series of lunchtime lectures on critical issues in clinical engineering will continue the tradition of high quality, informative presentations by the world leaders. See inside *ACCE News* (page 11) for schedule of lectures and speakers and registration information.

Benchmarking

Robert Stiefel

The International Benchmarking Clearinghouse defines benchmarking as *"the process of continuously comparing and measuring an organization with business leaders anywhere in the world to gain information which will help the organization take action to improve its performance"*. The four objectives of benchmarking, then, are as follows:

1. To provide goals for process improvement
2. To learn and develop measures of excellence
3. To understand changes needed to achieve improvement
4. To increase customer satisfaction.

Continued on page 6.

Clinical Engineers On the Hill

Francine Riebman

Government Relations Committee efforts focus on the Capitol in June as members visit congressional offices. Clinical engineering's importance in curing what ails the health care system will be stressed. ACCE will offer its expertise as a resource to members of Congress. For more information, call Francine at (201)763-6525. Congressmen will receive an information packet including this issue of ACCE News and the newly created brochure, *"What's a Clinical Engineer."*

With the formation of the ACCE Government Relations Committee, clinical engineering, through ACCE, is make its public debut in the health care planning and government policy arena. Working in conjunction with the ACCE Advocacy Committee, the GRC will focus on initiating dialogue with key government officials in an effort to raise public awareness.

Inside ACCE News

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.*

President's Message

What pleasure it is to acknowledge the fine work of the members of ACCE. Thank you all, you make my job easy. I should like you to take advantage of the wonderful opportunities and programs available to you by taking the steps outlined below. The items are explained in detail in the pages of this superb newsletter.

Frank R. Painter

I want you to

- ☞ Come to the Annual Meeting
- ☞ Attend an Advanced Clinical Engineering Workshop
- ☞ Support the Government Relations Committee
- ☞ Distribute the ACCE brochure, *"What's a Clinical Engineer"*
- ☞ Read *ACCE News*, now reaching over 600 clinical engineering leaders in the USA and around the world
- ☞ Access the ACCE Home Page, a CE great resource
- ☞ Join ACCE networking with others: AAMI, ASHE, AIMBE, IEEE/EMBS
- ☞ Register for ACCE Teleconferences '97.

ACCE News

ACCE News is the official newsletter of the American College of Clinical Engineering (ACCE).
ACCE News is a benefit of ACCE membership; nonmembers may subscribe for $50.

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Letters to the Editor

From: "Joseph P. McClain" <mcclain@ix.netcom.com>
Subject: "The Past, Present and Future of Clinical Engineering"

Dear Joe and Fellow ACCE Members,

I am attempting to write a book entitled, *"The Past, Present and Future of Clinical Engineering"*. I doubt seriously if it will ever be a best seller but I do not believe that anyone has done anything to really document our career's history as we soar toward the next millennium. I think it is something that we, members of ACCE, and other groups

need to do as a collaborative effort under the premise that all of us are smarter than anyone of us. Here is what I am asking of you. Would you be kind enough to research and write about the history of your organization, what you are doing today and what strategic actions are you and your organization making to plan for the future. What I would like to do is to consolidate your writings, giving you full credit for your part, into a book that hopefully we will have published with the help of Wayne Morse or , if necessary, by another publisher. Please use APA format or equivalent and show references as required so that this can be a scholarly document. If there are others who you think could be a value added please feel free to have them send their contribution as well. We should be able to do most via internet. I hope your response will be favorable.

Looking forward to your responses.

Joe McClain

ACCE News on the Web

http://info.lu.farmingdale.edu/~acce/

ACCE News Deadlines

Send news items by April 15 for inclusion in the May 1997 issue of the *ACCE News*. All copy must be received 15 days before the first of the following months: January, March, May, July, September, November. E-mail is best at jfdyro@aol.com or fax to 516-751-7802 or call at 516-751-7244.

Guest Editorial

Delete PE, CCE and PhD
Insert E-Mail Address

Marvin Shepherd, marvins523@aol.com

In 1976 I wrote and had published an article that argued that insulation testing was a valid substitution for leakage current measurements. I still believe that the argument is sound and would result in less time to perform certain safety tests. However, although many thousands of persons were exposed to the idea, I received not one letter of support or criticism of that idea. In retrospect, I believe that those who read it may have casually dismissed the idea or thought that it was too inconsistent with the prevailing views of the time. A more likely reason was that it was too much work to find my address (it was not published with the article) and I could not be readily contacted except through the publisher. The inertia to writing a letter and to finding a proper address was not overcome by the need to comment. The idea had quietly fallen into the world's trash can for unconventional ideas.

With the inexpensive, readily available access to internet, e-mail communication, this inertia to writing a supporting comment or the critiquing of an idea should no longer be an obstacle. Indeed! It is the professional's responsibility to present and develop ideas and to fairly comment on those of others. Many ACCE members have expressed some quite excellent ideas in letters to the editor, editorials, journal articles, and newsletter columns. But how many of you authors have received comments on your presentations? Relatively few, I suspect.

The clinical engineering profession, as with all professions, continually needs new ideas to respond to the changing times. Ideas that must be nourished from kernel to full bloom before they can spur the changes that will affect patient comfort and outcomes or demonstrate the more efficient use of our assets. Each of us has had an idea that we may have expressed to a few friends but never presented to a review group for nourishment or critique. It is important for each of us to do so. Our collective ideas will not only satisfy our inner needs to see our ideas mature and grow but will push the profession to new heights. I would like to suggest a way of doing this. Delete the PE, CCE, and Ph.D. after your name and add your e-mail address.

Comments to the editor, editorials, journal articles, and news items should never again be published without an e-mail address following the name of the author. All persons calling themselves *professionals* should be identified with such an address. If the author has No E-Mail Address (NEMA), their name should be followed with NEMA until such time as they have appended an address. It is a bit whimsical to suggest the deleting of letters after an author's name. However, the letters do not contribute to the ideas. The ideas come from the individual writer. And their ideas can be easily and quickly enhanced, encouraged, or fairly critiqued by their peers through e-mail communication.

What do you think of the idea that your e-mail address should always follow your name on any publication of your ideas?

Techs and Engineers Revisited

Bob Morris

I have listened to and read on education and of electronic techs vs biomed techs with amusement and a sense of *deja vu*. First let me say that I obtained my first job in a hospital in 1959 and have been an active participant in the multiple changes the field has undergone since. I began my career as a bench technician and am currently the director of a Clinical Engineering Department (read biomed, biomedical engineering, bioengineering, medical electronics, medical engineering, biomedical electronics, scientific instruments, instruments and safety, medical systems group, and a host of others, some forgotten and some still in use) consisting of myself, 2 senior engineers, 2 junior engineers and 10 technicians. Several of the technicians are certified as a BMET and I am a certified clinical engineer. We are responsible for the maintenance of over US$70,000,000 of capital equipment in our hospital.

