

CURRICULUM VITAE

Edward Hance Shortliffe, MD, PhD, MACP, FACMI, FIAHSI

- [work] Chair Emeritus and Adjunct Professor, Department of Biomedical Informatics
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Born: Edmonton, Alberta, Canada
Date of birth: 28 August 1947
Citizenship: U.S.A. (naturalized - 1962)
Spouse: Vimla L. Patel, PhD

Education

From	To	School/Institution	Major Subject, Degree, and Date
9/62	6/65	The Loomis-Chaffee School, Windsor, CT.	High School
9/65	7/66	Gresham's School, Holt, Norfolk, U.K.	Foreign Exchange Student
9/66	6/70	Harvard College, Cambridge, MA.	Applied Math and Computer Science, A.B., June 1970
9/70	1/75	Stanford University, Stanford, CA	PhD, Medical Information Sciences, January 1975
9/70	6/76	Stanford University School of Medicine	MD, June 1976.
7/76	6/77	Massachusetts General Hospital, Boston, MA	Internship in Internal Medicine
7/77	6/79	Stanford University Hospital, Stanford, CA	Residency in Internal Medicine

Honors

Graduation Magna Cum Laude, Harvard College, June 1970

Medical Scientist Training Program (MSTP), NIH-funded Stanford Traineeship, September 1971 - June 1976

[Grace Murray Hopper Award](#) (Distinguished computer scientist under age 30), *Association for Computing Machinery*, October 1976

Research Career Development Award, *National Library of Medicine*, July 1979—June 1984

Henry J. Kaiser Family Foundation Faculty Scholar in General Internal Medicine, July 1983—June 1988

Young Investigator Award, *Western Society for Clinical Investigation*, February 1987

Elected Member, National Academy of Medicine (formerly Institute of Medicine), *National Academies of Sciences, Engineering, and Medicine*, 1987

Elected Fellow, *Association for the Advancement of Artificial Intelligence (AAAI)*, 1990

Master, *American College of Physicians*, November 2002

National Associate, *National Academies of Sciences, Engineering, and Medicine*, Washington, DC, December 2004

Appointed Rolf H. Scholdager Professor of Biomedical Informatics (endowed chair), *Columbia University*, June 2005

[Morris F. Collen Award for Distinguished Contributions to Medical Informatics](#), *American College of Medical Informatics (ACMI)*, November 2006

Selected as “Phoenix 50 Influential Leader”, *Phoenix Business Journal*, October 2007

Listed annually in *Who’s Who in America*

Commencement Speaker and Honorary Doctor of Science, *State University of New York, Downstate Medical Center*, May 2013

Elected Founding Member, International Academy of Health Sciences Informatics (IAHSI), International Medical Informatics Association, May 2017

Marquis Who’s Who Lifetime Achievement Award, May 2017

Convocation Speaker and Honorary Doctorate, Telfer School, University of Ottawa, Ottawa, Ontario, Canada, June 2017

[François Grémy Award of Excellence](#), International Medical Informatics Association (IMIA), October 2021.

Annual thesis competition named the [Edward H Shortliffe Doctoral Dissertation Award](#), American Medical Informatics Association (AMIA), November 2022

Awardee, *The [Academy Plaque](#) for Exceptional Service to the Academy*, New York Academy of Medicine, September 2023

Awardee, [Walsh McDermott Medal](#) for Distinguished Service to the National Academy of Medicine and to the National Academies of Sciences, Engineering, and Medicine, October 2023

[Highly Ranked Scholar Recognition](#) – ScholarGPS, ID: 64198721731081

Licensure

National Board of Medicine Examiners, USMLE #31441348, Certified April 1977

California State Medical Board, License G-035737, September 1977— (inactive since 2009)

Arizona Medical Board, License #37630, October 2007 – (inactive since 2012)

Diplomate, American Board of Internal Medicine, Certificate #073613, September 1979 (unlimited)

Named Lectureships

October 1983 Kauffman Memorial Lecture, College of Pharmacy, The Ohio State University, Columbus, Ohio

March 1985 Jacob Marschak Interdisciplinary Colloquium on Mathematics in the Behavioral Sciences, UCLA, Los Angeles, California.

May 1985 Joseph Leiter Lecture, Annual Meeting, Medical Library Association, New York, New York

February 1987 Young Investigator Award Lecture, Western Society for Clinical Investigation, Carmel, CA.

February 1988 George and Sandra Forsythe Memorial Lectures, Computer Science Department, Stanford University, Stanford, California.

April 1988 Audio-Digest Annual Lectureship, Congress on Continuing Medical Education, Los Angeles, California.

June 1994	19th Annual Eugene Pendergrass Lectureship, Department of Radiology, University of Pennsylvania School of Medicine, Philadelphia, Pennsylvania.
May 1996	Hurst Brown Professorship, Toronto General Hospital, University of Toronto, Toronto, Ontario.
October 1995	Richard M. Polaschek Lectureship in Medical Informatics, Johns Hopkins University School of Medicine, Baltimore, Maryland.
May 1996	C. Everett Koop Lectureship in Medical Informatics, Dartmouth University School of Medicine, Hanover, New Hampshire.
April 1997	Cosgrove Lecture, Annual Clinical Meeting, American College of Obstetrics and Gynecology, Las Vegas, Nevada.
April 1997	Marsden S. Blois Lectureship in Medical Informatics, University of California San Francisco, San Francisco, California.
June 1998	Donald AB Lindberg Lecture in Medical Informatics, University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania
September 2005	Priscilla Mayden Lecture, Midcontinental Meeting of the Medical Library Association, University of Utah, Salt Lake City, Utah
February 2007	James Coward Lecture, Symposium on Information Technology and Communications in Health, University of Victoria, Victoria, British Columbia
September 2007	Shirley Agnos Arizona Town Hall Lecture, Phoenix, Arizona
June 2008	Ted and Janice Smith Distinguished Lecture, University of California Irvine, Irvine, California
March 2009	John Dickmeyer Lecture, Renal Physicians Association Meeting, Baltimore, MD
October 2009	Julius S. Aronofsky Lecture, UT Southwestern School of Medicine, Dallas, TX
October 2011	Antonija Prelec Memorial Lecture, School of Medicine, Stony Brook University, Stony Brook, NY.
March 2016	Crawford Long Lectureship, Department of Anesthesiology, Emory School of Medicine, Atlanta, GA.
June 2023	The Howard Bleich Lecture, Division of Clinical Informatics (DCI), Beth Israel Deaconess Medical Center and Harvard University, Cambridge, MA.

Employment, Research, and Academic Positions

2018—2024	Adjunct Professor of Biomedical Informatics, College of Health Solutions, Arizona State University, Phoenix, AZ
2016—2020	Senior Physician Executive Consultant, IBM Watson Health, Cambridge, MA (part-time)
2013—	Adjunct Professor of Population Health Sciences (Division of Health Informatics), Weill Cornell Medical College, New York, NY.
2013—2020	Member, Center for Healthcare Informatics and Policy (CHiP), Weill Cornell Medical College, New York, NY
2012—2018	Senior Advisor to the Dean and Executive Vice Provost, College of Health Solutions, Arizona State University, Phoenix, AZ
2012—2017	Scholar in Residence, New York Academy of Medicine, New York City

2009—2012 President and Chief Executive Officer, American Medical Informatics Association, Bethesda, Maryland

2009—2011 Professor of Biomedical Informatics with tenure, School of Biomedical Informatics, University of Texas Health Sciences Center at Houston, Houston, Texas

2009 Affiliated Professor, School of Life Sciences, Arizona State University, Tempe, Arizona

2007—2009 Professor of Biomedical Informatics with tenure, School of Computing and Informatics, Fulton School of Engineering, Arizona State University, Phoenix, Arizona

