Third Annual Symposium on
Computer Applications in Medical Care
Sheraton Inn-Washington Northwest
8727 Colesville Road, Silver Spring, MD 20910
October 14-17, 1979

SPONSORING ORGANIZATIONS
National Center for Health Statistics,
Office of Health Research Statistics and Technology, DHEW
The George Washington University Medical Center
Medical College of Virginia/Virginia Commonwealth University
IEEE: Computer Society
IEEE: Northern Virginia Section
IEEE: Engineering in Medicine and Biology Society
American Institute of Industrial Engineers/National Capital Chapter
Washington Operations Research/Management Science Council
Biomedical Engineering Society
American Society of Internal Medicine
American Association of Physicists in Medicine/Mid Atlantic Chapter
Society for Advanced Medical Systems

COOPERATING ORGANIZATIONS
MUMPS Users’ Group
Division of Computer Research and Technology, NIH, DHEW
Division of Research Resources, NIH, DHEW
Naval Medical Research Institute
Lister Hill National Center for Biomedical Communications,
National Library of Medicine, NIH, DHEW
American Speech-Language-Hearing Association
National Commission on Confidentiality of Health Records
Johns Hopkins Medical Institutions/
Department of Biomedical Engineering
Biomedical Engineering and Instrumentation Branch, NIH, DHEW
National Center for Health Services Research/DHEW
Alliance for Engineering in Medicine and Biology

GENERAL INFORMATION: The Third Annual Symposium on Computer Applications in Medical Care is designed to inform physicians, computer scientists, biomedical and clinical engineers, medical educators, health care administrators, and other health care professionals about advancements in the rapidly expanding field of medical computing.

CREDIT: As organizations accredited for continuing medical education, the Offices of Continuing Medical Education at the George Washington University Medical Center and the Medical College of Virginia/VCU certify that this continuing medical education activity meets the criteria for twenty-eight hours in Category 1 toward the Physician’s Recognition Award of the American Medical Association, provided the Symposium is used and completed as designed.

TUTORIALS: Tutorials are offered Sunday, October 14, as optional exercises, designed to provide conference participants an in-depth understanding in areas of high interest, and to serve as background for many of the papers that will be presented in the subsequent sessions.

NIH CONSENSUS DEVELOPMENT CONFERENCE: This conference on the role of "intelligent" microprocessor-based machines in patient care will be held in conjunction with the Symposium, from October 17 (7:30 PM) to October 19 (1:30 PM).

EXHIBITS: Demonstrations and exhibitions will illustrate computer systems and commercial products discussed during the Symposium.

SYMPOSIUM COMMITTEE
General Chairman: Abund O. Wist, Ph.D., Medical College of Virginia/VCU 804-786-9846
Vice Chairman: Helmut F. Orthner, Ph.D., The George Washington University Medical Center 202-676-2683
Program Chairman: Rosalie A. Dunn, Ph.D., National Center for Health Statistics 301-436-7138
Registration Chairman: Richard Mansfield, Ed.D., Medical College of Virginia VCU 804-786-0494
Exhibition Chairman: Michael J. Ackerman, Ph.D., Naval Medical Research Institute 202-295-1810
Publicity Co-chairmen: Thomas E. Piemme, M.D., The George Washington University Medical Center 202-676-4285
George D. Marton, Matrix 703-548-2058
SUNDAY, October 14, 1979

11:00 AM - 6:30 PM REGISTRATION

12:00 N - 6:30 PM TUTORIALS

12:00 N - 3:00 PM TUTORIAL A-1 Fee $35
AN INTRODUCTION TO MUMPS
Jack Bowie, Ph.D., The MITRE Corporation
This tutorial will offer an introduction to the standard MUMPS language. MUMPS (the Massachusetts General Hospital Utility Multi-Programming System) is a high level interpreted language which has been used in a variety of medical and non-medical application areas. The tutorial has been designed to give programmers and analysts an overview of the language and its operating environment. Detailed MUMPS manuals (Pramer, Language Standard Specification, and Pocket Guide) will be provided and are included in the fee for this course.

3:30 PM - 6:30 PM TUTORIAL A-2 Fee $35
AN INTRODUCTION TO COSTAR V
Bruce D. Waxman, Ph.D., NCHRS, DHEW
This tutorial will offer an introduction, overview, and demonstration of COSTAR V (Computer-Store Ambulatory Record) system which is a computer-based medical information system designed to perform the data management functions needed by a group practice in the care of ambulatory patients. COSTAR V was developed jointly by the Laboratory of Computer Science of the MITRE Corporation, the National Center for Health Services Research in collaboration with the Harvard Community Health Plan (HCHP). COSTAR V is an expanded version of the HCHP automated medical record system. It is written in the standard MUMPS language and consists of a fairly large repertoire of modules such as Registration, Scheduling, Accounts Receivable, Medical Records Retrieval and Display, Management Reporting, and Security. The system is currently being implemented throughout the United States. The COSTAR V modules are in the public domain and are available to all those who have the equipment upon which they can be implemented.

12:00 N - 3:00 PM TUTORIAL B-1 Fee $35
INTRODUCTION TO CLINICAL INFORMATION SYSTEMS
Bruce I. Blum, Johns Hopkins Medical Institutions
This tutorial is intended to provide an introduction for both programmers and health care professionals. The various classes of information systems are described, their general requirements identified, and operational experience cited. Emphasis is placed upon building a foundation for the conference sessions and further reading. Handouts include a bibliography and a vendor survey.

3:30 PM - 6:30 PM TUTORIAL B-2 Fee $35
INTRODUCTION TO COMPUTER ASSISTED MEDICAL DECISION MAKING
James A Reggia, M.D., University of Maryland
This tutorial is an introductory survey course about computer assisted clinical decision making. The emphasis is on different techniques that can be used to provide "automated consultation" and thus the material is primarily suited for computer scientists. No previous medical training is assumed. Major topics to be discussed are: psychological aspects of diagnosis, problems faced in automating an expert consultant, and alternative approaches to solving these problems (e.g., Bayesian inference, production systems, etc.).