I have been through the "we don't get no respect phase", been active in certification activities (member of US Board of Examiners for Clinical Engineering Certification for 11 years), taught classes in 25 countries on trouble shooting and repair of medical devices, set up

departments in several countries and provided seminars, instruction and advise to many institutions, groups and countries on issues relating to all aspects of technology in health care systems.

Never having attended a vendor training class on a medical device, I have developed a general theory of trouble shooting and repair that is applicable to all kinds of devices which has been translated into at least four languages besides English. I did not study engineering and learned vacuum tube electronics while in the military. I eventually worked my way through the university system obtaining a degree in physics.

There are several vocational areas of importance for a technical person working in health care.

1. Technical knowledge to the component and circuit level is important.
2. Knowledge of the vocabulary of medicine.
3. Knowledge of medical and physiological basis for the existence of a device.
4. Knowledge maintenance and repair principles.
5. Knowledge of preventive maintenance principles.
6. Knowledge of safety issues (not just patient electrical safety).
7. Knowledge of the organizational structure of health care institutions (administrative, medical, nursing, support services, etc.).
8. Knowledge of financial management and budgeting processes.
9. Knowledge of record keeping and organization.
10. Knowledge of basis of interpersonal relationships.
11. Knowledge of regulatory and accreditation requirements.
12. Knowledge of planning processes in your institution.
13. Awareness of strategic plan of your institution.
14. Awareness and creation of a strategic plan in your department.
15. Knowledge of acquisition processes.
16. Knowledge of emerging technologies.
17. Awareness of impact of new technologies on institutional focus, patient mix, etc.
18. Knowledge of mechanisms of predicting maintainablility, failure rate, etc.
19. Knowledge of life cycle or cost of ownership principles.
20. Knowledge of changes occuring or likely to occur in our industry.
21. Knowledge of how to write meaningful specifications.
22. Knowledge of how to interact with vendors.
23. Knowledge of priorities and how to establish them.
24. Knowledge of how to manage time.
25. Knowledge of how to be a professional (It is not a matter of government recognition.).
26. Knowledge of test equipment, its use and calibration.
27. Knowledge of clinical application of medical devices.etc.etc.etc.

I am certain that you all could add another 100 or so items to the list. It is also important to recognize that knowledge is not equivalent to skill. The list could be rewritten listing skills. The purpose of making the list is to recognize the wide variety of knowledge and skills required to be successful in a hospital. It is highly unlikely that anyone exists who has all of the required expertise; but, none the less, we must all do these things to some extent. It then follows that we do not do many things as well as they should be done and therefore a mix of people and skills are necessary to improve the chances for and extent of our success.

Titles, degrees, and expertise don't prevent multi-talented Bob from lending a hand (or shoulders) when needed

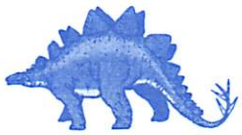
When hiring either technicians or engineers, I of course look at their educational and experiential background. But more important to me - Do they think well? Are they self motivated? Can they function usefully in the complex enviornment of the health care industry? If the answers to those three questions are judged affirmative and if the persons have some basic background, then they are eminently employable. They will put forth the effort, given the opportunity, to learn what must be learned. Degrees and certifications indicate knowledge, not skills.

One of the best technicians I ever hired had 10 years of experience in X and Y band radars. That was his entire technical life. When I asked him if he thought he could make the transition from waveguides, directional couplers, and Smith Charts to medical equipment, his answer was that the only difference in the electronics from his point of view was that he would no longer have to worry so much about stray capacitance, high frequency behavior and the like, and that temperature effects would be more pronounced in DC or low

frequency circuits. I hired him immediately and he was very successful, later becoming the head of a department in another institution.

I guess that what I have done is be very long winded to make the point that the field needs people with all kinds of skills and that to legislate or write class and position descriptions restricting them to only persons with a particular background is a two edged sword. You may obtain job security but it is rare that such a department will be judged outstanding in other than a restrictive sense.

Remember that in the beginning there were no technicians or engineers trained in medical equipment, transitors, integrated circuits, accounting principles and the like. We exist only so long as we are judged useful to our institution by our superiors. If we do not allow new skills and knowledge into our field, it will die and resurface in another incarnation without us. I might make the best buggy whips in the world but if I don't recognize that the internal combustion engine will have an impact on my business, I will become, at best, a minor player or, at worst, extinct.



ACCE Board Highlights

December 18, 1996

Jennifer C. Ott

President Painter called the meeting to order. The minutes of the October 24, 1996, Board meeting were approved.

President's Report

Frank Painter appointed Tom Judd to the Member-at-Large position vacated by Denver Lodge. The Secretariat function will be reviewed to improve quality.

First Vice President Report

Ira Tackel described the progress of the Advanced Clinical Engineering Workshops in San Diego and Washington, DC. Tom Judd, Brian Porras and Joe Dyro are Workshop coordinators.

Secretary's Report

Jennifer Ott reported an up-to-date membership database. The 1997 Membership Directory will be distributed in April. Membership certificates will be sent to those few members who never received them.

Treasurer's Report

Bryanne Patail reported an adequate cash reserve and discussed the fundraising policy and revenue generation plans developed by the Ad Hoc Financial Development Committee.

Past President's Report

Tom Bauld stated that the recent MTM Conference was successful in terms of content but disappointing in terms of ACCE member attendance. That notwithstanding, ASHE and ACCE will enthusiastically plan a 1997 MTM in conjunction with the American Heart Association meeting in Orlando, Florida, in November.

Membership Committee

Bob Morris proposed the development of new membership categories addressing international, retired, student, and unemployed members.

Advocacy Committee

George Johnston distributed a 27-page National Engineers Week packet to his nine Committee members for further dissemination. The Clinical Engineer brochure is in progress.

International Committee

Alan Levenson distributed for Board review a draft letter dealing with the issue of ACCE and equipment donation. The letter will be directed primarily to non-governmental organizations (NGO). A Committee mission statement co-authored by Binseng Wang and Levenson was also distributed for review and comment.

Webmaster Report

Bruce Morgan discussed improvements in the message center for easier chat room access. The format of member-only pages is being explored. *ACCE News* is on the Net.

Newsletter

Joe Dyro presented the *ACCE News* 1997 budget calling for doubled circulation, new advertising revenues and elimination of member subsidy.

AIMBE Report

Tom Bauld reported that the March 1996 Council of Societies meeting focused on handling the media, marketing, promotion and getting the message to the public. Bauld was elected to the College of Fellows of the AIMBE.

ICC Liaison

Frank Painter stated that AAMI rejected ACCE's proposal to serve as ICC Clinical Engineering Board of Examiners Secretariat.