2012—2018 Professor of Biomedical Informatics, College of Health Solutions, Arizona State University, Phoenix, AZ

2007—2009 Professor of Basic Medical Sciences, University of Arizona College of Medicine – Phoenix, in partnership with Arizona State University

2007—2009 Professor of Medicine, University of Arizona College of Medicine

2007—2008 Physician Member, University Physicians' Healthcare, Tucson, Arizona

2007—2008 Founding Dean, University of Arizona College of Medicine – Phoenix, in partnership with Arizona State University

2005—2007 Rolf H. Scholdager Professor and Chair, Department of Biomedical Informatics, College of Physicians and Surgeons, Columbia University

2002—2007 Deputy Vice President for Information Technology (Columbia University Medical Center) and Senior Associate Dean for Information Technology (College of Physicians and Surgeons), Columbia University

2000—2020 Editor-in-Chief, *Journal of Biomedical Informatics*, Elsevier Science (formerly Academic Press)

2000—2007 Professor with tenure and Chair, Department of Biomedical Informatics, Vagelos College of Physicians and Surgeons, Columbia University

2007— Chair Emeritus and Adjunct Professor

2000—2007 Professor of Medicine, College of Physicians and Surgeons, Columbia University

2000—2007 Professor of Computer Science (by courtesy), College of Engineering, Columbia University

2000—2007 Director, Center for Advanced Information Management (NYSTAR-funded Center for Advanced Technology), New York Science and Technology Academic Research Program, Columbia University

2000—2007 Director, Medical Informatics Services, New York Presbyterian Healthcare System

2000—2002 Associate Vice President for Strategic Information Planning, Health Sciences Division, Columbia University

1995—2000 Associate Dean for Information Resources and Technology, Stanford University School of Medicine

1994—1995 Fellow, Center for Advanced Studies in the Behavioral Sciences, Stanford University.

1993—1995 Associate Chair of Medicine for Primary Care, Department of Medicine, Stanford University School of Medicine.

1992— 1997 Principal Investigator, CAMIS Computing Resource (National Library of Medicine), Stanford University, Stanford, California.

- 1990—2000 Professor of Medicine with tenure (General Internal Medicine and, after 1995, Medical Informatics), Stanford University School of Medicine, Stanford, California.
- 1990— 2000 Professor of Computer Science (by courtesy), Stanford University, Stanford, California.
- 1990— 1997 Director, Center for Advanced Medical Informatics at Stanford (CAMIS), Stanford University, Stanford, California.
- 1988—1993 Co-Director, Training Program in Health Services Research, Division of General Internal Medicine, Stanford University School of Medicine, Stanford, California.
- 1988—1995 Chief, Division of General Internal Medicine, Department of Medicine, Stanford University School of Medicine, Stanford, California.
- 1988—1993 Head, Section on Medical Informatics, Department of Medicine, Stanford University School of Medicine, Stanford, California.
- 1985—1990 Associate Professor of Medicine with tenure (General Internal Medicine), Stanford University School of Medicine, Stanford, California.
- 1985—1990 Associate Professor of Computer Science (by courtesy), Stanford University, Stanford, California.
- 1985—1992 Principal Investigator, SUMEX-AIM Computing Resource (Division of Research Resources and National Library of Medicine, NIH), Stanford University, Stanford, California.
- 1981—2000 Director, Medical Information Sciences Training Program, Stanford University, Stanford, California.
- 1986—1987 Visiting Associate Professor of Medicine and of Computer and Information Sciences, University of Pennsylvania, Philadelphia, Pennsylvania.
- 1980—1985 Co-Principal Investigator and Medical Liaison, SUMEX-AIM Computing Resource, Stanford University, Stanford, California.
- 1979—1985 Assistant Professor of Computer Science (by courtesy), Stanford University, Stanford, California.
- 1979—1985 Assistant Professor of Medicine (General Internal Medicine), Stanford University School of Medicine, Stanford, California.
- 1971—1975 Doctoral Research, Medical Scientist Training Program, Stanford University School of Medicine, Stanford, California (Preceptor: Stanley N. Cohen, M.D.)
- 1970—1971 System Designer, Automated Health Systems, Inc.; Burlingame, California and Wakefield, Massachusetts (summer employment).
- 1968—1969 Research Assistant, Laboratory of Computer Science, Massachusetts General Hospital, Boston, Massachusetts (Preceptors: Robert A. Greenes, M.D., Ph.D. and G. Octo Barnett, M.D.)

Committees, Boards, and Consultancies

- 2022—2023 Chair, Scientific Advisory Board, *MI1 Inc.*, San Diego County, California.
- 2021—2022 Member, Selection Committee, Healthy Longevity Catalyst Award Competition, *National Academy of Medicine*, Washington, DC
- 2021— Advisory Committee, American Board of Artificial Intelligence in Medicine, Orange, CA
- 2020—2024 Advisory Committee, Artificial Intelligence in Health Care, Ekagrid University (India)

2020—2021 Chair, *Committee on Implications of Discarded Weight-Based Drugs*, National Academies of Sciences, Engineering, and Medicine, Washington, DC.

2018—2020 Chair, Membership Committee, *National Academy of Medicine*, Washington, DC

2017 Consultant in Biomedical Informatics, School of Medicine, *SUNY Upstate Medical University*, Syracuse, New York

2017—2019 Advisory Board, US Pharma Studies, Inc., Tempe, AZ

2016— Member, Head of School's Council, *Loomis-Chaffee Institute*, Windsor CT.

2016—2018 Chair, *NAS Committee on Developing a Smarter National Surveillance System for Occupational Safety and Health in the 21st Century*, National Research Council, National Academies of Sciences, Engineering, and Medicine, Washington, DC.

2015—2023 Member, Medical Advisory Board, *98point6, Inc.*, Seattle, WA.

2015 Consultant in Biomedical Informatics, Hood College, Frederick, MD

2014—2016 Member, Healthcare Advisory Board, QTS, Inc., Atlanta, GA
Formerly *Carpathia, Inc.*, Dulles, VA

2014—2015 Member, Healthcare Advisory Board, *Pxyl, Inc.*, Scottsdale, Arizona.

2013—2016 *Board of Trustees*, New York Academy of Medicine, New York, NY
(Vice Chair 2013-15)

2013—2014 Member, *Committee on Identifying and Prioritizing New Preventive Vaccines for Development* (Phase III), Institute of Medicine (now National Academy of Medicine), National Academies of Sciences, Engineering, and Medicine, Washington, DC.

2013 Consultant in the Evaluation of the Department of Public Health, *Weill Cornell Medical College*, New York, NY.

2013 Consultant in Research Cyberinfrastructure, *University of California San Diego*, San Diego, CA.

2013 Consultant in Biomedical Informatics, *Mayo Clinic*, Rochester, MN.

2012 Consultant in Biomedical Informatics, *University of Amsterdam Medical Center*, Amsterdam, the Netherlands

2012—2013 Member, *Committee on Developing a Decision-Support Tool for Prioritizing New Vaccines* (Phase II) [Report: *Ranking Vaccines: A Prioritization Software Tool*, October 2013], Institute of Medicine (now National Academy of Medicine), National Academies of Sciences, Engineering, and Medicine, Washington, DC.

