The First Annual Symposium on Computer Applications in Medical Care is designed to inform physicians and other health care professionals about current and potential applications of computer technology to patient care and to identify areas of future research and development that need to be addressed.

CREDIT:
As organizations accredited for continuing medical education, Medical College of Virginia/Virginia Commonwealth University and The George Washington University Medical Center certify that this continuing medical education activity meets the criteria for eighteen hours in Category I of the Physicians' Recognition Award of the American Medical Association, provided it is used and completed as designed.

Credit has been requested for eighteen prescribed hours from the American Academy of Family Physicians.

**Tutorial: “Introduction to Computer Technology”**

The tutorial will provide background in computer technology such as mini and microcomputers, operating systems, programming languages and applications areas to assist participants for the technical sessions in the Symposium.

The tutorial will be presented by John H. Carson, Ph.D., a computer scientist with RLG Associates.

**Exhibits:** Computers and related products will be displayed during the conference.

**Program**

**Sunday, October 2, 1977**

1:00 p.m.-7:00 p.m. Tutorial: “Introduction to Computer Technology,” John H. Carson, Ph.D.

5:00 p.m.-7:30 p.m. Registration

8:00 p.m. Cocktail Party

**Monday, October 3, 1977**

7:30 a.m. Registration

8:45 a.m. Welcome

Abund O. Wist, Ph.D., Medical College of Virginia/VCU, General Chairman

F. Helmuth Orthner, Ph.D., G.W.U. Medical Center, Program Chairman

9:00 a.m.-10:30 a.m. Keynote Session


“Computers in Medicine 1977,” William S. Yamamoto, M.D., Professor and Chairman, Department of Clinical Engineering, GWU Medical Center

10:45 a.m.-12:30 p.m. Computers in Laboratory Medicine

Chairman: E. Arthur Robertson, M.D., Assistant Chief, Laboratory Computer Service, Department of Clinical Pathology, Clinical Center, NIH

“Mechanized Information Transfer in the Medical Environment,” Martin Rubin, Ph.D., Professor of Biochemistry, Director, Division of Clinical Chemistry, Georgetown University Medical School, et al

“An Approach to the Automatic Interpretation of the Effects of Drugs on Laboratory Tests,” Donald S. Young, M.D., Ph.D., Head of Clinical Chemistry Laboratory Medicine, Mayo Clinic, and R. B. Friedman, M.D., Assistant Professor, Director, Center of Medical Computing, University of Wisconsin

“Computer Applications in the Clinical Microbiology Laboratory,” Lawrence J. Kunz, Ph.D., Francis Blake Bacteriology Laboratories, MGH, Harvard Medical School

“Computer Techniques for Cell Analysis in Hematology,” J. W. Bacus, Ph.D., Director, W. A. Yasnoff, and M. G. Belanger, Medical Automation Research Unit, Rush-Presbyterian-St. Lukes Medical Center

“A New Computer Controlled Blood Cell Counting and Sizing System,” E. Talag, M.D., and L. J. Arp, Ph.D., Professor, Biomedical Engineering, Virginia Polytechnic Institute and State Univ

12:30 p.m.-1:30 p.m. Lunch

(program continued on next page)
The First Annual Symposium on computer applications in medical care

1:30 p.m. - 3:30 p.m. CLINICAL EXECUTIVE DECISIONS AND KNOWLEDGE BASES
Chairman: William R. Baker, Ph.D., Special Assistant for Biomedical Engineering, Biotechnology Resources Program Branch, NIH

"INTERNIST: A CONSULTATIVE DIAGNOSTIC PROGRAM IN INTERNAL MEDICINE," J. D. Myers, M.D., University Professor of Medicine, and H. E. Pople, Ph.D., Dept. of Medicine, Univ. of Pittsburgh*

"THE PRACTICAL USE OF DECISION ANALYSIS IN PATIENT CARE," Stephen G. Pauker, M.D., Assistant Professor, Department of Medicine, Tufts New England Medical Center Hospital*