Other Board Actions

The next Board Meeting was scheduled for January 22, 1997.

January 22, 1996

Jennifer C. Ott

President Painter called the meeting to order. The minutes of the December 18, 1996, Board meeting were approved.

President's Report

ACCE has adopted a middle of the road policy concerning truth in advertising and the media. The ACCE Annual Meeting will be held on Tuesday, June 10, 1997, at 7PM in Washington, DC.

Past President's Report

Bauld continues his efforts to support a joint ACCE-ASHE-AAMI mid-year meeting.

ACCE News

First Vice President Report

Ira Tackel updated the Board on the progress of the Advanced Clinical Engineering Workshops in San Diego and Washington. Caroline Campbell will spearhead Workshop publicity.

Second Vice President Report

Kasti reported phlegmatic member response to initiatives within Marketing/Advocacy and Strategic Alliances groups. Leadership reinforcements will provide much needed stimulus.

Secretary's Report

Ott is pursuing parchment providers. Stationery status is stable.

Treasurer's Report

Patail's budget package was passed unanimously by Board vote. Board unanimously accepted fundraising procedure offered by the Ad Hoc Finance Committee. Details, in next *ACCE News*.

Membership Committee

Wang will temporarily assume the Chair in Morris' absence. Board approved change of dues for candidate member to $25.

Education Committee

Jim Wear announced the 1997 Teleconference Series (see details in this issue of *ACCE News*, page 11) .

Advocacy Committee

No Advocacy Award nominations received to date reports Johnston. More effective strategies need to be evolved for reaching membership with information on National Engineers Week. Clinical Engineer brochure is just around the corner. Video promoting clinical engineering might best be linked with ongoing AIMBE/PBS project recently launched.

Government Relations Committee

Fran Reibman presented her Committee's plan for ACCE members to visit Congressional offices in June while in Washington for the Annual Meeting. See front cover for more information on the work of this Committee.

International Committee

Levenson reported interest in a second ACCE Workshop in China. The Committee's Mission statement is undergoing internal review before presentation to the Board.

Grass Roots Network

Levenson volunteered to conduct customer satisfaction survey, contacting all non-international ACCE members to elicit comment on the value of ACCE products, communication network, newsletter, workshops, teleconferences, web page and annual meeting.

Newsletter

Joe Dyro reported enthusiastic response to *ACCE News* within the clinical engineering and biomedical engineering community. He introduced Rachel Mercado as new Assistant Editor and Caroline Campbell as Advertising Manager.

AIMBE Report

Tom Bauld will attend March 2-4, AIMBE Annual Event representing ACCE at the Council of Societies.

Other Board Actions

The Board approved the motion to develop a full consulting proposal for Carelift International. The next Board meeting was scheduled for March 19, 1997.

Benchmarking - *continued from page 1*

Fulfilling these objectives is no easy task. Optimally, it requires a commitment from top leadership, often an entire benchmarking department. The benchmarking process requires that one

- Coordinate activities
- Develop procedures and position descriptions
- Manage information
- Network with other benchmarking professionals.

The following parameters, when measured, lead to effective benchmarking:

Business Effectiveness

◊ Services revenue as percent of total company revenue
◊ Services revenue net profit
◊ Revenue per employee; per service tech
◊ Revenue per employee v. cost per employee
◊ Costs in services organization

Customer Satisfaction

◊ Customer satisfaction v. cost
◊ Customer complaints as percent of total calls
◊ Percent of calls responded to/completed within target time
◊ Percent of calls completed on first visit
◊ Percent of repeat calls

Logistics

◊ Spare parts inventory turnover
◊ Inventory value v. parts availability
◊ Inventory value v. calls not completed due to parts not available
◊ Distribution costs v. inventory turns
◊ Obsolete inventory as percent of inventory value
◊ Repair cost as percent of replacement cost

Field Operations and Support

◊ Calls cleared without a visit as percent of total calls
◊ Ratio of indirect to direct employees

- ◊ Percent of techs with laptops or hand-held terminals
- ◊ Technician utilization
- ◊ Training days per technician per year

Life Cycle Management

Characteristics vs. categories, e.g. managing life cycle costs, stage of development of organization

Installation

Characteristics v. categories, e.g. installation activities, stages of development of organization

When it comes down to benchmarking Clinical Engineering, one must remember that in-house departments have concerns that are different from outside services. Some of these are listed below:

- Political survival v. financial survival
- Participate with clinicians and administrators v. run your own business
- Maintain budget share v. reduce cost
- Satisfy administrators v. satisfy customers
- Regulatory compliance v. performance improvement

Overall, benchmarking is a process that requires training, experience, and commitment. It is an organization-wide program, which, done correctly, can enhance your organization's service.


Robert Stiefel

Editor's Note: The above is based on a featured presentation in the ACCE 1996 Teleconference Series by Robert Stiefel, MS, CCE, Manager of Clinical Engineering Services at Johns Hopkins Hospital. Audiotapes of Bob's presentation on benchmarking as well as tapes of all teleconference series presentations are available through Morse Medical. The present outline is presented here to demonstrate the comprehensive nature and fine quality of the of the ACCE Teleconference Series presentations. Readers are strongly encouraged to take advantage of these excellent presentations by signing up for the 1997 Series (see page for a description of this year's series).

Workshops - continued from page 1.

Understanding the New Healthcare Market

Managed Care / HMO / PPO / IPA / UM / Levels of Care? Learn what these terms mean for your growth as a clinical engineer in the new health care environment. Topics to be covered include: Introduction to Managed Care, Reimbursement Practices, Managed Care Products, and the Role of Clinical Engineering in the New Market.

Hazard Reduction and Quality Improvement

Clinical Engineers and other technology management professionals deal almost daily with risk management issues. Technology managers need to have a good understanding of risk management processes to ensure that legal exposure to health care providers is minimized. Taught by an experienced, hospital-based risk manager, this 4-hour course provides a rigorous introduction to device-related risk management. Topics to be covered include: Incident Investigation, Relationships Between Risk Managers and Clinical Engineering, Developing a Risk Management Process, Starting QI/Benchmarking Programs, and Integration into the Hospital QI Process.

Best Clinical Engineering Business Practices

With health care providers emphasizing the importance of a business perspective on their operations, so too must clinical engineering professionals run their operations from a business perspective. Those that do not will not survive in this era of downsizing and re-engineering. This 4-hour course provides the tools needed for technology managers to operate their equipment management programs as competitive businesses. Topics to be covered include: Strategic Planning, Marketing Clinical Engineering Services, Accounting/Managerial Finance, Developing a Business Plan, Outsourcing Trends, and Multi-Vendor Service.

Technology Trends: EMC, CGMP, Telemedicine

Everything a clinical engineer would want to know about these hot topics: clinical engineering controls for managing electromagnetic interference, telemedicine, CGMP.