2012—2018 Member, *Committee on National Statistics (CNSTAT)*, National Research Council, the National Academies of Sciences, Engineering, and Medicine, Washington, DC

2012 Consultant in Biomedical Informatics, *Georg-August-Universität*, Göttingen, Germany

2012—2015 External Advisory Board, *Center for Advanced Information Management (CAIM)*, New York State Center for Advanced Technology, Columbia University in the City of New York

2012—2019 Advisory Board, *Health Record Banking Alliance*, Arlington, VA.
Chairman of the Board: 2013—2018

- 2011—2012 Consultant, *Committee on Developing a Decision-Support Tool for Prioritizing New Vaccines* (Phase I), Institute of Medicine (now National Academy of Medicine), National Academies of Sciences, Engineering, and Medicine, Washington, DC.
- 2011—2015 Section Liaison, Section 01 (Physical, Mathematical, Computer, Information, and Engineering Sciences), Membership Committee, *Institute of Medicine (now National Academy of Medicine)*, National Academies of Sciences, Engineering, and Medicine, Washington, DC [Section Chair, 2013-2015]
- 2011 Consultant in Biomedical Informatics, School of Medicine, *Stony Brook University*, Stony Brook, New York
- 2011—2013 Board of Directors, *Friends of the National Library of Medicine*, Washington, DC.
- 2011 Consultant in Biomedical Informatics, *University of Rochester School of Medicine*, Rochester, NY
- 2011 Consultant in Biomedical Informatics, *University of Connecticut School of Medicine*, Storrs and Farmington, CT
- 2010—2022 External Advisory Board, Clinical and Translational Science Institute, University of California San Diego, La Jolla, CA.
- 2010—2011 Chair, Committee on Future Information Architectures, Processes, and Strategies for the Centers for Medicare and Medicaid Services. *National Research Council*, National Academies of Sciences, Engineering, and Medicine, Washington, DC
- 2010 Consultant in Biomedical Informatics, School of Medicine, University of Cincinnati, Cincinnati, OH
- 2009—2013 External Advisory Board, Clinical and Translational Science Institute, University of Florida, Gainesville, FL.
- 2009—2011 Keck Faculty Affiliate, *Gulf Coast Consortium*, Houston, TX
- 2009—2015 Journal Oversight Committee, JAMA and the JAMA Network, *American Medical Association*, Chicago, IL (Chair 2012-2015)
- 2008—2009 Search Committee for Editor, *Annals of Internal Medicine*, American College of Physicians, Philadelphia, PA
- 2008 Consultant in Biomedical Informatics, *University of Florida School of Medicine*, Gainesville, FL
- 2008 Consultant in Biomedical Informatics, School of Medicine, *University of California Irvine*, Irvine, CA
- 2008 Consultant in Biomedical Informatics, School of Medicine, *University of California San Diego*, San Diego, CA
- 2007—2009 Member, Board of Directors, *The Wellness Community Central Arizona*, Phoenix, AZ
- 2007—2008 Member, Board of Directors, *Downtown Phoenix Partnership*, Phoenix, AZ
- 2006—2021 External Advisory Board, Institute for Translational and Health Sciences, University of Washington (CTSA), Seattle, WA.
- 2006 Chair, Review Committee regarding the Computer Science and Telecommunications Board, Division of Engineering and Applied Sciences, *National Research Council*, Washington, DC
- 2004—2007 Member, Biomedical Informatics Advisory Committee, Center for Public Health Informatics, *Centers for Disease Control and Prevention*, Atlanta, GA

- 2005 Consultant in Biomedical Informatics, *University of Pennsylvania School of Medicine*, Philadelphia, PA
- 2005—2008 Consultant, Radiological Event Medical Management (REMM) Program, *Office of Mass Casualty Planning and Office of Public Health Emergency Preparedness (OPHEP)*, Department of Health and Human Services, Washington, DC
- 2005 Consultant in Biomedical Informatics, *Johns Hopkins University School of Medicine*, Baltimore, MD,
- 2005—2007 Member, Search Committee for a Director of the National Center for Public Health Informatics, *Centers for Disease Control and Prevention*, Atlanta, GA.
- 2005—2006 Nominations Committee, *American College of Physicians*
- 2004—2007 Member of Oversight Committee, Division of Engineering and Physical Sciences (DEPS), *National Research Council*, Washington, DC
- 2004—2006 Member, Biomedical Informatics Expert Panel (BIEP), *National Center for Research Resources*, National Institutes of Health, Bethesda, MD
- 2004 External Review Committee (Advisory to the Director), Chief Information Officer and Director of the Center for Information Technology, National Institutes of Health, Bethesda, MD
- 2004 Chair, Advisory Committee on Health Information Technology, *Health Affairs*, New York, NY
- 2003—2007 Board of Directors (Member of Compensation Committee), *Medco Health Solutions, Inc.*, Franklin Lakes, NJ.
- 2003—2009 Advisory Committee, Office of Academic Computing, *Charles Drew Medical School*, Los Angeles, CA
- 2003—2009 Scientific Advisor, *Pritzker Consortium*, Chicago, IL
- 2013—2016 Board of Trustees, *New York Academy of Medicine*, New York, NY. (Chair of Library and Awards Committees; Chair of Program Planning Committee on Health Communication and Health Literacy; Vice-Chair, 2006-2011; Vice-Chair, 2013-2015; Search Committee for the President, 2006; Co-Chair, Nominations Committee of the Board, 2014-present)
- 2003—2011
- 2002—2006 Member, External Advisory Board, *Center for Information Technology Leadership (CITL)*, Partners Health and Harvard Medical School, Boston, MA.
- 2002—2004 Committee on National Need for Biomedical, Behavioral, and Clinical Sciences
2008—2010 Researchers, *National Research Council*, National Academies of Sciences, Engineering, and Medicine, Washington, DC
- 2002—2003 Chair, Steering Committee on Electronic Scientific, Technical, and Medical Journal Publishing and Its Implications, *National Academies of Sciences, Engineering, and Medicine*, Washington, DC
- 2002—2003 Special Advisor and Member of the Board, *eHealth Initiative*, Washington, DC
- 2002—2003 Member, Health Communications Initiative Program Committee, *ACP Foundation*, Philadelphia, PA.
- 2001—2007 Member, Advisory Panel, *Pediatric Emergency Northeast Team (PEDNET)*, Regional Node of the National Pediatric Emergency Care Applied Research Network (PECARN).
- 2001—2003 Member, Committee on Science, Engineering, and Public Policy (COSEPUP), *National Academy of Sciences*, Washington, D.C.
2005—2007
- 2001—2003 Elected Member, Executive Council, Institute of Medicine (IOM), *National Academy of*

- 2005—2007 Sciences; Member of the Finance Subcommittee (Chair, 2002-2003).
- 2000—2004 Chairman, Organizing Committee, Medinfo2004 (7-11 September 2004, San Francisco), *International Medical Informatics Association*
- 2000—2010 External Advisory Committee, Biomedical and Health Informatics Program, *University of Washington*, Seattle, WA.
- 2000—2003 Member, National Committee on Vital and Health Statistics (NCVHS), *Department of Health and Human Services*, Washington, D.C.
- 2000—2002 Chair, PIER Steering Committee (Physicians' Information and Education Resource), *American College of Physicians*
- 2000—2010 Medical Advisory Board, *PatientKeeper, Inc.*, Boston, Massachusetts
- 2000—2012 Scientific Advisory Board, *Medexpert, Inc.*, Palo Alto, California
- 2000—2004 Scientific Advisory Board, *Clinician Support Technology, Inc.*, Framingham, Massachusetts
- 1998—2001 International Advisor, Medical Informatics Programme, *National University of Singapore*.
- 1998—1999 Committee on Enhancing the Internet for Medical Applications (Chair), Computer Science and Telecommunications Board, *National Research Council*, National Academies of Sciences, Engineering, and Medicine, Washington, DC
- 1997—1999 Section Liaison, Section 01 (Physical, Mathematical, Computer, Information, and Engineering Sciences), *Institute of Medicine (now National Academy of Medicine)*, National Academies of Sciences, Engineering, and Medicine, Washington, DC
- 1997—2002 President's Information Technology Advisory Committee (PITAC), *Executive Office of the President*, Washington, D.C.
- 1997—1998 Advisory Committee on Internet-2, *Internet 2 Academic Consortium*
- 1997—2005 Scientific Advisory Board, *Surromed, Inc.*, Palo Alto, California
- 1997—2006 Board of Directors, *Friends of the National Library of Medicine*
- 1996—1997 Planning Panel on International Programs, *National Library of Medicine*
- 1996—1998 Consulting Committee to the Chemical/Biological Incident Response Force, US Marine Corps (Quantico and Camp Lejeune), *United States Department of Defense*
- 1996—1999 University Advisory Board, *Stanford University*
- 1996—2000 Board of Directors, *Mcard, Inc.*, Sunnyvale, CA.
- 1996—2002 Board of Regents, *American College of Physicians*
 Research Center Advisory Committee (1997— 1999)
 Publications Committee (Chair, 1997— 2000)
 PIER Steering Committee (Chair, 2000—2002)
- 1996—2001 Chair, Scientific Advisory Board, *Caresoft, Inc.*, Sunnyvale, CA.
- 1995—2003 Public Policy Committee, *American Medical Informatics Association* [Committee Chair: 1995-96]
- 1995—1997 Final Judges' Committee for Health Care, *The Global Information Infrastructure Awards* [formerly NII Awards], Santa Monica, CA.
- 1994—2002 Publications Committee, *American College of Physicians* (Chair, 1997—2000)