"COMPUTER-CONTROLLED HORMONE DELIVERY IN DIABETES MELLITUS," Albert M. Albisser, Ph.D., Professor, B. S. Leibelt, M.D., B. Zinnman, M.D., and E. B. Marlas, M.D., Hospital for Sick Children, Univ of Toronto*

"MYCIN: A KNOWLEDGE-BASED COMPUTER PROGRAM APPLIED TO INFECTIOUS DISEASES," Edward H. Shortliffe, M.D., Ph.D., SUMEX-AIM, Stanford Medical School*

"THE CONSTRUCTION OF KNOWLEDGE BASES FOR MEDICAL CONSULTATION PROBLEMS IN THE UTILIZATION OF MULTIPLE SOURCES AND MULTIPLE MODELS," Casimir A. Kulikowski, Ph.D., Associate Professor, Computer Science, Rutgers Univ.*

3:45 p.m. - 5:30 p.m. ADVANCES IN HEALTH CARE TECHNOLOGY
Chairman: Leon J. Arp, Ph.D., Professor, Biomedical Engineering, Virginia Polytechnic Institute and State University

"THE MAINSAIL PROJECT: DEVELOPING TOOLS FOR SOFTWARE PORTABILITY," Clark R. Wilcox, SUMEX, Genetics, Stanford University Medical Center*


"THE IMPACT OF MICROCOMPUTERS ON AUTOMATED INSTRUMENTATION IN MEDICINE: ADVANCES IN HARDWARE AND INTEGRATED CIRCUITS," Jonathan A. Titus, President, Typhon, Inc.*

"THE IMPACT OF MICROCOMPUTERS ON AUTOMATED INSTRUMENTATION IN MEDICINE: ADVANCES IN ARCHITECTURE AND SOFTWARE," Christopher A. Titus, Ph.D., Typhon, Inc.*

TUESDAY, October 4, 1977

7:30 a.m. REGISTRATION

8:30 a.m. - 10:15 a.m. HOSPITAL INFORMATION SYSTEMS
Chairman: Donald V. Jellig, Vice President, Hospital Data Center for Virginia

"H.I.S.: A STATE OF THE ART SOLUTION," Edward L. Berdick, Director of Information Systems, Medical Center Hospitals

"PROMIS: THE PROBLEM ORIENTED MEDICAL INFORMATION SYSTEM," Peter Walton, M.D., PROMIS Laboratory, Dept of Medicine, University of Vermont

"ADAPTATION OF A GENERAL HOSPITAL COMPUTERIZED MEDICAL INFORMATION SYSTEM TO THE RESEARCH HOSPITAL ENVIRONMENT," Thomas L. Lewis, M.D., and Gerald Jacks, Office of Clinical and Management Systems, The Clinical Center NIH

"PACOAS: PATIENT CARE QUALITY ASSURANCE SYSTEM," John E. Gail, Director of Management Engineering, El Camino Hospital

10:30 a.m. - 12:30 p.m. INFORMATION SYSTEMS FOR CLINICAL INVESTIGATION
Chairman: William R. Ayers, M.D., Assistant Dean for Curriculum, Georgetown Univ School of Medicine

"COMPUTERIZED CLINICAL OPHTHALMOLOGY SYSTEM," Aran Safor, M.D., F.A.C.S, Director, and R. Hashman, M.D., Institute of Computer Science, C.U.N.Y.

"A CLINICAL INFORMATION DISPLAY SYSTEM," Bruce J. Blum, Technical Director, R. Lenhard, Jr., M.D., H. Braine, M.D. and A. Kameran, Johns Hopkins Univ. Oncology Center

"COMPUTER-BASED PATIENT INFORMATION SYSTEM FOR CARDIOVASCULAR DATA," L. Jerome Krovetz, M.D., Ph.D., Professor, Pediatric Cardiology, Univ of Virginia