12:00 N - 5:00 PM TUTORIAL C Fee $60
INTRODUCTION TO AND REVIEW OF DEVELOPMENTS IN COMPUTER TECHNOLOGY
John H. Carson, Ph.D., RLG Associates
This tutorial will provide background and review of recent developments in computer technology such as mini- and microcomputers, operating systems, programming languages, and various software concepts to assist participants in the technical sessions of the Symposium. The course is aimed at the novice and newcomer to the world of computers.

MONDAY, October 15, 1979

8:00 AM - 6:00 PM REGISTRATION

9:00 AM - 9:15 AM KEYNOTE ADDRESS: Joshua Lederberg,
Nobel Laureate, Rockefeller University

9:15 AM - 10:00 AM WELCOME AND INTRODUCTORY REMARKS

12:00 N (Session 1) CURRENT TRENDS IN MEDICAL DECISION MAKING
Chairwoman: Judith M.S. Prewitt, Ph.D., Office of the Director, Division of Computer Research and Technology, National Institutes of Health, Bethesda, MD.

“TEN YEARS OF MEDICAL DECISION-MAKING” Lee B. Lusted, University of California, San Diego, CA.

“CONSULT-I IN INTENSIVE CARE” Edward A. Patrick, Purdue University, West Lafayette, IN.

“CONTEMPORARY RESEARCH IN EEG INTERPRETATION” Siegfried J. Popp, Institute for Medical Informatics and Health Services Research, GSF, Munich, Federal Republic of Germany.

“GRAPHS AND GRAMMARS FOR HISTOLOGY: AN INTRODUCTION” Judith M. S. Prewitt, Division of Computer Research and Technology, National Institutes of Health, Bethesda, MD.

10:30 AM - 12:00 N (Session 5) INFLUENCES OF COMPUTER ENVIRONMENT ON EDUCATIONAL APPLICATIONS
Chairman: Charles S. Tidball, Ph.D., M.D., Department of Physiology, The George Washington University Medical Center, Washington, DC.

“CHARACTERIZING COMPUTER SYSTEMS USED IN MEDICAL EDUCATION” Victor E. Church, Computer Sciences Corporation, Silver Spring, MD. and Charles S. Tidball, George Washington University, Washington, DC.

“TEACHING HEALTH RISK CONCEPTS USING MICROCOMPUTERS” Lynda B. M. Ellis, John R. Raines, Department of Laboratory Medicine and Pathology, Medical School and James W. Brown, School of Journalism and Mass Communication, University of Minnesota, Minneapolis, MN.

“ANATOMICAL-CLINICAL CORRELATION: A COMPUTER SIMULATION FOR FRESHMAN MEDICAL STUDENTS” J.M. Kenns, R.S. Snell and C.S. Tidball, Department of Anatomy and Physiology, George Washington University Medical Center, Washington, DC.

“INTRAPARTUM FETAL MONITORING: A COMPUTER-BASED APPROACH TO DEVELOPMENT AND ASSESSMENT OF CLINICAL COMPETENCE” Robert G. Votaw, Lawrence W. Miller, H. Alec Himwich, Eileen Call-Himwich and John N. Bledner, Department of Research in Health Education and Department of Obstetrics and Gynecology, University of Connecticut School of Medicine, Farmington, CT.

“INTELLIGENT COMPUTER-AIDED INSTRUCTION FOR MEDICAL DIAGNOSIS” William J. Clancey, Edward H. Shortliffe, Bruce G. Buchanan, Computer Science Department, Stanford University, Stanford, CA.

10:30 AM - 12:00 N (Session 8) INFORMATION SYSTEM USE IN PATIENT CARE SYSTEMS
Chairman: Bruce I. Blum, The Johns Hopkins University, Baltimore, MD.
Co-Organizer: Harry E. Emlet, Jr., Vice President, Health Systems ANSER, Arlington, VA.

“IMPLEMENTATION OF A MEDICAL INFORMATION SYSTEM IN AN AMBULATORY CARE SETTING” Robert H. Drachman and Michael O’Neill, The Johns Hopkins University School of Medicine, Baltimore, MD.

“ON-LINE PATIENT INFORMATION SYSTEM WITH QUERY” Elie G. Hayeck, Anatharvedi; Anne and William J. Bernstein, Division of Biomedical Engineering, University of Virginia, Charlottesville, VA.

“USER SATISFACTION WITH COSTAR V (COMPUTER STORED AMBULATORY RECORD SYSTEM)” Barbara D. Kerlin, the MITRE Corporation, McLean, VA.

“THE PROBLEM ORIENTED MEDICAL INFORMATION SYSTEM (POMIS) FOR CLINICAL ONCOLOGY. PATIENT CARE AND CLINICAL RESEARCH AT THE BALTIMORE RESEARCH PROGRAM (BCRP), NATIONAL CANCER INSTITUTE (NCI)” Robert J. Esterhay, Jr. and Peter L. Walton, BCRP, DCT, NCI, Baltimore, MD. and PROMIS Laboratory, Burlington, VT.

“ASSESSING THE IMPACT OF COMPUTERIZED MEDICAL RECORD SUMMARIES” James L. Rogers, Olga M. Harring and Roncey A. Watson, Northwestern University Medical School, Chicago, IL.

“ALCHEMIST (ANESTHESIA LOG CHARGE ENTRY, MEDICAL INFORMATION, AND STATISTICS)” M. Carl Covey, Jr., Department of Anesthesia, University of Arkansas, Little Rock, AR.

10:30 AM - 12:00 N (Session 12) DATA BASE SYSTEMS AND CONVENTIONS
Chairman: Joseph T. O’Neill, World Association for Medical Informatics, Gainesville, MD.

“INFORMATION PROCESSING STANDARDS AND FOOD AND NUTRITION INFORMATION” Arden W. Forrey, Institute for the Advancement of Computer Use in Nutrition and Dietetics, Seattle, WA.