- 1993—1998 Board of Directors, *Smart Valley, Inc.*, Palo Alto, CA.
- 1993—1994 Board of Directors, *American Medical Informatics Association*
- 1992—1996 Membership Committee, *Institute of Medicine (now National Academy of Medicine)*; [Section 1 Chair, 1994-96.]
- 1993 Co-chairman (with C. Everett Koop, M.D.), Workshop on the National Information Infrastructure and Health Care, *National Research Council*, Washington, D.C.
- 1992—1993 Committee on Regional Health Data Networks, *Institute of Medicine*
- 1992—1996 Advisory Board, Health Sciences Computer Education Project, *Friends of the National Library of Medicine*
- 1992—1994 Scientific Advisor, *Teknekron Corporation*, Menlo Park, CA.
- 1991—1995 Scientific Advisory Board, *AIDS Community Research Consortium*, Redwood City, CA.
- 1991—1996 Computer Science and Telecommunications Board, *National Research Council*, National Academy of Sciences.
- 1991—1992 Federal Networking Advisory Council, *National Science Foundation* [Member of Steering Committee].
- 1990—1996 *American College of Medical Informatics*: President-Elect (1990-92), President (1992-94), Past-President (1994-96).
- 1990—1994 Appointments and Promotions Committee, Stanford University School of Medicine; Associate Chair, 1991-92; Chair, 1992-94.
- 1990—1993 Committee on Libraries (C-LIB), Stanford University.
- 1989—1991 Committee to Improve the Patient Record, *Institute of Medicine*. [Chair, Subcommittee on Strategies for Implementation]
- 1988—1991 *Society for Medical Decision Making*: President-Elect (1988-89), President (1989-90), Past-President (1990-91).
- 1988—1992 TyPE Advisory Council, *InterStudy/Quality Quest*, Excelsior, Minnesota.
- 1988—1991 Board of Directors, *American Medical Informatics Association*.
- 1987—1993 Computer-Based Testing Advisory Panel, *National Board of Medical Examiners*.
- 1986—1991 Editorial Board, *BRS Colleague*, New York.
- 1986—1987 Consultant to the Search Committee in Medical Information Sciences, University of Pennsylvania School of Medicine, Philadelphia.
- 1985—1986 Chairman, Advisory Planning Panel on Medical Informatics, *National Library of Medicine*, Bethesda, Maryland.
- 1984—1986 Executive Board, *American College of Medical Informatics*.
- 1984—1990 Board of Directors, *Symposium on Computer Applications in Medical Care (SCAMC, Inc.)*. President, 1988-1990.
- 1984—1986 Scientific Advisory Board, *Centre Mondial Informatique*, Paris.
- 1984—1987 Board of Councilors, *American Association for Artificial Intelligence*.

- 1984—1985 Steering Committee on Medical Information Sciences, *Association of American Medical Colleges*.
- 1983—1989 Technology Advisory Board, *Teknowledge, Inc.*, Palo Alto, California.
- 1983—1986 Committee on Academic Computing and Information Systems (C-ACIS), Stanford University.
- 1983—1988 Medical Informatics Subcommittee (formerly Telecommunications Subcommittee), *American College of Physicians*.
- 1982—1990 Board of Directors, *American Association for Medical Systems and Informatics* [Three terms: 1982-84, 1984-86, 1989-90].
- 1981—1983 Founder of Medical Subgroup (AAAI-M) and Medical Liaison, *American Association for Artificial Intelligence* (now *Association for the Advancement of Artificial Intelligence*)
- 1981—1985 Board of Trustees, *Society for Medical Decision Making* (two terms).
- 1981—1991 Member, Steering Committee, *Association for Advanced Technology in the Biomedical Sciences*.
- 1980—1984 Member, Biomedical Library Review Committee, *National Library of Medicine* (Chairman, July 1983 - June 1984).

Elected Professional Memberships

- 2018 Founding Fellow, *International Academy of Health Sciences Informatics, International Medical Informatics Association (IMIA)*
- 2003 Fellow, *New York Academy of Medicine*
- 2002 Master, *American College of Physicians (MACP)*
- 1993 Fellow, *American Association for the Advancement of Science (AAAS)*
- 1993 Member, *Association of American Physicians (AAP)*
- 1992 Member, *American Clinical and Climatological Association (ACCA)*
- 1991 Fellow, *American Institute for Medical and Biological Engineering (AIMBE)*
- 1991 Member, *Western Association of Physicians (WAP)*
- 1990 Fellow, *Association for the Advancement of Artificial Intelligence (AAAI)*
- 1987 Member, *Institute of Medicine (now National Academy of Medicine), National Academies of Sciences, Engineering, and Medicine (NASEM)*
- 1986 Member, *American Society for Clinical Investigation (ASCI)*
- 1984 Founding Fellow, *American College of Medical Informatics (ACMI)*
- 1984 Member, *National Academies of Practice (NAP)*
- 1984 Fellow, *American College of Physicians (FACP)*
- 1983 Member, *Western Society for Clinical Investigation (WSCI)*

Other Professional Memberships

2008—	<i>American Medical Association</i>
1995—1997	<i>American Educational Research Association</i>
1992—2001	<i>Computer-Based Patient Record Institute (CPRI)</i>
1991—2007	<i>The Internet Society</i>
1988—	<i>American Medical Informatics Association (AMIA)</i>
1985—2010	<i>IEEE Computer Society</i>
1983—2000	<i>Society for General Internal Medicine (SGIM)</i> (Formerly SREPCIM)
1983—1993	<i>American Federation for Clinical Research (AFCR)</i>
1980—2012	<i>Society for Medical Decision Making (SMDM)</i>
1980— 2020	<i>American Association for Artificial Intelligence (AAAI)</i>
1978—	<i>American College of Physicians (ACP)</i> (Fellowship in 1984, Mastership in 2002)
1978—1990	<i>American Association for Medical Systems and Informatics} (AAMSI)</i> (formerly Society for Computer Medicine)
1972—2020	<i>Association for Computing Machinery (ACM)</i>

Doctoral Student Supervision

Paul Cohen	Computer Science and Psychology (Stanford) - 1983 (committee) `Heuristic Reasoning Under Uncertainty: An Artificial Intelligence Approach.'
Gregory F. Cooper	Medical Information Sciences (Stanford) - 1984 (advisor) `NESTOR: A Computer-Based Medical Diagnostic Aid that Integrates Causal and Probabilistic Knowledge.'
John C. Kunz	Medical Information Sciences (Stanford) - 1984 (committee) `Use of Artificial Intelligence and Simple Mathematics to Analyze a Physiologic Model.'
David E. Smith	Computer Science (Stanford) - 1985 (committee) `Controlling Inference.'
Glenn D. Rennels	Medical Information Sciences (Stanford) - 1986 (advisor) `A Computational Model of Reasoning From the Clinical Literature.'
Mark A. Musen	Medical Information Sciences (Stanford) - 1987 (advisor) `Generation of Model-Based Knowledge-Acquisition Tools for Clinical Trial Advice Systems.'
Curtis P. Langlotz	Medical Information Sciences (Stanford) - 1989 (advisor) `A Decision Theoretic Approach To Heuristic Planning.'
David Klein	Computer and Information Sciences (University of Pennsylvania) - 1989 (advisor) `Interpretive Value Analysis.'
Thierry Barsalou	Medical Information Sciences (Stanford) - 1990 (committee) `Toward Expert Database Systems: Integration of Object-Oriented Methods with a Relational Architecture.'