"CLINFO: A RESEARCH DATA MANAGEMENT AND ANALYSIS SYSTEM ACCEPTABLE TO PHYSICIAN USERS," Howard K. Thompson, Jr., M.D., Baylor College of Medicine, W. R. Baker, Ph.D., D.R.R., NIH, T. G. Christopher, M.D., Univ of Washington, W. Lacy, M.D., Vanderbilt Univ, and G. Groner, Ph.D., The Rand Corporation


"A PACKAGE OF TIME-SHARED COMPUTER PROGRAMS FOR PATIENT CARE," Roger W. Jelliffe, M.D., Professor of Medicine, A. Schumitzky, J. Rodman, and J. Crone, Laboratory of Applied Pharmacokinetics, Univ of Southern California

12:30 p.m. LUNCH

1:30 p.m. - 3:30 p.m. INFORMATION SYSTEMS FOR AMBULATORY CARE
Chairman: Bruce D. Waxman, Ph.D., Director, Div of Health Care Information Systems and Technology, NCHSR, HRA, DHEW

"COSTAR: FUNCTIONAL CHARACTERISTICS OF AN AMBULATORY CARE MEDICAL INFORMATION SYSTEM," Michael E. Somand, M.D., J. B. Adams, M.D., N. Justice, G. O. Barnett, M.D., Director, Laboratory of Computer Science, MGH Harvard Medical School

"A GENERAL PURPOSE REPORT GENERATOR FOR COMPUTERIZED AMBULATORY MEDICAL RECORDS — A TOOL FOR USE BY PHYSICIANS TO MONITOR THEIR PRACTICES," Alan E. Zuckerman, Georgetown Univ Medical Center*

"THE REGENSTrief MEDICAL RECORD SYSTEM," Clement J. McDonald, M.D., et al, Regenstrief Institute for Health Care*


"A COMPUTER BACKUP FOR A FAMILY PRACTICE CLINIC IN A MEDICALLY UNDERSERVED AREA," Blair A. Rowley, Ph.D., John H. Chinn, M.D., Dwane E. Anderson, Ph.D., Biomedical Engineering and Computer Medicine, Department of Family Practice, Texas Technical University

"PRELIMINARY RESULTS WITH A COMPUTERIZED INFORMATION SYSTEM FOR EMERGENCY MEDICAL SERVICES," Ernst O. Attinger, M.D., Ph.D., A. Anne, Ph.D., R. Edlich, M.D., Biomedical Engineering, Univ. of Virginia

3:45 p.m. - 5:30 p.m. MEDICAL DECISION MAKING
Chairman: William S. Yamamoto, M.D., Professor and Chairman, Department of Clinical Engineering, GWU Medical Center

"COMPUTER-AIRED VS. COMPUTER-SIMULATED MEDICAL DIAGNOSIS," G. Bordage, M.D., A. Elstein, Ph.D., Office of Medical Education Research and Development, and J. Vinsonhaler, Ph.D., C. Wagner, Inst. for Research on Teaching, Michigan State Univ

"COMPUTER GUIDED DATA ACQUISITION IN RENAL MEDICINE," E. Norton, J. Keck, F. Goe, Renal Division, Dept of Medicine, Michael Reese Hospital

"VARIATION OF ELECTROCARDIOGRAPHIC PATTERN WITH CONSTITUTIONAL VARIABLES: THE EFFECT UPON COMPUTER PROGRAMS FOR ELECTROCARDIOGRAPHIC ANALYSIS," Rosalie A. Dunn, Ph.D., Associate Professor, Clinical Engineering, GWU Medical Center, and VA Hospital


7:00 p.m. COCKTAILS

8:00 p.m. BANQUET

"HOW HEALTHY ARE COMPUTERS?" Carl Hammer, Ph.D., Director, Computer Sciences, Sperry Univac

WEDNESDAY, October 5, 1977

7:30 a.m. REGISTRATION

8:30 a.m. - 10:30 a.m. ON-LINE DATA ACQUISITION
Chairman: Ernst O. Attinger, M.D., Ph.D., Professor and Chairman, Division of Biomedical Engineering, Univ. of Virginia