* Session numbers correspond to the sequence as they are to be presented in the Proceedings which will be distributed at the Symposium and are included in the registration fee.
Chairman: James A. Reggia, M.D., Assistant Professor, Department of Surgery, University of Maryland Hospital, Baltimore, MD and Department of Computer Science, University of Maryland, College Park, MD

"CLINICAL APPLICATIONS OF THE MEDICAL DECISION AIDING SYSTEM MARI" W. Dallas Hall, School of Medicine, Emory University and Henry N. Camp, School of Information and Computer Science, Georgia Institute of Technology, Atlanta, GA

"AN INTEGRATED PROTOCOL MANAGEMENT SYSTEM" Richard B. Friedman, Steven M. Estine, G. Malcolm Murray, David Holladay and Carol E. Stein- hart, University of Wisconsin Clinical Center, Madison, WI

"AN EXPLORATORY DATA ANALYSIS SYSTEM FOR MEDICAL DECISION-MAKING" Joyce M. Corley and Richard W. Underwood, Biomedical Information and Computer Science Program, Georgia Institute of Technology and Emory University, Atlanta, GA

"AUTOMATIC APPLICATION OF HEALTH CARE CRITERIA TO NARRATIVE PATIENT RECORDS" Lynette Hirschman, Naomi Sager, Linguistic String Pro- ject, New York University and Margaret Lyman, Department of Pediatrics, New York University Medical Center, New York, NY

4:00 PM - 5:30 PM (Session 11) INFORMATI ON SYSTEM USE IN PATIENT CARE: FUTURE DIRECTIONS

Chairman: Bruce I. Blum, The Johns Hopkins University, Baltimore, MD Co-Organizer: Henry E. Emlet, Jr., Vice President, Health Systems ANSI, Arling- ton, VA

"MEDICAL INFORMATION SYSTEMS - PROBLEMS OF INTEGRATION" Stan Weinstein, EDS Federal Corporation, Washington, DC

"COST BENEFIT ANALYSIS" Gerald Chapman, Micro-Technology, Inc., Cedar Rapids, IA

"A METHODOLOGY FOR AN ANALYSIS OF MEDICAL CARE OUTTIME TO ASSURE A STATE OF PATIENT WELLNESS" Mendle Adams, Western Michigan Professional Standards Review Organization, Inc., Grand Rapids, MI

"APPLICATION ENABLING PROGRAMS: A FOUNDATION FOR HOSPITAL INFORMATION SYSTEMS" J. Kent Goode, IBM, Bethesda, MD

"A STANDALONE MINICOMPUTER SYSTEM FOR ADMINISTRATION OF HEALTH CARE FACILITIES" Aaron Tenenbaum, Department of Computer and Information Science, Brooklyn College, Brooklyn, NY, George Weinberger and Brent Weintrob, Health Information Systems, Inc., Brooklyn, NY

"A PRACTICAL SYSTEM FOR MONITORING THE RESULTS OF HEALTH CARE" G.D. Daugharty, Department of Obstetric, Gynecology, and Reproductive Medicine, St. Luke's Hospital, Cleveland, OH

4:00 PM - 5:30 PM (Session 12) COST BENEFIT ANALYSIS AND EVALUATION OF OPERATIONAL IMPACT OF MEDICAL INFORMATION SYSTEMS II

Chairman: Henry E. Emlet, Jr., Vice President, Health Systems ANSI, Arlington, VA

"A MULTIFICACETED APPROACH TO A COMPUTERIZED RADIOThERAPY SYSTEM" William T. Ellis, Jr. and Dennis M. Oliver, Washington University School of Medicine, St. Louis, MO