Both Workshops are scheduled to complement other conferences and thus afford opportunities to save on travel costs. The San Diego Workshop occurs immediately before HealthTech '97 and the DC Workshop, immediately before the AAMI Annual, the ACCE General Meeting, and the FDA/AAMI EMC Conference.

The DC venue will be the Pan American Health Organization, 2nd Floor Conference Room, Regional Office of the World Health Organization, 525 Twenty Third Street, NW, Washington, DC 20037. Conference facilities were arranged by ACCE member, Eng. Antonio Hernandez, who is PAHO Regional Advisor for Health Services Engineering and Maintenance.

Housing is available Tuesday night, June 3rd - Tuesday night, June 10th, 1997, at George Washington University Dormitory, 1900 S. Street, Washington, DC, 20037, approximately 4 blocks from PAHO. The cost is $45 Single/day and $27/day per person, Double Occupancy. GWU contact-on-site room registration is Christina Huszcza, (202) 994-6688. We are known by GWU as the PAHO Group

Note that this housing is available through the duration of the Workshop and the AAMI Program at this low rate!

Close of Workshop Registration is Friday, April 18, 1997. Reserve your place now!

☞ See back page for Workshop details

ACCE News

On The Move and In the News

Campbell Joins *ACCE News*


Caroline Campbell
photo by Guido Villacres

Caroline Campbell, Assistant Director of Biomedical Engineering at the Washington Hospital Center, juggles career and professional activities between posing for photographs. Having recently completed graduate work at the George Washington University, she has undertaken the challenging role of Advertising Manager for *ACCE News*. In her spare time, she enjoys the solitude of gardening.

Mercado Proves Engineers Can Write

ACCE News welcomes Assistant Editor Rachel Mercado. Rachel received her BSE in Bioengineering from the University of Pennsylvania and is currently a clinical engineering intern at the University of Connecticut Health Center. She is finishing her Master's Degree in Biomedical Engineering. As a literary aficionado (she minored in English in college), Rachel hopes to prove that engineers can write, after all.


Rachel Mercado

Ott Chairs AAMI Session

ACCE Secretary Jennifer Ott will chair the session on *Evaluating Medical Equipment Managment Programs* at the 1997 AAMI Annual Meeting, Washington, DC, just before the ACCE General Meeting. Speakers include Dave Dickey, Mo Kasti, Brian Porras, Ira Tackel, Ethan Hertz, Ott, Larry Hertzler, and Ray Dalton. Excellent ACCE representation, don't you think? Speakers represent in-house, third party, and consulting groups. The session will explore methods utilized by medical equipment management programs to evaluate effectiveness, to examine costs to the organization, to enable competitive bidding against other suppliers, and to provide guidelines for developing programs. Focus will be on individuals that have recently had to bid for their continuance, large organizations that appropriate in-house departments, small departments striving for autonomy and control within their organization, and the progress of standardized methods of evaluation.

Betts is Technology Management Director

Bill Betts recently took the position of Director of Technology Management at the Tuscon Medical Center. His new coordinates follow:

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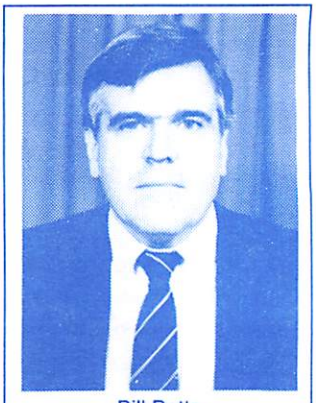
5301 East Grant Road
Tucson, Arizona 85712
520-324-2050; -1559 fax
Wbetts7435@aol.com


Bill Betts

Eight ACCE Members Speak at HealthTech'97

HealthTech'97, the Annual Conference & Exposition for the Management, Integration and Support of Healthcare Technology, features eight ACCE members as guest speakers. Keynote speaker, Philip A. Katz, Ph.D. presents *Current trends in information management*. Mohamad Kasti speaks on *Re-engineering: The role of the technology manager*; Wayne Morse, *Service partnerships*; Greg Davis, *Asset management*; Yadin David, *Engineering issues in telemedicine*; Marvin Shepherd, *Challenges of the SMDA final rule and device recalls*; Elliot B. Sloane, *Managing off-site and home health devices*; and David M. Dickey, *Comprehensive equipment failure and service cost analysis*. The conference, dedicated to managing healthcare technology, includes an exposition of manufacturers of information and imaging systems, networking providers, service organizations and start-ups with unique products. The conference runs from May 12-14 in San Diego and is preceeded by the ACCE Advanced Clinical Engineering Workshop, May 9-11.

Argentieri to Drager

In February, Mike Argentieri transitioned from ECRI to North American Drager.

Kasti to Address AFSM

ACCE Vice President Mohamad (Mo) Kasti is an invited speaker at the Third AFSMI Medical Conference, June 1-4, 1997, Chicago. The Association for Servicers Management International (AFSMI) Conference draws administrators, service managers, marketing personnel, equipment manufacturers and independent service organizations to discuss the business issues facing the medical services industry. Mo will speak on *Professional services in health care (clinical engineering)*. He will show how clinical engineers deliver the services of technology assessment, strategic technology planning, asset management, replacement scheduling, user training, technology evaluation, and risk management. Mo is Account Executive with STERIS Management Services, a leading health care multivendor service provider.

ACCE News

Chancellor's Award Honors Soller

Ira Soller, MSEE, PE, Director of Biomedical Engineering at the State University of New York, Health Science Center of Brooklyn, formerly Downstate Medical Center, has been selected recipient of the Chancellor's Award for Excellence in Professional Service for 1996.

The selection criteria requires that the award be given *"to individuals who have repeatedly sought improvement of themselves, their campuses and ultimately the State University and, in so doing, have transcended the normal definitions of excellence,"* and they are *"individuals who can serve as professional role models for a University system in the pursuit of excellence."*

Soller, who has worked in biomedical and clinical engineering for the past 20 years, is active in many other professional societies including AAMI, IEEE, and ASHE. He serves as the Coordinator for the New York Metropolitan Area Clinical Engineering Directors' Group, represents University Hospital of Brooklyn on the Clinical Engineering Council of the University Healthcare Consortium, and serves on the Curriculum Advisory Committee of the Biomedical Engineering Technology Department of SUNY Farmingdale. At the 1996 AAMI meeting, Ira presented a paper entitled, *"The changing role of biomedical/clinical engineering as a result of healthcare reform & funding cutbacks."* His paper this year is entitled, *"Biomedical/clinical engineering department restructuring, a practical management guide."*

Ira Soller

Meetings

Michigan Clinical Engineering & Biomedical Technology Week

Thomas J. Bauld, III

February 16-22, 1997, saw considerable promotion of clinical engineering in the nation's mid-section. The Michigan Society for Clinical Engineering presented a week-long program of lectures, workshops, courses, and high school career visitations. Michigan Governor John Engler as well as Mayors Archer, Cowen and Sheldon from Detroit, Royal Oak and Ann Arbor, respectively, proclaimed Michigan Clinical Engineering & Biomedical Technology Week. Featured speaker was ACCE member, Joseph P. McClain (see Clinical Engineering Profiles, this issue) Chief, Clinical Engineering Division, Walter Reed Army Medical Center, Washington, DC, spoke on *The past, present and future of clinical engineering.*

New York City Metropolitan Area Clinical Engineering Directors Group

Ira Soller

The New York City Metropolitan Area Clinical Engineering Directors Group (NYCMACEDG), consisting of 38 Directors of Biomedical/Clinical Engineering Departments representing all of the major medical centers in the greater New York City area, met on February 1, 1997.