David Heckerman	Medical Information Sciences (Stanford) - 1990 (committee) `Probabilistic Similarity Networks.' [ACM Doctoral Dissertation Award, 1990]
Holly Jimison	Medical Information Sciences (Stanford) - 1990 (advisor) `A Representation for Gaining Insight into Clinical Decision Models.'
Eric Horvitz	Medical Information Sciences (Stanford) - 1990 (committee) `Computation and Action Under Bounded Resources.'
R. Martin Chavez	Medical Information Sciences (Stanford) - 1990 (advisor) `Architectures and Approximation Algorithms for Probabilistic Expert Systems.'
Brad R. Farr	Medical Information Sciences (Stanford) - 1991 (committee) `Assessment of Preferences Through Simulated Decision Scenarios.'
Harold Lehmann	Medical Information Sciences (Stanford) - 1991 (advisor) `A Bayesian Computer-Based Approach to the Physician's Use of the Clinical Research Literature.'
Henri Jaap Suermondt	Medical Information Sciences (Stanford) - 1992 (committee) `Explanation in Bayesian Belief Networks.'
John Egar	Medical Information Sciences (Stanford) - 1994 (committee) `Construction of Normative Decision Models Using Abstract Graph Grammars'
Geoffrey Rutledge	Medical Information Sciences (Stanford) - 1995 (committee) `Dynamic Selection of Models.'
Lucila Ohno-Machado	Medical Information Sciences (Stanford) - 1996 (committee) `Hierarchical Neural Networks: Applications in Survival Analysis'
Gretchen Purcell	Medical Information Sciences (Stanford) - 1996 (advisor) `Contextual Document Models for Searching the Clinical Literature'
Alex Poon	Medical Information Sciences (Stanford) - 1996 (committee) `Optimizing the Task of Menu Selection for Large Controlled Vocabularies'
Keith E. Campbell	Medical Information Sciences (Stanford) - 1997 (advisor) `Distributed Development of a Logic-Based Controlled Medical Terminology'
Gillian D. Sanders	Medical Information Sciences (Stanford) - 1998 (committee) `Automated Creation of Clinical-Practice Guidelines from Decision Models'
Cecil Huang	Medical Information Sciences (Stanford) - 1999 (committee) `Intelligent Alarms for Monitoring'
Wanda M. Pratt	Medical Information Sciences (Stanford) - 1999 (committee) `Dynamic Knowledge-Based Hierarchical Text Categorization'
Diane Oliver	Biomedical Informatics (Stanford) – 2000 (committee) `Managing Local Divergence of a Shared Clinical Vocabulary''
Daniel C. Berrios	Biomedical Informatics (Stanford) – 2001 (committee) `Methods for Semi-Automated Index Generation for High Precision Information Retrieval'
Dongwen Wang	Medical Informatics (Columbia) – 2003 (advisor) `A Generic Execution Model for Sharing of Computer-Interpretable Clinical Practice Guidelines'
Trevor Cohen	Biomedical Informatics (Columbia) – 2007 (committee) `Augmenting Expertise: Computer-enhanced Clinical Comprehension in Psychiatry'

Knarig Arabshian	Computer Science (Columbia) – 2008 (committee) 'Ontology-based Context-aware Service Discovery in a Globally Distributed Network'
Akshay Vankipuram	Biomedical Informatics (Arizona State University) – 2018 (committee) 'Utilization of automated location tracking for clinical workflow analytics and visualization'
Zongwei Zhou	Biomedical Informatics (Arizona State University) – 2021 (committee) 'Integrating interactive learning and transfer learning for digital imaging'

Editorial Boards

2021---	<i>BMJ Health & Care Informatics</i> , BMJ Publishing Group
2021—	<i>Biomedical Engineering Advances</i> , Elsevier Science
2001—2020 2021—	<i>Journal of Biomedical Informatics</i> , Elsevier Science, <i>Editor in Chief</i> <i>Editor Emeritus</i>
2020---2024	<i>Intelligence-Based Medicine</i> , Elsevier Science, <i>Honorary Editor</i>
2002—2007	<i>Informedica Journal</i> , Fundacion de Informatica Medica, Miami, Florida
1998—2021	<i>Information Systems Frontiers</i> , Springer
1998—2021	<i>American Journal of Medicine</i> , Elsevier Science
1997—2001	<i>International Journal of Medical Informatics</i> , Elsevier
1993—1995	<i>Journal of the American Medical Informatics Association</i> , Hanley and Belfus
1991—1994	<i>Annals of Internal Medicine</i> , American College of Physicians
1991—1992	<i>Internet News: The Newsletter of the Internet Society</i> (Contributing Editor for biomedical community)
1989—2017	<i>Artificial Intelligence in Medicine</i> , Elsevier Science
1986—2000	<i>Computers and Biomedical Research</i> , Academic Press
1986—2003	<i>Methods of Information in Medicine</i> , Schattauer
1986—1988	<i>Medical Decision Making</i> , Hanley and Belfus, Inc.
1984—1991	<i>Lecture Notes in Medical Informatics</i> , Springer-Verlag
1983—1995	<i>Research Notes in Artificial Intelligence</i> , Pitman Advanced Publishing Program
1980—1985	<i>Medical Decision Making</i> , Birkhauser Boston, Inc.
1978—1993	<i>Computer Methods and Programs in Biomedicine</i> , Elsevier

Editorial Advisory Boards

2000—2007	<i>Biomedical Frontiers</i> (College of Physicians and Surgeons, Columbia University)
1999—2000	<i>Annual Reviews, Inc.</i> , Palo Alto, California.
1990—1991	<i>Outcomes Measurement and Management</i> , The Zitter Group, San Francisco

1985—1992	<i>M.D. Computing</i> , Springer Verlag
1999—2001	<i>M.D. Computing</i> , Springer Verlag
1984—1986	<i>Health Care Instrumentation</i> , Excerpta Medica
1983—2000	<i>Stanford Medicine</i> (Medical Center and Alumni Magazine)