"A COMPARATIVE EVALUATION OF TWO MULTIPATHIC HEALTH TESTING SYSTEMS" Douglas Mackintosh, Dennis St. Clair, Robin Hertz and Lynda Brewer, ANSI, Arlington, VA
PANEL:
Bruce I. Blum, Johns Hopkins University, Baltimore, MD
Peter E. Chesbrough, Chesbrough Associates, Fairfax, VA
William R. Feit, The George Washington University Medical Center, Washington, DC
Donald A. Lindberg, University of Missouri, Columbia, MO
Richard DuBois, National Center for Health Services Research, DHEW, Hyattsville, MD
Benjamin R. Baker, Rockville, MD
7:00 PM - 9:00 (Session A) HEALTH CARE SYSTEMS ANALYSIS AND MODELING
Chairman: John L. Davis, Ph.D., Health Systems ANSER, Arlington, VA
Co-Organizer: Harry E. Emlet, Jr., Vice-President, Health Systems ANSER, Arlington, VA
“CALCULATING DOCTORS” Meyer Katzper, Rockville, MDK
“MIS REQUIREMENTS FOR MANAGING A HOSPITAL UNDER ‘PER CASE’ REIMBURSEMENT” Donald Sternwachs, Maureen Fahey, Ralph Horky and David Tower, The Johns Hopkins Medical Institutions, Baltimore, MD
“FINANCIAL MODELING OF HEALTH MAINTENANCE ORGANIZATIONS” John R. Coleman, University of New Haven, West Haven, CT and Frank C. Kaminsky, University of Massachusetts, Amherst, MA
“SIMULATION OF A RURAL EMS SYSTEM” James E. Ames IV, University of Pittsburgh, Pittsburgh, PA
7:00 PM - 9:00 (Session B) COMPUTER APPLICATIONS IN CANCER CENTERS
Moderator: Raymond E. Lenhard, Jr., M.D., Associate Professor of Oncology and Medicine, The Johns Hopkins Oncology Center, Baltimore, MD
Co-Organizer: Bruce I. Blum, The Johns Hopkins University, Baltimore, MD
TUESDAY, October 16, 1979
9:00 AM - 12:00 (Session 15) REGULATION, PRIVACY AND SECURITY OF MEDICAL INFORMATION
Chairman: E.R. Gabrieli, M.D., President, New York State Association for Confidentiality of Health Data, Inc., Buffalo, NY
Co-Organizer: Rosalie A. Dunn, Ph.D., National Center for Health Statistics, Hyattsville, MD
“NEW DEVELOPMENTS AND PROBLEMS IN HEALTH CARE CONFIDENTIALITY” Alan F. Westin, Department of Political Science, Columbia University, New York, NY
“RECONCILING INFORMATION NEED IN MEDICAL AND EPIDEMIOLOGIC RESEARCH WITH THE RIGHT TO PRIVACY AND CONFIDENTIALITY” Leon Lack, Department of Epidemiology, Johns Hopkins University, Baltimore, MD
“PROTECTION OF CONFIDENTIAL MEDICAL DATA: A MODEL” John Gabrieli, Western New York Medical Data Center, Buffalo, NY
“DEVELOPMENT OF AN INTERNATIONALLY ACCEPTED CLASSIFICATION WITHIN A SPECIALTY AREA” August Combrinckarder, Department of Diphtheriaeologie, PathoMedical Center, San Francisco, CA
“CONFIDENTIALITY PROBLEMS WITH MICRO-DATA RELEASE” Lawrence H. Cox, Statistical Research Division, U.S. Bureau of the Census, Suitland, MD
9:00 AM - 12:00 (Session 18) TECHNICAL ASPECTS OF MICROCOMPUTER SYSTEMS FOR MEDICINE
Chairman: Abund O. Wist, Ph.D., Medical College of Virginia/Virginia Commonwealth University, Richmond, VA
Co-Organizer: Henry S. Eden, M.D., Assistant to the Chief, Biomedical Engineering and Instrumentation Branch, Division of Research Services, National Institutes of Health, DHEW, Bethesda, MD
“MULTIPLE MICROPROCESSORS FOR CONTINUOUS PATIENT MONITORING” Andrew Simmons, Miami Veterans Administration Hospital, Miami, FL
“VIDEODENSITOMETRY VIA AN S-100 BUS MICROCOMPUTER” T.C. Rhee, Jr., J.H. Nelson, J.M. Bateman, and T.P. Graham, Jr., Division of Pediatric Cardiology, Vanderbilt Medical Center, Nashville, TN
“A MICROPROCESSOR-BASED TILTING BED FOR BLOOD PRESSURE CONTROL” David W. Griffith and Ralph W. Barnes, Department of Neurology, Bowman Gray School of Medicine, Winston-Salem, NC
“STRATEGY FOR AN EXTENSIBLE, MICROCOMPUTER-BASED MUMPS SYSTEM FOR PRIVATE PRACTICE” Richard F. Walters, Department of Community Health, University of California, Davis, CA
“A 16-BIT MICROCOMPUTER BASED BIOMEDICAL SIGNAL PROCESSOR” Antal A. Sarkady, US Naval Academy, Annapolis, MD and Errol E. Wallingford, Royal Military College, Kingston, Ontario, Canada
9:00 AM - 12:00 N (Session 21) DATA BASE APPLICATIONS
Chairman: Joseph T. O'Neill, World Association for Medical Informatics, Gathersburg, MD
“AUTHOR SUPPORT FOR THE DESIGN OF AUTOMATED MEDICAL INTERVIEWS” A.B. Maccabe and W.E. Underwood, Biomedical Information and Computer Science Program, Georgia Institute of Technology and Emory University, Atlanta, GA
“THE CONTEXT OF MEDICAL COMPUTER SOFTWARE SYSTEM DEVELOPMENT: MEDICAL USERS NEEDS AND EXPECTATIONS” Bonnie Kaplan, Department of Medical Physics, Michael Reese Hospital and Medical Center, Chicago, IL
“The USE OF THE COMPUTER IN EVALUATED MMPI IN CLINICAL AND INDUSTRIAL MEDICINE” Robert Most, Behavovrlyne, Palo Alto, CA
“PRACTICAL APPLICATIONS OF COMPUTERIZED NUTRITION ANALYSIS” Alfred C. Meyer, Madison, WI
“The PATIENT RECORD AS A PRIMARY COMPONENT OF MEDICAL COMPUTING” Gretchen Murphy and Kathleen Waters, Health Information Services, Seattle University, Seattle, WA
“AUTOMATED DEVELOPMENTAL DISABILITIES OUT-PATIENT TREATMENT REVIEW SYSTEM (ADDOPTRS)—DEVELOPMENT AND IMPLEMENTATION OF A MICROCOMPUTER BASED CASE MANAGEMENT SYSTEM” Clifford B. Fisch and Martin L. Fisch, The Long Island College Hospital, Brooklyn, NY
2:00 PM - 3:30 PM (Session 16) SYSTEMS FOR SUPPORT OF CLINICAL TRIALS
Chairwoman: Selma C. Kunitz, Office of Biometry and Epidemiology, National Institute of Neurological and Communicative Disorders and Stroke, NIH, Bethesda, MD
Co-Organizer: William C. Mohler, M.D., Associate Director, Division of Computer Research and Technology, National Institutes of Health, DHEW, Bethesda, MD
“DATA COLLECTION AND DATABASE MANAGEMENT FOR LARGE CLINICAL TRIALS” Willard L. McVeigh, Division of Clinical Investigation, University of Maryland, Baltimore, MD
“AN INTERACTIVE SYSTEM FOR CLINICAL TRIALS” Jeanette Y. Lee and Dennis M. Oliver, Division of Radiation Oncology, Washington University School of Medicine, St. Louis, MO
“INTERACTIVE MEDICAL QUESTIONNAIRE - PATIENT DATA SYSTEM” J.D. Wallace, Neurology Department, Yale University and West Haven Veterans Administration Medical Center, West Haven, CT
“AN INTERACTIVE COMPUTER PATIENT DATA ENTRY AND ANALYSIS SYSTEM FOR RADIATION THERAPY CLINICAL TRIALS” Bonnie Kaplan, Department of Medical Physics, Michael Reese Hospital and Medical Center, Chicago, IL
“THE SCARS CONCEPT FOR SURGICAL CODING AND REPORTING” Arnold Muecke, William Snyder and Lynn Peterson, Medical Computing Resources Center and Department of Surgery, The University of Texas Health Science Center, Dallas, TX
2:00 PM - 3:30 PM (Session 19) APPLICATIONS OF MICROCOMPUTERS IN MEDICINE
Chairman: Henry S. Eden, M.D., Assistant to the Chief, Biomedical Engineering and Instrumentation Branch, Division of Research Services, National Institutes of Health, DHEW, Bethesda, MD
Co-Organizer: Abund O. Wist, Ph.D., Medical College of Virginia/Virginia Commonwealth University, Richmond, VA
“MICROCOMPUTER-BASED PULMONARY WEDGE PRESSURE MEASUREMENTS” N. DeClaris and R. Bennington, Maryland Institute for Emergency Medical Services, University of Maryland, Baltimore, MD
“MICROCOMPUTER TEST BATTERY FOR EVALUATING THE EFFECTS OF NEUROPSYCHIATRIC TREATMENT INTERVENTIONS” Victor E. Krynicki, New York Medical College, New York, NY; Edmund MacKenzy, HZI Research Center, Tarrytown, NY and Turan M. Isik, New York Medical College, New York, NY
“MICROCOMPUTER BASED OBSERVATION OF HUMAN BIRTHING” Mel L. Barclay, Department of Obstetrics and Gynecology, University of Michigan Medical School, Ann Arbor, MI
2:00 PM - 3:30 PM (Session 22) CLINICAL LABORATORY COMPUTER SYSTEMS
Chairman: Paul Wolotsky, Director, Laboratory Computer Center, The Long Island Hospital, Brooklyn, NY
Co-Organizer: Ruth E. Dayhoff, M.D., Department of Laboratory Medicine, The Johns Hopkins Hospital, Baltimore, MD
“COMPUTERIZATION OF CLINICAL LABORATORIES” Paul Wolotsky, Long Island College Hospital, Brooklyn, NY
“JUSTIFICATION OF LABORATORY COMPUTER SYSTEMS” Roger Yurko, Clinical Information Center, Memorial Sloan Kettering Cancer Center, New York, NY
“APPLICATION OF CLINICAL LABORATORY DATABASE FOR MONITORING INFECTION CONTROL AND ANTIBIOTIC AUDIT” Sandra Phillips, Long Island College Hospital, Brooklyn, NY
“GENERAL ACCOUNTING (AND SCIENTIFIC SYSTEMS) CLINIC” Samuel A. Maxey, Willis Knighton Memorial Hospital, Shreveport, LA
“The BLOOD GASES QUALITY ASSURANCE SYSTEM” Lee Pickler, G.L. Pickler and Associates, Brunswick, OH
4:00 PM - 5:30 PM