A presentation on *"Robotics and Materials Transport"*, was given by W. Stuart Lob and Glenn Tamir of HelpMate Robotics Inc. This was followed by discussion which included the sociologic issues of using such systems in hospital environments. Also discussed was ECRI's HPCS CD-ROM model in which data becomes inaccessible after subscription expiration. The meeting, attended by 20 members, was hosted by ACCE member Mike Mirsky of St. Luke's Roosevelt Hospital. Alan Levenson, ACCE Intenational Committee Chairman and NYCMACEDG member, attended the meeting.

The next meeting will be held in April. Manufacturers interested in making presentations or those seeking further information are invited to contact Group Coordinator Ira Soller, Director of Biomedical Engineering, State University of New York Health Science Center at Brooklyn, 450 Clarkson Ave, SMIC Box 26, Brooklyn, NY 11203. Phone: (718) 270-3192, Fax: (718) 270-3194.

New England Society of Clinical Engineering

Frank Painter

ACCE News Editor, Joe Dyro, was featured speaker at the meeting of the New England Society of Clinical Engineering (NESCE) on February 3, 1997. Dr. Dyro spoke on forensic clinical engineering detailing his extensive experience in the investigation of accidents and incidents involving medical devices in the hospital and in the home. The 70 in attendance engaged Dr. Dyro in lively discussion as interest was keen. NESCE is a professional group of people actively involved in the practice of clinical engineering and interested in promoting better patient care through improved application, operation, and maintenance of medical instrumentation. For information on NESCE contact President Dave Wilder at (203)785-5084.

3rd China Clinical Engineering Academic Meeting

Dongshen Tang, dongshen.tang@bj.col.co.cn

In September last year, the 3rd China Clinical Engineering Academic Meeting was held in Hangzhou, China. More than 300 people attended the meeting. At the meeting, I introduced the concepts of clinical engineering which I learned during the

outstanding Advanced Clinical Engineering Workshop presented by ACCE in Beijing in 1995. All in attendance were most interested in the advanced concepts learned in that Workshop. Chinese clinical engineers are indebted to ACCE for spreading clinical engineering knowledge. Special thanks go to Workshop faculty members, Alan Levenson, Binseng Wang, Joe Dyro and Frank Painter.

Profiles in Clinical Engineering

Joseph P. McClain

- Director of the Clinical Engineering Division, Walter Reed Army Medical Center (WRAMC).
- Manages medical devices valued at $250,000,000 with operating budget of $9M.
- Responsible for planning, scheduling, staffing, directing, implementing, and managing the total installation, maintenance and equipment management program for the largest U.S. Army Medical Center in the Department of Defense and for the Walter Reed Army Institute of Research, Armed Forces Institute of Pathology and all Army Medical facilities in the Military District of Washington involving clinical, biomedical, dental, communication, electronic equipment and instrumentation.
- Executive Deputy Director of Logistics for WRAMC and its satellite activities including numerous clinics, agencies, institutes, and facilities whose staffing totals over 7,500 military and civilian personnel.
- Technical Advisor to Commanding General and Chief of Staff of WRAMC and the North Atlantic Hospital Support Service Area.
- M.S., George Peabody College, Oxford, England; BGS, Engineering Science & Clinical Engineering, Univcrsity of Nebraska. Hopes to complete his Ph.D. this year.
- Adjunct Professor, Southern Illinois University at Carbondale. Teaches Work Center Management, Equipment and Materials Management in Health Facilities, and Professional Development.
- Instructor of Management, and Instructor of Maintenance Management, WRAMC.
- Research Fields: Rational emotive communications; Integration - Blacks in the service; Medical maintenance in the US Army; and Civilians: The Army's 2nd class citizen or the foundation of our defense system?
- Joe has authored numerous papers and book chapters a sampling of which include the following titles: Life expectancy projection benchmarks; Quality management and team building; Health care reform's impact on CQUJ for hospital equipment; and Total quality management in health care.
- The first AAMI Certified Biomedical Equipment Technician (24 April 1972).
- Senior APEx Award of the American Society for Hospital Engineering (1995).
- Member of ASHE-AHA (Clinical Engineering and Management Technology and Education Committees), IEEE (EMBS and EMC Societies), AAMI (EMC Committee), Baltimore Medical Engineers & Technicians, National Capital Hospital Engineering Society, Association of Military Surgeons, Society of Pen and Sword, Berlin International Medical Society, and Order of Military Medical Merit.
- Military Decorations: Meritorious Service Medal, Army Commendation Medal, Good Conduct Medal - Five Awards, Army Occupation Medal, Vietnam Cross Of Gallantry, Vietnam Campaign Medal, Vietnam Service Medal, National Defense Medal, Several Air Force Medals.
- Recipient of twenty-four U.S. Government Civilian Awards including fourteen Exceptional Performance Awards, Commanding Generals Superior Civilian Service Award, and Special Act Award for Excellence in Clinical Engineering Management.
- Community Service: Director of the Catholic Choir, Ft. Meade, MD; Chairperson of the Cultural Diversity Advisory Council to the Commanding General, WRAMC; Chairperson of the WRAMC Cultural Activities Committee; President of the A.F.J. ROTC Booster Club: and Junior Activities, Washington, DC.

Joseph P. McClain

- Hobbies: Joe's hobbies are singing and physical fitness. He won 37 1st place trophies in the Army and Air Force and toured with

the Air Force Tops in Blues in the 1960's and the US Army talent tour. He appeared on the Ted Mack Original Amature hour. He and his wife work out an hour each day in their our own fitness center.

- Family: Joe has five children from his first marriage and his wife, two from her's. His daughter is an executive with the Washington Post. Among his sons, one, an Annapolis graduate, is a Navy (pilot) Lieutenant Commander stationed in San Diego, one works for a Baltimore architectural firm, one is the Engineering Manager of the Beverly Hills Beaumont Hotel, and one has his own company, The Christopher Group, in Los Angeles and New York.