Publications

Books

- Shortliffe EH. **Computer-Based Medical Consultations: MYCIN**, Elsevier/North Holland, New York, 1976. Japanese language version by Bunkodo Blue Books, Tokyo, 1981 (translated by T Kaminuma). <https://doi.org/10.1016/B978-0-444-00179-5.X5001-X>
- Buchanan, BG, Shortliffe EH. (eds). **Rule-Based Expert Systems: The MYCIN Experiments of the Stanford Heuristic Programming Project**. Reading, MA: Addison-Wesley, 1984. <https://dl.acm.org/doi/10.5555/1096485>
- Clancey WJ, Shortliffe EH (eds). **Readings in Medical Artificial Intelligence: The First Decade**. Reading, MA: Addison-Wesley, 1984. <https://dl.acm.org/doi/book/10.5555/1124>
- Shortliffe EH (ed), Perreault L (ed), Wiederhold G (assoc ed), Fagan LM (assoc. ed). **Medical Informatics: Computer Applications in Health Care** (textbook). Reading, MA: Addison-Wesley, 1990.
- Shortliffe EH, Wulfman CE, Rindfleisch TC, Carlson RW. **An Integrated Oncology Workstation**. Bethesda, MD: National Cancer Institute, 1991. [Received the 1991-92 Award of Excellence from The Society for Technical Communication.]
- Committee on Improving the Patient Record (member and subcommittee chair). **The Computer-Based Patient Record: An Essential Technology for Health Care**. Washington, DC: National Research Council, National Academies Press, 1991 (revised 1997).
- Committee on Regional Health Data Networks (member). **Health Data in the Information Age: Use, Disclosure, and Privacy**. Washington, DC: National Research Council, National Academies Press, 1994.
- Shortliffe EH (ed), Perreault L (ed), Wiederhold G (assoc. ed), Fagan LM (assoc. ed). **Medical Informatics: Computer Applications in Health Care and Biomedicine** (textbook). New York: Springer-Verlag, 2000. (2nd edition of #4, new publisher and title).
- Shortliffe EH, Sheehan JR, eds. **Networking Health: Prescriptions for the Internet**. Washington, DC: National Research Council, National Academies Press, 2000.
- Shortliffe EH (ed), Cimino JJ (assoc. ed.). **Biomedical Informatics: Computer Applications in Health Care and Biomedicine** (textbook). New York: Springer-Verlag, 2006. (3rd edition of #6). Translated into Mandarin as 生物医学信息学 (第三版), 2011.
- Shortliffe EH, Millett LI, eds. **Strategies and Priorities for Information Technology at the Centers for Medicare and Medicaid Services**. Washington, DC: National Research Council, National Academies Press, 2012.
- Committee on National Statistics (member). **Principles and Practices for a Federal Statistical Agency** (Fifth Edition). Washington, DC: National Academies Press, 2013.
- Committee on Identifying and Prioritizing New Preventive Vaccines for Development, Phase II. **Ranking Vaccines: A Prioritization Software Tool: Phase II**. Washington, DC: National Academies Press, 2013.
- Shortliffe EH (ed), Cimino JJ (assoc. ed.). **Biomedical Informatics: Computer Applications in Health Care and Biomedicine** (textbook). London: Springer-Verlag, 2014. (4th edition of #8)
- Committee on National Statistics (member). **Principles and Practices for a Federal Statistical Agency** (Sixth Edition). Washington, DC: National Academies Press, 2017.
- Committee on Developing a Smarter National Surveillance System for Occupational Safety and Health in the 21st Century (Chair). **A Smarter National Surveillance System for Occupational Safety and Health in the 21st Century**. Washington, DC: National Academies Press, January 2018.

17. Committee on Implications of Discarded Weight-Based Drugs (Chair). **Medications in Single Dose Vials: Implications of Discarded Drugs.** Washington, DC: National Academies Press, February 2021.
18. Shortliffe EH (ed), Cimino JJ (ed), Chiang MF (assoc. ed). **Biomedical Informatics: Computer Applications in Health Care and Biomedicine** (textbook). London: Springer, 2021 (5th edition of #11). <https://doi.org/10.1007/978-3-030-58721-5>
19. Cohen TE, Patel VL, Shortliffe EH (eds). **Intelligent Systems in Medicine and Health: The Role of AI** (textbook). London: Springer, 2022. <https://doi.org/10.1007/978-3-031-09108-7>

Study Reports

1. **The Computer-Based Patient Record: An Essential Technology for Health Care.** Washington, D.C.: Institute of Medicine, National Academy Press; 1991. <https://doi.org/10.17226/18459> - (Revised 1997). <https://doi.org/10.17226/5306> – Committee Member, Subcommittee Chair.
2. **Health Data in the Information Age: Use, Disclosure, and Privacy.** Washington, D.C.: Institute of Medicine, National Academy Press; 1994. <https://doi.org/10.17226/2312> – Committee Member
3. **Networking Health: Prescriptions for the Internet.** Washington, DC: National Research Council. National Academy Press; 2000. <https://doi.org/17226/9750> – Committee Chair
4. **Information Technology Research: Investing in our Future.** Washington, D.C.: President's Information Technology Advisory Committee (PITAC), Report to the President; February 1999. https://www.nitrd.gov/pitac/report/pitac_report.pdf – Committee Member
5. **Transforming Health Care Through Information Technology.** Washington, D.C.: Panel on Transforming Health Care, President's Information Technology Advisory Committee (PITAC), Report to the President; February 2001. <https://www.nitrd.gov/pubs/pitac/pitac-hc-9feb01.pdf> – Panel Chair
6. **Information for Health: A Strategy for Building the National Health Information Infrastructure.** Washington, D.C.: Workgroup on the NHII, National Committee on Vital and Health Statistics; November 2001. <https://aspe.hhs.gov/report/information-health-strategy-building-national-health-information-infrastructure> – Workgroup and Committee Member
7. **Electronic Scientific, Technical, and Medical Journal Publishing and its Implications: Report of a Symposium.** Washington, D.C.: National Research Council, National Academy Press; 2004. <https://doi.org/10.17226/10969> – Chair of Steering Committee
8. **Advancing the Nation's Health Needs: NIH Research Training Programs.** Washington, D.C.: National Research Council, National Academy Press, 2005. <https://doi.org/10.17226/11275> – Committee Member and Liaison to the Subcommittee on Oral Health
9. **Digital Infrastructure for the Learning Health System: The Foundation for Continuous Improvement in Health and Health Care (Workshop Series Summary).** Roundtable on Value & Science-Driven Health Care. Washington, D.C.: Institute of Medicine, National Academy Press, 2011. <https://doi.org/10.17226/12912> – Steering Committee Member and Speaker.
10. **Research Training in Biomedical, Behavioral, and Clinical Research Sciences.** Washington, DC.: National Research Council, National Academy Press, 2011. <https://doi.org/10.17226/12983>. – Committee Member.
11. **Strategies and Priorities for Information Technology at the Centers for Medicare and Medicaid Services.** Washington, DC.: National Research Council, National Academy Press, 2011. <https://doi.org/10.17226/13281> – Committee Chair
12. **Ranking Vaccines: A Prioritization Software Tool: Phase II: Prototype of a Decision-Support System.** Washington, DC: Institute of Medicine, National Academy Press, 2013. <https://doi.org/10.17226/13531> – Committee Member.
13. **A Smarter National Surveillance System for Occupational Safety and Health in the 21st Century.** Washington, DC: The National Academies Press, 2018. <https://doi.org/10.17226/24835> —Committee Chair
14. **Medications in Single Dose Vials: Implications of Discarded Drugs.** Washington, DC: National Academies Press, 2021. <https://doi.org/10.17226/25911> – Committee Chair.