"CONSIDERATIONS IN THE DESIGN OF ON-LINE, REAL-TIME DATA ACQUISITION SYSTEMS," A. Anne, Ph.D., Associate Professor, Biomedical Engineering, Univ. of Virginia

"NON-INVASIVE MEASUREMENT OF REGIONAL CEREBRAL BLOOD FLOW," Edwin M. Wilson, Sc.D., Professor of Engineering, and E. C. Wills, Ph.D., Dept. of Physics, Univ. of Alabama in Birmingham, Walter Obrist, Ph.D., Research Professor in Neurosurgery and Neurology, Univ of Pennsylvania Medical School, (discussant)

"DISCRIMINANT ANALYSIS OF XENON 133 WASHOUT CURVES," P. David Wilson, Ph.D., Assistant Professor, Social and Preventive Medicine, G. Fallon, Dept. of Surgery, and E. U. Buddemeier, Dept of Medicine, Univ of Maryland
"COMPUTER-BASED SYSTEM FOR BREATH-BY-BREATHE ANALYSIS OF CARDIO-PULMONARY RESPONSES TO EXERCISE," David H. Pearce, Ph.D., Biomedical Engineering, Mississippi Methodist Rehabilitation Center, and H. T. Milhorn, Jr., M.D., Ph.D., Dept. of Family Medicine, The Univ of Mississippi Medical Center.

"A MICROCOMPUTER SYSTEM FOR ON-LINE ACQUISITION OF NEUROMUSCULAR DATA," R. J. Anders, A. Anné, Ph.D., and D. H. Sanders, M.D., Biomedical Engineering and Department of Neurology, Univ of Virginia.


"COMPUTER ANALYSIS OF CARDIAC CATHETERIZATION DATA," L. Jerome Krovetz, M.D., Ph.D., Professor, Pediatric Cardiology, University of Virginia.

10:45 a.m. - 12:30 p.m. MONITORING THE CRITICALLY ILL PATIENT
Chairman: W. C. Sheppard, Ph.D., Associate Professor, Department of Surgery, Medical Center, The Univ of Alabama in Birmingham.

"COMPARISON OF MODELS FOR R-R INTERVAL PREDICTION IN ECG MONITORING," L. Julian Haywood, M.D., Professor of Medicine, and Director, Coronary Care Unit, V. K. Murthy, Ph.D., and G.A. Harvey, General Hospital, Univ of Southern California.

"ON-LINE ANALYSIS OF EXPIRED CARBON DIOXIDE CONCENTRATIONS: ITS PREDICTIVE VALUE IN WEANING FROM MECHANICAL VENTILATORY ASSISTANCE," Richard A. de Asla, R. A. Jurado, M.D., H. L. Fitzkee, R. A. Christiansen, and R. S. Litwak, M.D., Cardio-thoracic Surgery, Mt. Sinai Medical Center.

"COMPUTER-AIDED THERAPY OF THERMAL BURNS: A PROGRESS REPORT," W. Rindone, Ph.D., N. O'Connor, M.D., M. Fiering, Ph.D., and Alfred Morgan, M.D., Department of Surgery, Peter Bent Brigham Hospital, and the Div of Applied Sciences, Harvard Univ.


"APPLICATIONS OF COMPUTERS TO THE MEASUREMENT, ANALYSIS AND TREATMENT OF PATIENTS FOLLOWING CARDIAC SURGICAL PROCEDURES," Louis C. Sheppard, Ph.D., Associate Professor, Dept. of Surgery, Medical Center, The Univ of Alabama in Birmingham.

"INTEGRATED COMPUTER SYSTEMS FOR MONITORING OF THE CRITICALLY ILL," Reid M. Gardner, Ph.D., Associate Professor, D. Scoville, B. West, B. Bateman, and R. Cundick, Medical Biophysics and Computing, LDS Hospital, Univ of Utah.