Web Trappings

B.J. Morgan

There are some enhancements to the ACCE web site in the works which should improve its usefulness to members and nonmembers alike.

First is a significant upgrade to the messages section which will make it easier to use and to engage in online discussions, albeit not in real time. To maintain some semblance of order, it will remain a moderated forum. This is a major undertaking and will be implemented as quickly as time allows.

The second project is a **members-only** section. This will be password protected and will include directory information and other information not intended for the general public. This will be ready as soon as the information is available.

New links are continually being added, and the information for Clinical Engineering Week has been incorporated into a new ACCE Advocacy section.

A particularly good website is maintained at Duke University. Try it at www2.mc.duke.edu\depts\clineng\. Also, the Journal of Maintenance Technology maintains a site at www.mt-online.com. This site has many useful links.

Remember, the ACCE web site is a service for ACCE members. Comments and suggestions are welcome. Please send them to jmorgan@ibm.net.

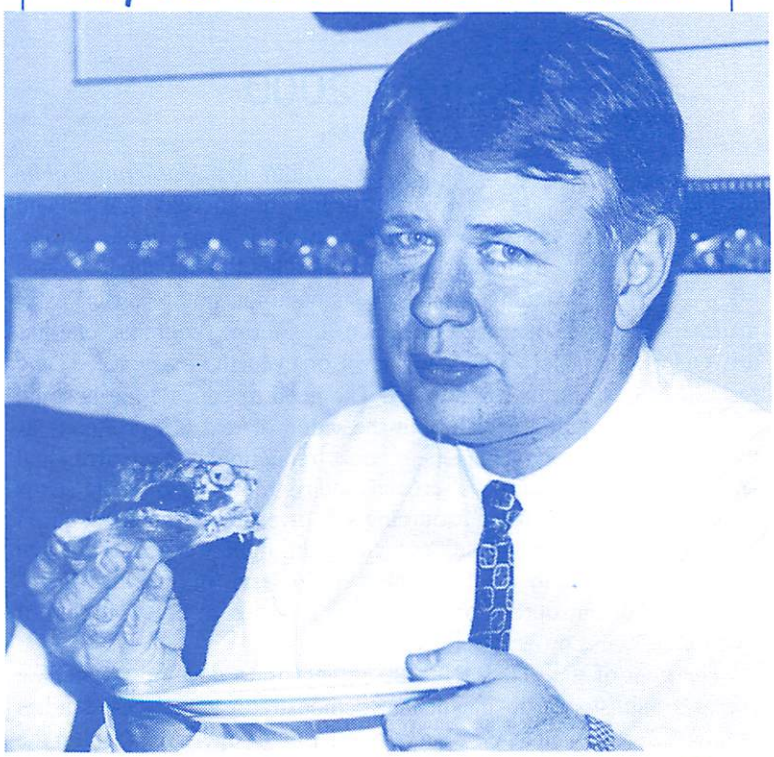
ACCE Teleconferences '97

James O. Wear

The 1997 ACCE Teleconference Series is listed below:

Date	Topic and Speaker
April 17	What is the future of clinical engineering? *ACCE Vision 2000 Proponents*
May 15	Financial analysis of operations *Binseng Wang*
June 19	What does it take to perform in-house radiology? *Larry Carnell, RSTI*
July 17	More opportunities for clinical engineers *Ira Tackel*
August 21	Marketing your services within and outside your health care organization *Frank Painter*
September 18	Development of a capital expenditure committee *Jennifer C. Ott*
October 16	Building teamwork between CE staff and maintenance staff *Tom O'Dea*
November 20	Preparation of RFPs for outsourcing clinical engineering services *Bill Betts*

Why Not Lunch While You Learn?



ACCE News

The cost for up to three ACCE members at a single site is $100 per course or $750 for the series. Additional attendees will be charged $25 per course. ACCE will accept checks, credit cards, and purchase orders. POs can be sent by way of fax to the attention of Jim Wear (501)771-1775. For further information on the Series, call me at (501)370-6618 or e-mail at wear.james@forum.va.gov.

ACCE Cosponsors FDA/AAMI EMC/EMI Conference

ACCE is cosponsor of the June 12, 1997, conference on Electromagnetic Compatibility/Electromagnetic Interference: Solutions for Medical Devices, Crystal Gateway Marriott, Arlington, VA. The FDA in cooperation with AAMI will convene scientists, manufacturers, health care professsionals and regulatory experts to discuss EMI/EMC problems and potential solutions to promote increased medical device safety. The conference will increase awareness of EMC/EMI problems, present FDA action for medical device EMC, foster open communication, propose solutions to ensure patient safety. After an overview by FDA, health care facilities, and industry, separate tracks for users and manufacturers will foster speaker-attendee interaction. Telemedicine and EMC standards will occupy the afternoon with breakout sessions on standards, designing and testing for EMC, device premarket and postmarket review, and facility policy, procedures, and education. Poster sessions will show the latest in medical device test and evaluation concerning EMI. Cost is $395. ACCE members receive a discount price of $245. Breakfast, lunch and handouts included in the registration fee. For more details call (800)332-2264.

VISION 2000

David Dickey

One of the **Vision 2000** projects within the *Marketing/Public Relations* group is to compile a listing of success stories and accomplishments of ACCE members within their organizations. Given the number of announcements I continue to read about various OEM's and ISO's winning new contracts within hospitals to run 'asset management' (and I question the use of this term) programs, one has to wonder about the competency level or even the existence of any real CE program at these facilities. The need to educate the hospital administrators of the world about the value of real CE programs as they relate to asset management, cost reduction and control, and impact on patient care is crucial today more than ever! How administrators think that outsourcing CE or asset management saves them money is beyond me, especially in light of such evidence recently published in the September 1996 issue of *Inside ASHE*. There, cost of outsourced programs was reported to be **twice** that of well run in-house programs.

The goal of this **VISION 2000** project is to develop a database and/or a publishable document that demonstrates actual case studies of how CE's have impacted cost, risk, quality, or operations within the patient care setting. Please take a few minutes to describe any quantifiable project which demonstrates CE value in any of these areas. Send it to me at Fisher Consulting Services, Inc., 10435 Ortonville Rd. Clarkston Michigan, 48348. I'd like to have at least 50 examples by March 22. If we as a group can't come up with that, then I suggest that we have a REAL PROBLEM! If you have a topic which you aren't sure fits into this project, please call me at (800) 877-2202 to discuss. You really should do this; you're job just might depend on it.