**Session 17**

**OCCUPATIONAL HEALTH MONITORING SYSTEMS**

Chairwoman: Adrienne A. Whyte, Ph.D., BioTechnology, Inc. Falls Church, VA

Co-Organizer: William C. Mohler, M.D., Associate Director, Division of Computer Research and Development, National Institutes of Health, DHEW, Bethesda, MD

**“A MEDICAL MONITORING SYSTEM FOR VETERANIORCANCER RESEARCH PERSONNEL”** Dr. William H. Kirby, Jr., National Cancer Institute, DHEW, Bethesda, MD

**THE HEALTH/ENVIRONMENT MANAGEMENT SYSTEM FOR THE STANDARD OIL COMPANY (INDIANA)”** Pamela S. Kerr, Standard Oil Company (Indiana), Chicago, IL

**INDUSTRIAL MEDICAL DATA FOR EMPLOYEE SAFETY AND HEALTH”** R. Minnati and S. Moliner, Hoffman-La Roche Inc., Nutley, NJ

4:00 PM - 5:30 PM

**Session 20**

**APPLICATION OF MICROCOMPUTERS IN MEDICINE**

Chairman: Henry S. Eden, M.D., Assistant to the Chief, Biomedical Engineering and Instrumentation Branch, Division of Research Services, National Institutes of Health, DHEW, Bethesda, MD

Co-Organizer: Abund O. Wist, Ph.D., Medical College of Virginia/Virginia Commonwealth University, Richmond, VA

**SOLO: AN INTERACTIVE MICROCOMPUTER BASED BASED MONITOR”** Harry Comeriero, Michael Vernino and David Kalinsky, Menneen Medical Inc., Claremont, NY, Eric C. Rackow and Jim Welch, Critical Care Center, Ellis Hospital, Schenectady, NY

**A MICROCOMPUTER-BASED NEUROPHYSIOLOGICAL STIMULATOR”** John Halter, Department of Electrical Engineering, Texas A&M University, College Station, TX

**“COMPUTER ASSISTED MANAGEMENT OF THE CRITICALLY ILL”** Peter E. Friedell and Morris T. Friedell, Jackson Park Hospital, Chicago, IL

**A MICROCOMPUTER-BASED BASED MONITOR”** D. Kelinsky, G. Tigiv, E. Goldtein, Y. Elaz, A. Geva and M. Moskowitz, M.G. Electronics Ltd., Rehovot, Israel

4:00 PM - 5:30 PM

**Clinical Laboratory Database Applications**

Chairman: John Lewis, Ph.D., Associate Professor Washington University School of Medicine and Director of Laboratory Computing, Barnes Hospital, St. Louis, MO

Co-Organizer: Ruth E. Dayhoff, M.D., Division of Laboratory Medicine, The Johns Hopkins Hospital, Baltimore, MD

**“COMPUTER-ACQUIRED CLINICAL LABORATORY DATA BASES IN MEDICAL RESEARCH”** John W. Lewis, Division of Laboratory Medicine, Washington University School of Medicine, St. Louis, MO

**“THE HELP SYSTEM IN THE CLINICAL LABORATORY: LABORATORY DATA IN DRUG MONITORING AND INTERPRETATION OF DRUG EFFECTS ON LABORATORY TESTS”** Stephen J. Clark, Department of Pathology and Department of Medical Biophysics and Computing, College of Medicine, University of Utah, Salt Lake City, UT

**“UTILIZATION OF CLINICAL LABORATORY INFORMATION SYSTEM DATABASES FOR MEDICAL EDUCATION AND RESEARCH”** James C. Boyd, University of Virginia, Charlottesville, VA, Jack H. Laden and John W. Lewis, Washington University School of Medicine, St. Louis, MO

**“THE BLOOD DONOR DEFERRAL REGISTRY OF THE AMERICAN NATIONAL RED CROSS”** Donald Burnhart and Frank R. Ellis, Missouri-Illinois Regional Red Cross Blood Services, St. Louis, MO

7:00 PM - 12:00 M

**BANQUET**

Wednesday, October 17, 1979

9:00 AM - 12:00 N

**Session 24**

**PHYSIOLOGICAL SIGNAL ACQUISITION AND ANALYSIS I**

Chairperson: Urs E. Ruttimann, Ph.D., Department of Cardiology, Children’s Hospital National Medical Center, Washington, D.C.

**“COMPUTERIZED ELECTRO-OCTALOGRAPHY (CEO)”** R.S. Ledley, L.S. Rotolo and J.C. Kattah, Georgetown University Medical Center, Washington, D.C.