Refereed Journal Publications

20. Shortliffe, E.H., Axline, S.G., Buchanan, B.G., Merigan, T.C., and Cohen, S.N. An artificial intelligence program to advise physicians regarding antimicrobial therapy. **Comput. Biomed. Res.** 6:544-560 (1973).
21. Shortliffe, E.H. and Buchanan, B.G. A model of inexact reasoning in medicine. **Math. Biosci.** 23:351-379 (1975). Reprinted in **Readings in Uncertain Reasoning**, G. Shafer and J. Pearl, eds., pp. 259-273, San Mateo, CA: Morgan Kaufmann Publishers, Inc., 1990.
22. Shortliffe, E.H., Davis, R., Axline, S.G., Buchanan, B.G., Green, C.C., and Cohen, S.N. Computer-based consultations in clinical therapeutics: explanation and rule-acquisition capabilities of the MYCIN system. **Comput. Biomed. Res.** 8:303-320 (1975). Reprinted in Sheehy, N. and Capman, A.J., eds. **The International Library of Critical Writings in Psychology: Cognitive Science**, London: Edward Elgar Publishing Ltd., pp. 250-267, 1995.
23. Wraith, S.M., Aikins, J.S., Buchanan, B.G., Clancey, W.J., Davis, R., Fagan, L.M., Hannigan, J.F., Scott, A.C., Shortliffe, E.H., van Melle, W.J., Yu, V.L., Axline, S.G., and Cohen, S.N. Computerized consultation system for selection of antimicrobial therapy. **Amer. J. Hosp. Pharm.** 33:1304-1308 (1976).
24. Davis, R., Buchanan, B.G., and Shortliffe, E.H. Production rules as an approach to knowledge-based consultation systems. **Artificial Intelligence** 8:15-45 (1977).
25. Scott, A.C., Clancey, W., Davis, R., and Shortliffe, E.H. Explanation capabilities of knowledge-based production systems. **Amer. J. Comp. Ling.**, Microfiche 62, 1977.
26. Yu, V.L., Buchanan, B.G., Shortliffe, E.H., Wraith, S.M., Davis, R., Scott, A.C., Axline, S.G., and Cohen, S.N. Evaluating the performance of a computer-based consultant. **Comput. Prog. Biomed.** 9:95-102 (1979).
27. Shortliffe, E.H., Buchanan, B.G., and Feigenbaum, E.A. Knowledge engineering for medical decision making: A review of computer-based clinical decision aids. **Proc. IEEE**, 67:1207-1224 (1979).
28. Shortliffe, E.H. The computer as clinical consultant (editorial). **Arch Int Med** 140:313-314 (1980).
29. Fagan, L.M., Shortliffe, E.H., and Buchanan, B.G. Computer-based medical decision making: from MYCIN to VM. **Automedica** 3:97-106 (1980).
30. Teach, R.L. and Shortliffe, E.H. An analysis of physician attitudes regarding computer-based clinical consultation systems. **Comput Biomed Res** 14:542-558 (1981).
31. Shortliffe, E.H. The computer and clinical decision making: good advice is not enough (guest editorial). **IEEE Engineering in Medicine and Biology Magazine** 1(2):16-18 (1982).
32. Wallis, J. and Shortliffe, E.H. Explanatory power for expert systems: studies in the representation of causal relationships for medical consultation systems. **Meth Info Med** 21:127-136 (1982).
33. Gerring, P.E., Shortliffe, E.H., and van Melle, W. The Interviewer/Reasoner model: an approach to improving system responsiveness in interactive AI systems. **AI Magazine** 3(4):24-27 (1982). Republished in **Readings from AI Magazine 1980-1985**, Menlo Park, CA: American Association for Artificial Intelligence, 1987.
34. Suwa, M., Scott, A.C., and Shortliffe, E.H. An approach to verifying completeness and consistency in a rule-based expert system. **AI Magazine** 3(4):16-21 (1982). Republished in **Readings from AI Magazine 1980-1985**, Menlo Park, CA: American Association for Artificial Intelligence, 1987.
35. Duda, R.O. and Shortliffe, E.H. Expert systems research. **Science**, 220:261-268 (1983).
36. Shortliffe, E.H. Problems in implementing the computer for continuing education. **Mobius**, 3:52-55 (1983).
37. Aikins, J.S., Kunz, J.C., Shortliffe, E.H., and Fallat, R.J. PUFF: An expert system for interpretation of pulmonary function data. **Comput Biomed Res** 16:199-208 (1983).
38. Langlotz, C.P. and Shortliffe, E.H. Adapting a medical consultation system to critique physicians' therapy plans. **Int J Man-Machine Stud** 19:479-496 (1983). Reprinted in **Developments in Expert Systems** (M.J. Coombs, ed.), pp. 77-94, London: Academic Press, 1984.
39. Kunz, J.C., Shortliffe, E.H., Buchanan, B.G., and Feigenbaum, E.A. Computer-assisted decision making in medicine. **J Phil Med** 9:135-160 (1984).
40. Shortliffe, E.H. Reasoning methods in medical consultation systems: artificial intelligence approaches. **Comput Prog Biomed** 18:5-14 (1984).

41. Gordon, J. and Shortliffe, E.H. A method for managing evidential reasoning in a hierarchical hypothesis space. **Artificial Intelligence** 26(3):323-357 (1985). Reprinted in **Readings in Uncertain Reasoning**, G. Shafer and J. Pearl, eds., pp. 529-539, San Mateo, CA: Morgan Kaufmann Publishers, Inc., 1990. Reprinted in **The Classic Works on the Dempster-Shafer Theory of Belief Functions** (A.P. Dempster, RR Yager, and L Liu, eds), New York: Springer, 2005.
42. Kent, D.L., Shortliffe, E.H., Carlson, R.W., Bischoff, M.B., and Jacobs, C.D. Improvements in data collection through physician use of a computer-based chemotherapy treatment consultant. **J Clin Onc** 3:1409-1417 (1985).
43. Hickam, D.H., Shortliffe, E.H., Bischoff, M.B., Scott, A.C., Jacobs, C.D. A study of the treatment advice of a computer-based cancer chemotherapy protocol advisor. **Ann Intern Med** 103:928-936 (1985).
44. Tsuji, S. and Shortliffe, E.H. Graphical access to a medical expert system: I. Design of a knowledge engineer's interface. **Meth Info Med** 25:62-70 (1986).
45. Lane, C.D., Walton, J.D., and Shortliffe, E.H. Graphical access to a medical expert system: II. Design of an interface for physicians. **Meth Info Med** 25:143-150 (1986).
46. Walton, J.D., Musen, M.A., Combs, D.M., Lane, C.D., Shortliffe, E.H., and Fagan, L.M. Graphical access to medical expert systems: III. Design of a knowledge-acquisition environment. **Meth Info Med** 26:78-88 (1987).
47. Shortliffe, E.H. Medical expert systems: knowledge tools for physicians. **West J Med** 145:830-839 (1986).
48. Rennels, G.D., Shortliffe, E.H., and Miller, P.L. Choice and explanation in medical management: a multiattribute model of artificial intelligence approaches. **Med Dec Mak** 7:22-31 (1987).
49. Langlotz, C.P., Fagan, L.M., Tu, S.W., Sikic, B.I., and Shortliffe, E.H. A therapy planning architecture that combines decision theory and artificial intelligence techniques. **Comput Biomed Res** 20:279-303 (1987). Reprinted in **Readings in Uncertain Reasoning**, G. Shafer and J. Pearl, eds., pp. 214-238, San Mateo, CA: Morgan Kaufmann Publishers, Inc., 1990.
50. Musen, M.A., Fagan, L.M., Combs, D.M., and Shortliffe, E.H. Use of a domain model to drive an interactive knowledge editing tool. **Int J Man-Mach Stud** 26(1):105-121 (1987).
51. Shortliffe, E.H. Computer programs to support clinical decision making. **JAMA** 258:61-66 (1987). Reprinted in **Readings in Uncertain Reasoning**, G. Shafer and J. Pearl, eds., pp. 161-166, San Mateo, CA: Morgan Kaufmann Publishers, Inc., 1990.
52. Rennels, G.D. and Shortliffe, E.H. Advanced computing for medicine. **Scientific American** 255(10):154-161 (1987).
53. Langlotz, C.P., Shortliffe, E.H., and Fagan, L.M. A methodology for generating computer-based explanations of decision-theoretic advice. **Med Dec Mak** 8:290-303 (1988).
54. Langlotz, C.P. and Shortliffe, E.H. Logical and decision-theoretic methods for planning under uncertainty. **AI Magazine**, pp. 39-47, Spring 1989.
55. Shortliffe, E.H. Testing reality: the dissemination of clinical decision-support systems. **Meth Info Med** 28:1-5 (1989).
56. Rennels, G.D., Shortliffe, E.H., Stockdale, F.E., and Miller, P.L. A computational model of reasoning from the clinical literature. **AI Magazine**, pp. 49-57, Spring 1989.
57. Shortliffe, E.H. and Fagan, L.M. Research training in medical informatics: The Stanford experience. **Academic Medicine**, 64:575-578 (1989).
58. Tu, S.W., Kahn, M.G., Musen, M.A., Ferguson, J.C., Shortliffe, E.H., and Fagan, L.M. Episodic skeletal-plan refinement based on temporal data. **Commun ACM** 32:1439-1455 (1989).
59. Rucker, D.W., Maron, D.J., and Shortliffe, E.H. Temporal representation of clinical algorithms using expert-system and database tools. **Comput Biomed Res** 1990;23:222-239.
60. Greenes, R.A. and Shortliffe, E.H. Medical informatics: an emerging academic discipline and institutional priority. **JAMA** 1990;263:1114-1120.
61. Buchanan, B.G., Bobrow, D., Davis, R., McDermott, J., and Shortliffe, E.H. Knowledge-based systems. **Annual Review of Computer Science** 1990;4:395-416.
62. Shortliffe, E.H. Developing trends in clinical computing. **Annals of the Academy of Medicine, Singapore**, 1991;20(2):277-280.