Ethics in Clinical Engineering

Dr. Subrata Saha announces the First International Conference on Ethical Issues in Biomedical Engineering, Sept. 28-29, 1997, at Clemson University, Clemson, SC. Chairman Saha states that the submission of papers on the following topics are encouraged:

* Ethical issues in clinical engineering
* Resource allocation for health care delivery
* Ethics of technology introduction
* Clinical trials of biomedical devices and implants
* Use of animals in the testing of medical devices
* Code of ethics for bioengineers
* Ethical questions in bioengineering research
* Conflicts of interst in biomedical research and practice

See Calendar of Events p.15 for more information.

International CE Directory

The Clinical Engineering Division (CED) of the IFMBE is updating the *International Clinical Engineering Directory,* first published in 1994. All ACCE members as of 1994 are listed in the *Directory*. The new *Directory* will include more information on each clinical engineer listed, such as area of interest and e-mail address. ACCE members wishing to update and add to the database and recent members not previously listed are encourage to transmit their data electronically to Peter Heimann, coordinator of the new *Directory*. To access the electronic questionnaire, go to the ACCE Home Page. There you will find the necessary information on how to file your data. Heimann may be contacted at ifmbe@eagle.mrc.ac.za.

Information Technology in Biomedicine

Dr. Swamy Laxminarayan, Editor-in Chief, announces the debut of the *IEEE Transactions on Information Technology in Biomedicine*. Published by the Institute of Electrical and Electronics Engineering, the world's largest publisher of electrotechnical literature, the *Transactions* are sponsored by the IEEE Engineering in Medicine and Biology Society, the

world's largest bioengineering organization with over 8400 members worldwide.

The *Transactions* publishes application papers that reflect global information technology advances in medicine and biology and will further address the implementation and management of the broad spectrum of health care innovations arising from these developments worldwide. Its goal is to report on how information technology is utilized to harness medical, biological, and health care programs.

Prospective authors should submit manuscripts to Swamy at New Jersey Institute of Technology, BME Program & NextGen Internet, 4390, US Route 1 North, 3rd Floor, Princeton, NJ 08540, USA. (609)514-3830; -3842 fax; swamy@jvnc.net or s.laxminarayan@ieee.org.

ACCE Membership Campaign

Binseng Wang, binseng@voicenet.com

ACCE Board approved lowering by 50% the annual dues and application fees for candidate members. Effective 1997, the dues will be $25. The Membership Committee is currently composed of Robert Morris (Chairman, on leave), Kelly Galanopoulos, Wayne Morse, William Betts, David Bell, and Binseng Wang (past Chairman, serving as the interim chairman). Bill Betts and Dave Bell are new members.

The following membership information is being provided for your convenience. It is hoped that you will discuss membership in ACCE with your colleagues.

Definition of Clinical Engineer

A clinical engineer is a professional who supports and advances patient care by applying engineering and managerial skills to healthcare technology.

Membership

The three categories of ACCE membership are Individual, Fellow, and Candidate.

Individual

A person demonstrating evidence of professional practice of engineering in a clinical environment for at least three years and meeting one or more of the following three conditions:

1. Possession of a baccalaureate degree in an engineering discipline or engineering technology from an accredited college or university; or
2. Certification as a clinical engineer (CCE), by the International Certification Commission; or
3. By recommendation of the Membership Committee in recognition of exceptional contributions, consistent with criteria established by the Board, to the profession of clinical engineering.

Fellow

An individual member may be advanced to Fellow status in recognition of distinguished service to the profession or achievement in the field of clinical engineering.

Candidate

An individual interested in the purpose of the College and meeting one of the following two conditions:

1. Currently enrolled at least half-time in an accredited baccalaureate or graduate program in engineering, engineering technology, or related course of study; or
2. In the process of completing the three year clinical experience requirement for individual membership after having received a baccalaureate or graduate engineering degree.

Membership Benefits

The ACCE is building a strong profession, a credible profession, a dynamic and a flexible profession. ACCE membership gives you advantages that will enhance your career now in this rapidly changing healthcare environment and for many years to come in the following ways:

- Access to a network of clinical engineering experts and peers
- Representation of your interests to legislators, regulatory agencies, and health care professionals
- Instant access to critical information on the **ACCE web page**
- Up-to-date information in ***ACCE News***, the **only** clinical engineering newsletter
- Special events and programs such as Advanced Clinical Engineering Workshops and audio-teleconference series
- Opportunities to share your expertise with other professionals
- Discounts on publications and meeting registrations

Lost But Not Forgotten

Letters sent to several ACCE members recently were returned, **Address Unknown**. Your help is requested in locating the following members:

? Robert Auld
? Brenton Fearron
? David McCusker
? Steven Mozelewski
? George Panagiotopoulous
? Thomas Roeble

Please send information to ACCE Secretary Jennifer Ott.

ACCE News

Welcome Advertisers

We are pleased to announce that **MII/Precision Glass Technologies** is the first medical device firm to advertise in *ACCE News*. **MII** has for years supplied high quality imaging and display components for all brands of diagnostic imaging equipment in all parts of the world. **MII** supports educational programs at such organizations as VA Medical Biomedical Training, Army Biomed School, SRE, and DITEC and RSTI. MII experts are pleased to advise you on your glassware needs, such as the optimum camera tube for the video system on your C-arm or fluoro unit. See advertisement on this page.

We also welcome **B. A. Akinsola Technical Services (BAATS)** as our second advertiser. **BAATS** sells, services, repairs and maintains medical equipment. See ad on page 15.

The *News* is mailed, first-class, directly to over 600 clinical engineers. These clinical engineers are ACCE members, certified clinical engineers, and heads of regional, national and international societies. The *News* reaches medical equipment decision-makers in 65 countries. The recipients of the *News* play a key role in technology management and purchasing decisions.

For rates and deadlines please contact Caroline Campbell at (202)877-7151; (202)877-5641 fax; cac1@mhg.edu.

Biomedical Engineering in India Three Decades of Experience

T. G. Krishna Murthy

Over the last three decades, the sponsors of various seminars, workshops, and conferences have attempted to promote the field of biomedical engineering in India. Truth was rather bitter, though, and the response from manufacturers and medical institutions was almost nil, as there was no monetary benefit from participation. It was disheartening to see medical institutions and centers of clinical excellence spending money on equipment and none on the optimization of equipment utilization. Lack of accountability due to very obvious reasons only worsened the situation.

In India, in 1968, the BMESI was born, led by Prof. Guha, Dr. Haridasan, Wg.Cdr. Mohan, and Dr. H.V.G. Rao. The importance of service and maintenance was realized, and several centers were established. Now, the picture is totally different, with R&D being done in nearly fifty centers all over the nation. About fifty manufacturers are in the field, designing the latest high tech systems used in referral centers, as well as the essential diagnostic, bio-analytical, and therapeutic equipment. A bold, dynamic, innovative, need-based, realistic, and economically viable approach has been conceived, initiated, coordinated, promoted, and propagated:

T. G. Krishna Murthy

HEALTH FOR ALL BY 2000 AD and REHABILITATION CARE OF HANDICAPPED AND ELDERLY. This is most certainly a challenging techno-bio-psycho-socio-medical target to be achieved. Various alternate approaches have to be explored and utilized once their clinical diagnostic/therapeutic potential is evaluated in a planned scientific manner.