**“USE OF GENERAL PURPOSE AND SPECIAL PURPOSE DIGITAL COMPUTERS IN TESTING OF SENSORY FUNCTION AND NEUROLOGICAL DISORDERS”** Ira P. Weiss and Ann B. Barnett, Children’s Hospital National Medical Center, Washington, D.C.

**“A MICROPROCESSOR-BASED UNIT DATA ACQUISITION AND REDUCTION SYSTEM”** Joseph D. Bronzino and Fred Borgenich, Trinity College, Hartford, CT

**“COMPUTER ASSISTED ANESTHESIA RECORD”** Harry J. Cozen, UCLA School of Medicine, Los Angeles, CA

**“MONITORING SYSTEM FOR NEUROLOGY”** J.D. Wallace, Yale University and West Haven Veterans Administration Medical Center, West Haven, CT

**“AN INTEGRATIVE COMPUTER ROUTINE FOR X-RAY SPECTRA GENERATION: TECHNIQUES AND APPLICATION”** J.O. Fenn, G.D. Frey and W.G. Gajewski, Medical University of South Carolina, Charleston, SC


9:00 AM - 12:00 N

**Session 27**

**COMPUTER SUPPORT FOR PHYSICIANS’ OFFICE PRACTICE: PHYSICIANS’ PERSPECTIVE**

Chairman: William R. Felts, M.D., Associate Professor of Medicine, Department of Medicine, The George Washington University Medical Center, Washington, DC

Co-Organizer: Helmuth F. Orthner, Ph.D., The George Washington University Medical Center, Washington, DC

**“OVERVIEW - NEED AND DEMAND”** William R. Felts, Department of Medicine, The George Washington University Medical Center, Washington, DC, and William H. Kirby, Jr., Control Data Corporation, Baltimore, MD

**“COMPUTERIZED HEALTH TESTING”** Donald Hanscom, Hinsdale Medical Center, Hinsdale, IL


**“THE COMPUTER IN THE MEDICAL OFFICE”** John R. Hayes, Department of Medicine, Windham Community Memorial Hospital, and Paul R. Truebig, Department of Computer Science, University of Connecticut, William, CT

**“COMPUTERIZING A SMALL MEDICAL PRACTICE OR TRADING TRANQUILITY FOR TRAQUILIZERS”** Richard C. Adams, Family Practice, Shaman, IL

**“AN IN-HOUSE COMPUTER SYSTEM FOR GENERAL OFFICE OPHTHALMOLOGY”** Paul L. Carmichael, Ophthalmic Associates-P.A., Lansdale, PA

**“A METHODOLOGY INFORMATION SERVING PATIENT AND PHYSICIAN ACCOUNTABILITY IN AN INTEGRATED BILLING PROCESS”** Alice Cavel, Kalamazoo, MI

9:00 AM - 12:00 N

**Session 31**

**MEDICAL INFORMATION SYSTEMS DEVELOPMENT AND DISSEMINATION POLICY**

Moderator: Henry G. Heffernan, Chairman, MUMPS Users’ Group, Washington, DC

**Panel:**

William R. Ayers, Society for Computer Medicine, Washington, DC

William R. Baker, Division of Research Resources, NIH, Bethesda, MD

Robert L. Cooper, Data Automation Directorate, OSD, Washington, DC

Karen A. Duncan, Mitre Corp., McLean, VA

Wolfgang Gire, Klinikum der Johann Wolfgang Goethe Universitat, Frankfurt, West Germany

Henry G. Heffernan, MUMPS Users’ Group, Washington, DC

Robbyn R. Hough, President’s Reorganization Project for Federal Data Processing, Rochester, MI

Richard K. Hsieh, Society for Advanced Medical Systems, Baltimore, MD

Alton P. Jensen, President’s Reorganization Project for Federal Data Processing, Atlanta, GA

Joseph T. O’Neill, World Association for Medical Informatics, Gaithersburg, MD

Herman E. Shipley, Office of Federal Procurement Policy, OMB, Washington, DC

Clarence D. Smith, U.S. General Accounting Office, Washington, DC

Steven M. Veazie, American Hospital Association, Chicago, IL

Ichiro Wakai, MUMPS Users’ Group-Japan, Nagoya, Japan

9:00 AM - 12:00 N

**Session 34**

**HOSPITAL INFORMATION SYSTEMS IN MULTI-HOSPITAL HEALTH CARE SYSTEMS**

Chairman: Col. Rudolf G. Bickel, MC., TRIMIS Program Office, Bethesda, MD

Co-Organizer: Harry E. Emiet, Jr., Vice President, Health Systems ANSER, Arlington, VA

**“THE TRIMIS CONCEPT”** Rudolf G. Bickel, MC., TRIMIS Program Office, Bethesda, MD

**“THE TESTING OF AUTOMATED MEDICAL SYSTEMS”** Ralph Gilbert Buckman, APL, Hopkins University, Laurel, MD

**“ADP MANAGEMENT PROBLEMS AND IMPLEMENTATION STRATEGIES”** Jonathan D. Hodgon, ANSER, Arlington, VA

**“PHAMIS CONCEPT”** Malcolm A. Glezer, USPHS Hospital, Seattle, WA

**“THE INDIAN HEALTH SERVICE PATIENT CARE INFORMATION SYSTEM”** Alfred E. Garnett, Indian Health Service, Tucson, AZ

**“DISTRIBUTED PROCESSING ARCHITECTURE FOR A HOSPITAL INFORMATION SYSTEM”** Stephen Tolchin, APL, Laurel, MD, Marvin Zickebar and Paul Brusil, The MITRE Corporation, Bedford, MA

2:00 PM - 3:30 PM

**Session 35**

**PHYSIOLOGICAL SIGNAL ACQUISITION AND ANALYSIS II**

Chairman: James J. Bailey, M.D., Division of Computer Research and Technology, National Institutes of Health, Bethesda, MD

**“A MINICOMPUTER BASED SCHEME FOR TURBULENCE MEASUREMENTS WITH PULSED DOPPLER ULTRASOUND”** J.J. Craig, D.P. Giddens and V. Saxena, School of Aerospace Engineering, Georgia Institute of Technology, Atlanta, GA

**“COMPUTERIZED CARDIOPULMONARY STRESS TESTING IN CHILDREN”** Robert P. Howard, Urs E. Ruttimann, Ozzie Rivera and Frank M. Galito, Departments of Cardiology and Biomedical Engineering, Children’s Hospital National Medical Center, Department of Child Health and Development, George Washington University, Washington, DC