12:30 p.m. LUNCH

1:30 p.m. - 3:30 p.m. PROCESSING THE ELECTROCARDIOGRAM
Chairman: Hubert V. Pipberger, M.D., Chief, VA Research Center for Cardiovascular Data Processing, VA Hospital, and Professor, Dept of Clinical Engineering and Dept of Medicine, GWU Medical Center.

"USE OF COMPUTER SIMULATION AS AN AID IN UNDERSTANDING THE ELECTROCARDIOGRAM IN ISCHEMIA AND INFARCTION," David B. Geselowitz, Ph.D., F.A.C.C., Professor of Bioengineering and W. T. Miller, III, Biomedical Engineering, The Pennsylvania State Univ.

"COMPUTER ANALYSIS OF THE HIS BUNDLE ELECTROCARDIOGRAM: PATTERN RECOGNITION IN A CONSTRAINED ENVIRONMENT," Stuart B. Soffer Human Oncology and J. L. Allen, M.D., and Carl Malkinson Department of Human Oncology & Anesthesiology, University of Wisconsin.

"CONTINUOUS NONINVASIVE MONITORING OF MYOCARDIAL FUNCTION: ITS APPLICATION IN EXERCISE STRESS TESTING," Paul N. Kizakevich, M.S., P.E., J. McDermott, F. Gollan and J. Aranda, VA Hospital, University of Miami.

"THE COMPUTERIZED ACQUISITION, COMPRESSION AND RETRIEVAL OF ELECTROCARDIOGRAMS," Ian C. Jenkins, and S. A. Briller, M.D., Professor of Engineering in Medicine, Carnegie-Mellon University.

"THE EFFECT OF BANDWIDTH LIMITATION ON MEASUREMENTS OF THE VECTOR ECG," Urs E. Ruttimann, Ph.D., Assistant Professor, and Hubert V. Pipberger, M.D., Professor, Clinical Engineering, GWU Medical Center.


3:45 p.m. - 5:30 p.m. COMPUTERIZED TOMOGRAPHY
Chairman: K. H. Huang, D.Sc., Assistant Professor, Department of Physiology and Biophysics, Georgetown University Medical Center Robert S. Ledley, D.D.S., Professor, Department of Physiology and Biophysics, Dept of Radiology, Georgetown Univ Medical Center; and President, National Biomedical Research Foundation.

"INTRODUCTION TO COMPUTERIZED TOMOGRAPHY," Film Presentation (10 mins.)

"COMPUTER PROCESSING OF CT SCANS," H. K. Huang, D.Sc., M. Cerroni, and J. C. Mazziotta, M.D., Ph.D., Dept of Physiology and Biophysics, Georgetown Univ.

"MOLEcular PICTURE REPRESENTATION OF WHOLE BODY ORGANS GENERATED FROM CT SCAN SEQUENCES," Robert S. Ledley, D.D.S., Professor, and C. M. Park, Ph.D., Physiology and Biophysics, Georgetown Univ.

"THE ENERGY DEPENDENCE OF THE HOUNSFIELD NUMBER," Rodney A. Brooks, Ph.D., Section on Neuroradiology and Computerized Tomography, Clinical Center, NIH.

*by invitation*

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**REGISTRATION CARD**

First Annual Symposium on COMPUTER APPLICATIONS IN MEDICAL CARE
October 3-5, 1977, Twin Bridges Marriott Hotel, U.S. 1 and I-95, Washington, D.C.

Advance registration closes on September 12; no refunds after September 19, 1977. $5 Administration charge for all refunds.

Registration fee includes three luncheons in special facilities at the Marriott Twin Bridges Hotel and a copy of the Proceedings. Additional copies may be ordered from the IEEE Computer Society, 5855 Naples Plaza, Suite 301, Long Beach, CA 90803.

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Social Program:

- **Registration**
- **Monday Night Supper Party** $10
- **Embassy Tour** $5
- **Pfizer Medical System Headquarters Tour** (3½ hr.) $3
- **Banquet, Tues. 8 p.m.** $15

The Social Program Committee will provide information to attendees and spouses on sightseeing trips, theater and morning discussion groups during the Symposium.

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