Training and education at various levels are now receiving due attention. The last decade brought about a phenomenal change in

medical techniques through advancements in medicine, science, technology, and engineering. Predictive, preventive, and curative measures are now needed to ensure proper operation of the ever increasing and very diverse range of equipment and systems. This has led to the emergence of the discipline of Clinical Engineering. Rehabilitation engineering has followed, involving rehab aids and appliances, as well as the mobility, transport, and accessibility aspects. Consequently, courses have to be planned to train the personnel required for these fields. Sadly, the work environment even in the prestigious medical centers and centers of clinical excellence appear to be non-conducive for higher level interdisciplinary projects which involve close interaction between R&D oriented medical specialists and biomedical engineers. In view of this, the majority of BME personnel at the Master's and Doctoral level have no option but to seek placement outside the nation. The same applies for highly competent technicians to handle dialysis machines, ventilators, and imaging systems.

The Clinical Engineering Centre (CEC) initiated about two years back is fully aware of the actual needs of the nation to minimize downtime of equipment and optimize their utilization. The CEC concept was initiated by Dr. A. Kalanidhi, who is also the Vice-President of CEC. Knowledge-based, placement-oriented courses have been initiated to achieve need-based targets. It is most heartening that the Directorate of Health Education and Training plans to depute participants for such courses. Considering the various aspects involved, the CEC plans to provide clinical engineers and technicians to handle the operation and maintenance of various levels of medical equipment. In all this, a broad-based, open-minded, integrated interdisciplinary teamwork approach seems inevitable.

In conclusion, medical institutions and professionals (there are exceptions) have to modify their approach and adapt to the ever-changing environment and scenario. Cost-effective techniques must be encouraged. Long- and short-term strategies have to be evolved. Traditional barriers, bottlenecks, and drawbacks need to be erased. Funding alone can never improve the quality of medi/rehab care at various levels of medical institutions located in the urban, semi-urban, and rural areas. OPTIMISM coupled with HUMANISM can help us achieve time bound targets to benefit HUMANITY. Nothing is impossible provided one has the self-confidence and courage to inspire the youth. One can always hope for a better decade with so much to be done for the benefit of humanity which is inevitably an interdisciplinary teamwork endeavor

Position Open

MEDIQ/PRN has an immediate opening for a technical assistant in the Quality Assurance Department. Responsibilities include preparation of equipment inspection and preventive maintenance procedures, revision of standard operating policies and procedures, scheduling of equipment inspections and preventive maintenance works, follow-up of customer complaints and equipment incidents, and special projects in regulatory affairs and quality improvement. Candidates must have at least an associate degree in biomedical engineering, or equivalent, and two years of experience. A bachelor's degree in engineering or business administration is preferred. Strong computer skills are expected. Excellent writing skills are essential. Accreditation by ICC as a CBET or CCE is desirable. Interested candidates should contact:

Binseng Wang
Senior Director, Clinical Engineering and Quality Assurance
MEDIQ/PRN, One MEDIQ Plaza
Pennsauken NJ 08110
Phone: (800)222-4776 Fax: (609)661-0278

Calendar of Events

- 34th Annual Rocky Mountain Bioengineering Symposium, April 11-13, 1997, Dayton, OH. (601)984-6324; -6344 fax; benghuzz.shrp@smtp.umsmed.edu.

ACCE News

- Society for Biomaterials, 23rd Annual Meeting, April 30-May 4, 1997, New Orleans, LA. (800)982-7335.
- ACCE Advanced Clinical Engineering Workshop, May 9-11, 1997, San Diego, CA. Info: David Motta at (401)434-1270, ext. 212.
- Health Tech '97, May 11-14, 1997, San Diego, CA. Contact: David Motta at (401)434-1270, ext. 212.
- 23rd IEEE Annual Northeast Bioengineering Conference, May 21-22, 1997, Durham, NH. Contact Dr. LaCourse: (603)862-1324; -1832 fax; lacourse@christa.unh.edu.
- 23rd Canadian Medical and Biological Engineering Conference, May 28-30, 1997, Toronto, Ontario. Contact:. (613)993-1686; (613)954-2216 fax; cmbes@nrc.ca.
- ACCE Advanced Clinical Engineering Workshop, June 6-8, 1997, Washington, DC. Info: (610)625-6000 x168.
- AAMI 32nd Annual Meeting & Exposition, June 7-11, 1997, Washington, DC. Call (800)332-2264. Cigar Night, June 7, 1997, Washington, DC. Call 516-751-7244.
- ACCE Annual Meeting, June 10, 1997, Washington, DC. Info: JCOttSLU@aol.com.
- EMC/EMI Solutions for Medical Devices, June 12, 1997, Washington, DC. Call (800)332-2264, x260.
- RESNA 97, June 20-25, 1997, Pittsburgh, PA. Contact: RESNA, Suite 1540, 1700 North Moore St., Arlington, VA 22209-1903. (703)524-6686.
- World Congress on Medical Physics and Biomedical Engineering, September 14-19, 1997, Nice, France. NICE 97 SEE General Secretary, 48 rue de la Procession, F75724 Paris, CEDEX 15, France. 33-144-6060; -4960 fax,: nice97@univ-paris12.fr.
- American Society of Biomechanics, 21st Annual Meeting, Sept. 24-27, 1997, Clemson, SC. Call Dr. Gharpuray, Chair: (864)656-5556; -4466 fax; vasanti@ces.clemson.edu.
- First International Conference on Ethical Issues in Biomedical Engineering, Sept. 28-29, 1997, Clemson, SC. Call Dr. Subrata Saha, Chair: (864)656-7603; (864)656-4466 fax; subrata.saha@ces.clemson.edu.
- IEEE/EMBS Society 19th Annual International Conference, October 30 - Nov. 2, 1997. Chicago, IL. (714)752-8205; -7444 fax; MeetingMgt@aol.com.
- International Scientific Meeting on Electromagnetics in Medicine, Nov. 3-5, 1997, Chicago, IL. Sponsored by URSI and IEEE. Information: http://www.eecs.uic.edu/~emmed.
- ASHE/ACCE Medical Technology Management Conference, Nov. 11-15, 1997. Orlando, FL. (312)422-3807; -4571 fax.
- American Society for Healthcare Engineering: 12th National Conference, Dec. 2-5, 1997, Chicago, IL. Contact: Patti Costello, One North Franklin, Chicago, IL 60606. Tel: 312-422-3807, fax: 312-422-4571.