**“THE QUANTITATIVE SIGNAL FEATURES OF THE AORTIC EJECTION CLICK AND FIRST HEART SOUND”** Samuel J. Showalters, Virginia Polytechnic Institute and State University, Blacksburg, VA and Aatul A. Sarkady, U.S. Naval Academy, Annapolis, MD

2:00 PM - 3:30 PM

**Session 38**

**COMPUTER SUPPORT FOR PHYSICIANS’ OFFICE PRACTICE: INTERMEDIARIES’ PERSPECTIVE**

Chairman: Helmuth F. Orthner, Ph.D., Associate Professor, Department of Clinical Engineering, Director, Academic Computer Services, The George Washington
REGISTRATION FORM
THIRD ANNUAL SYMPOSIUM ON COMPUTER APPLICATIONS IN MEDICAL CARE

Advance Registration must be received by October 9, 1979. No refunds after October 12. $10 Administrative charge will be assessed for all refunds. Registration fee allows admission to the technical sessions, exhibits, and poster demonstrations. Add $20 to the registration fee for the banquet to be held at the Sheraton Inn. The Proceedings will be distributed to all participants on October 14, 1979. Additional copies will be available following the meeting from IEEE Computer Society, 5855 Naples Plaza, Long Beach, CA 90803.

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University Medical Center, Washington, DC
Co-Organizer: William R. Felts, M.D., Associate Professor of Medicine, Department of Medicine, The George Washington University Medical Center, Washington, DC

“THE NEED FOR UNIFORM MEDICAL PROCEDURAL TERMINOLOGY FOR REPORTING PHYSICIANS’ SERVICES, CLAIMS PROCESSING, PEER REVIEW, AND STATISTICS AND PLANNING” William H. Kirby, Jr., American Health and Life Insurance Company, Baltimore, MD

“THE EFFECTS OF PHYSICIAN COMPUTER APPLICATIONS TO HEALTH INSURANCE CLAIMS AND REIMBURSEMENT” Dayton W. Selby, Professional Affairs Division and Robert J. Freddico, Claims Division, Blue Shield of the National Capital Area, Medical Services of D.C., Inc., Washington, DC

“ONLINE INFORMATION FOR PHYSICIANS: A PERSPECTIVE FROM THE LISTER HILL NATIONAL CENTER FOR BIOMEDICAL COMMUNICATIONS” Donald Merritt, Elliot R. Siegel, Charles M. Goldstein and Lionel M. Bernstein, Lister Hill National Center for Biomedical Communications, National Library of Medicine, NIH, DHREW, Bethesda, MD

2:00 PM - 3:30 PM (Session 32)

DISEASE ORIENTED DATA BASES

Chairman: William C. Mohler, M.D., Associate Director, Division of Computer Research and Technology, National Institutes of Health, DHREW, Bethesda, MD

“THE SEVERAL FACES OF DATA BASES” William C. Mohler, DCRT, NIH, Bethesda, MD

“A DATA BASE APPROACH FOR STABILIZING CLINICAL DECISIONS IN CORONARY DISEASE” C. Frank Starnier, Department of Medicine, Duke University Medical Center, Durham, NC

“A COMPUTER TERMINAL PROGRAM FOR EVALUATION OF CARDIOVASCULAR FUNCTION LIMITS AND ESTIMATION OF CORONARY EVENTS RISK” R.A. Bruce, L. Belanger, K. Hossack, J. Sobolowsky, and T. Holtzman, Division of Cardiology, Department of Medicine and Locke Computer Center, University of Washington, Seattle, WA

“PILOT DATA BANKS FOR STROKE AND TRAUMATIC COMA” Selma C. Kunitz, Office of Biometry and Epidemiology, National Institute of Neurological and Communicative Disorders and Stroke, DHREW, Bethesda, MD

“NATIONAL CHRONIC DISEASE DATA BANKS: PROSPECTIVES FROM AN ADVOCATE” James F. Fries, Department of Medicine, Stanford University, Stanford, CA

2:00 PM - 3:30 PM (Session 35)

PHARMACY INFORMATION SYSTEMS IN MULTI-HOSPITAL HEALTH CARE SYSTEMS!

Chairman: Ronald D. Trusty, R.Ph., M.S., Lt. Col., USAF, BSC, Bethesda, MD
Co-Organizer: Harry E. Emlet, Jr., Vice President, Health Systems ANSER, Arlington, VA

“TRIMIS APPROACH TO AUTOMATING PHARMACY INFORMATION” Ronald D. Trusty, TRIMIS Program Office, Bethesda, MD

“COST-BENEFIT ANALYSIS OF AN AUTOMATED PHARMACY SYSTEM” Carlos A. Marino, ANSER, Arlington, VA

“CHARLESTON PHARMACY INFORMATION SYSTEM AND EXPERIENCE” John Nazzaro, Naval Regional Medical Center, Charleston, SC and Warren Bennett, TRIMIS Navy, Bethesda, MD

4:00 PM - 5:30 PM (Session 26)

COMPUTER ASSISTED ANALYSIS OF ELECTROPHYSIOLOGICAL SIGNALS

Chairman: Joseph D. Bronzino, Ph.D., Director of Biomedical Engineering, Trinity College, Hartford, CT
Co-Organizer: Urs E. Ruttimann, Ph.D., Department of Cardiology, Children’s Hospital National Medical Center, Washington, DC

“USE OF COMPUTER ASSISTED ANALYSIS OF AUDITORY NERVOUS SYSTEM ACTIVITY IN PEDIATRIC PATIENTS” M.L. Lenhardt, Medical College of Virginia/Virginia Commonwealth University, Richmond, VA

“THE LOCALIZATION OF SOURCES OF HUMAN COMPUTER PROCESSED CEREBRAL POTENTIALS FOR AUTOMATED ASSESSMENT OF VISUAL FIELD IMPAIRMENT” G. Lesman, Serenco Scientific Systems, Mamaroneck, NY

“A COMPUTERIZED LABORATORY FOR CONDITIONING EEG ACTIVITY” A.V. Nelson and W.J. Jackson, Biomedical Engineering, Medical College of Georgia, Augusta, GA

“A QUANTITATIVE APPROACH TO PHOTIC FLASH RESPONSES” P.D. Bergery and J.D. Wallace, Neurolgy Department, Yale University and West Haven Veterans Administration Medical Center, West Haven, CT

“SPECTRAL ESTIMATES OF BRAINSTEM AUDITORY EVOKED POTENTIALS” J.R. Boston and C.A. Younger, Biomedical Engineering program, Carnegie-Mellon University, Pittsburgh, PA

“UTILIZATION OF POWER SPECTRAL ANALYSIS TECHNIQUES TO QUANTIFY ALTERATIONS IN THE EEG” Joseph D. Bronzino, Trinity College, Hartford, CT

4:00 PM - 5:30 PM (Session 29)

COMPUTER SUPPORT FOR PHYSICIANS’ OFFICE PRACTICE: VENDORS’ PERSPECTIVES

Chairman: Helmuth F. Orthner, Ph.D., Associate Professor, Department of Clinical Engineering, Director, Academic Computer Services, The George Washington University Medical Center, Washington, DC

“THE DESIGN OF A MEDICAL OFFICE COMPUTER SYSTEM, THE LONG RANGE VIEWPOINT” Charles Heisterkamp, III, Hogg and Heisterkamp Surgical Associates, Lancaster, PA

“MICRO-COMPUTER SOFTWARE IN THE MEDICAL OFFICE: AN INTRODUCTION FOR THE PHYSICIAN” David R. Garver, American Medical Software, Inc., Champaign, IL

“COMPUTER STORED AMBULATORY RECORDS SYSTEMS IN REAL LIFE PRACTICES” Michael A.W. Hattwick, Medical Information Management, Inc., Falls Church, VA

“AFTER THE BILLING...WHAT NEXT?” Cynthia T. Ross, IBM, General Systems Division, Atlanta, GA

“COMPUTER SUPPORT FOR MEDICAL OFFICES” Gregory J. Sheffield, Marca Industries, Inc., Chicago, IL

4:00 PM - 5:30 PM (Session 33)

DISEASE DATA AND DISPLAYS

Chairman: Thomas Mason, Ph.D., Chief, Population Studies Section, Environmental Epidemiology Branch, National Cancer Institute, DHREW, Bethesda, MD
Co-Organizer: William C. Mohler, M.D., Associate Director, Division of Computer Research and Technology, National Institutes of Health, DHREW, Bethesda, MD

“NATIONAL CANCER REGISTRY DATA MANAGEMENT SYSTEM” Norman A. Thetford, Robert F. McKown, John S. Flannery and Theodore Weis, Connecticut Cancer Epidemiology Program, New Haven, CT

“NATIONAL DEATH INDEX” Alan Kegner, National Center for Health Statistics, Office of Health Research, Statistics, and Technology, DHREW, Hyattsville, MD

“A MULTIPLE-CAUSE-OF-DEATH SYSTEM” Randall F. Chamberlain and Marshall Evans, National Center for Health Statistics, Office of Health Research, Statistics, and Technology, DHREW, Research Triangle Park, NC


“COMPUTER MAPPING AT NHLBI” R.F. Fabsitz and M. Feinleib, Epidemiology Branch, National Heart, Lung and Blood Institute, DHREW, Bethesda, MD

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Advance Program

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4:00 PM - 5:30 PM (Session 36)
PHARMACY INFORMATION SYSTEMS IN MULTI-HOSPITAL HEALTH CARE SYSTEMS II
Chairman: Ronald D. Trusty, R.Ph., M.S., Lt. Col., USAF, BSC, Bethesda, MD
Co-Organizer: Harry E. Emlet, Jr., Vice President, Health Systems ANSER, Arlington, VA
"PREPARATIONS FOR INTRODUCTION OF AN AUTOMATED PHARMACY INFORMATION SYSTEM" Edwin B. Morgan, Air Force Medical Systems Division, San Antonio, TX and Gerald Thompson, TRIMIS Army, Washington, DC
"PHAMIS PHARMACY SYSTEM" Arthur Gurtel, USPHS Hospital, Seattle, WA
"VETERANS ADMINISTRATION 'APPLES' SYSTEM" Eldridge, D. Huntington, Veterans Administration Data Processing Center, Los Angeles, CA
7:30 PM - 10:00 PM (Session 30) COMPUTER SUPPORT FOR PHYSICIANS' OFFICE PRACTICE: SYNTHESIZING THE PERSPECTIVES
Moderator: William R. Felts, M.D., Associate Professor of Medicine, Department of Medicine, The George Washington University Medical Center, Washington, DC

October 17-19
NIH CONSENSUS DEVELOPMENT CONFERENCE
"THE USE OF MICROPROCESSOR-BASED 'INTELLIGENT' MACHINES IN PATIENT CARE"
General Chairman: Murray Eden, Ph.D., Biomedical Engineering and Instrumentation Branch, DRS, NIH, DHEW
This year the third annual Symposium will be held in conjunction with an NIH consensus development conference on the role of "intelligent," microprocessor-based machines in patient care. The NIH conference will be held at the Sheraton from October 17 (7:30 PM) to October 19 (1:30 PM). Attendees will have the opportunity to assess the state of the art of such devices in patient care, as well as to consider relevant legal, social, and ethical issues. The format of the sessions will include both invited papers and round table discussions.

Preliminary approval has been obtained for participants to receive 5 hours of AMA Category 1 credit. There is no registration fee. The total number of participants will be limited, and interested persons are encouraged to write to Henry S. Eden, M.D., Assistant to the Chief, Biomedical Engineering and Instrumentation Branch, DRS, NIH, Ridg. 13, Room 3W-13, Bethesda, MD 20014 (or call 301-488-5771) for further information—including a set of "working papers" and an advance registration form.

HOTEL ACCOMMODATIONS
A block of rooms has been reserved for Symposium attendees. When making your hotel reservation, specify you are attending the Symposium in order to receive the special room rates of $40 (single) and $42 (double) per day.

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EXHIBITS
Demonstrations and exhibitions will illustrate computer systems and commercial products discussed during the Symposium. Interested exhibitors should contact the Exhibition Chairman: Michael J. Ackerman, Ph.D., Naval Medical Research Institute, Mail Drop 38, Bethesda, MD 20014. Telephone 202-295-1810