63. Shiffman, S., Wu, A.W., Poon, A.D., Lane, C.D., Middleton, B.F., Miller, R.A., Masarie, F.E., Cooper, G.F., Shortliffe, E.H., and Fagan, L.M. Building a speech interface to a medical diagnostic system. **IEEE Expert** 1991;6(1):41-50.
64. Shortliffe, E.H. Medical informatics and clinical decision making: The science and the pragmatics. **Med Dec Mak** 1991;11(suppl):S2-S14.
65. Lehmann, H.P. and Shortliffe, E.H. THOMAS: Building Bayesian statistical expert systems to aid in clinical decision making. **Comput Meth Prog Biomed** 1991;35:251-260.
66. Shortliffe, E.H., Tang, P.C., and Detmer, D.E. Patient records and computers (editorial). **Ann Intern Med** 1991;115(12):979-981.
67. Heckerman, D.E. and Shortliffe, E.H. From certainty factors to belief networks. **Artificial Intelligence in Medicine** 1992;4:35-52.
68. Jimison, H.B., Fagan, L.M., Shachter, R.D., and Shortliffe, E.H. Patient-specific explanation in models of chronic disease. **Artificial Intelligence in Medicine** 1992;4:191-206.
69. Wulfman, C.E., Rua, M., Lane, C.D., Shortliffe, E.H., and Fagan, L.M. Graphical access to medical expert systems: V. Speech input for use by physicians. **Meth Info Med** 1993;32:33-46.
70. Gordon, J. and Shortliffe, E.H. A method for managing evidential reasoning in a hierarchical hypothesis space—A retrospective. **Artificial Intelligence** 1993;59:43-47.
71. Davis, R., Buchanan, B.G., and Shortliffe, E.H. Retrospective on "Production rules as a representation for a knowledge-based consultation system. **Artificial Intelligence** 1993;59:181-190.
72. Shortliffe, E.H. The adolescence of AI in medicine: Will the field come of age in the '90s? **Artificial Intelligence in Medicine** 1993;5(2):93-106. Reprinted in **1994 IMIA Yearbook**, pp 318-331, Stuttgart: Schattauer, 1994.
73. Shortliffe, E.H. Doctors, patients, and computers: Will information technology dehumanize healthcare delivery? **Proceedings of the American Philosophical Society** 1993;137(3):390-398.
74. Shortliffe, E.H. Clinical information systems in the era of managed care. **Trans Amer Clin Climat Assn** 1994;203-215.
75. Klein, D. and Shortliffe, E.H. A framework for explaining decision-theoretic advice. **Artificial Intelligence** 1994;67:201-243.
76. Shortliffe, E.H. Dehumanization of patient care: Are computers the problem or the solution? (editorial). **J Am Med Inform Assoc** 1994;1(1):76-78.
77. Shortliffe, E.H. Health care professional workstations: Where are we now? ... Where should we be tomorrow? **Int J Biomed Comput** 1994;34:45-55.
78. Carlson, R.W., Tu, S.W., Lane, N.M., Lai, T.L., Kemper, C.A., Musen, M.A., and Shortliffe, E.H. Computer-based screening of patients with HIV/AIDS for clinical-trial eligibility. **Online J Curr Clin Trials**, 1995 Mar 28; Doc No 179.
79. Shortliffe, E.H. Medical informatics meets medical education. **JAMA** 1995;273(13):1061, 1064-1065.
80. Shortliffe, E.H. When decision support doesn't support (editorial). **Med Dec Mak** 1995;15(2):187-188.
81. Shortliffe, E.H. Medical informatics training at Stanford University School of Medicine. **1995 IMIA Yearbook**, pp 105-109, Stuttgart: Schattauer, 1995.
82. Poon, A.D., Fagan, L.M., and Shortliffe, E.H. The PEN-Ivory project: Exploring user-interface design for the selection of items from large controlled vocabularies of medicine. **J Am Med Inform Assoc** 1996;3(2):168-183.
83. Shortliffe, E.H., Bleich, H.L., Caine, C.G., Masys, D.R., and Simborg, D.W. The federal role in the health information infrastructure: A debate of the pros and cons of government intervention. **J Am Med Inform Assoc** 1996;3(4):249-257.
84. Shortliffe, E.H. Professionalism in medical informatics [editorial]. **Meth Info Med** 1996;35(3):155-156.
85. Shiffman, S. and Shortliffe, E.H. Biomedical imaging and the evolution of medical informatics. **Computerized Medical Imaging and Graphics** 1996;20(4):189-192.

86. Detmer, W.M. and Shortliffe, E.H. Using the Internet to improve knowledge diffusion in medicine. **Commun ACM**, 1997;40(8):101-108.
87. Purcell, G.P., Rennels, G.D., and Shortliffe, E.H. Development and evaluation of a context-based document representation for searching the medical literature. **Int J Digital Libraries**, 1997;1(3):288-296.
88. Shortliffe, E.H., Patel, V.L., Cimino, J.J., Barnett, G.O., and Greenes, R.A. A study of collaboration among medical informatics research laboratories. **Artificial Intelligence in Medicine**, 1998;12(2):97-123.
89. Campbell, K.E., Oliver, D.E., and Shortliffe, E.H. The Unified Medical Language System: Toward a collaborative approach for solving terminologic problems. **J Am Med Inform Assoc** 1998;5(1):12-16.
90. Shortliffe, E.H. Health care and the Next Generation Internet [editorial]. **Ann Intern Med** 1998;129(2):138-140.
91. Ohno-Machado, L., Gennari, J.H., Murphy, S.N., Jain, N.L., Tu, S.W., Oliver, D.E., Pattison-Gordon, E., Greenes, R.A., Shortliffe, E.H., and Barnett, G.O. The GuideLine Interchange Format: A model for representing guidelines. **J Am Med Inform Assoc** 1998;5(4):357-372.
92. Campbell, K.E., Oliver, D.E., Spackman, K., Shortliffe, E.H. Representing thoughts, words, and things in the Unified Medical Language System. **J Am Med Inform Assoc** 1998; 5(5):421-31.
93. Campbell, K.E., Cohn, S.P., Chute, C.G., Shortliffe, E.H., and Rennels, G.D. Scalable methodologies for distributed development of logic-based convergent medical terminology. Proceedings of IMIA WG 6 Conference on Natural Language and Medical Concept Representation. Jacksonville, FL, Jan 19-22 1997:243-256. Revised version published in **Meth Inform Med** 1998; 37(4-5):426-439.
94. Patel, V.L., Allen, V.G., Arocha, J.F., Shortliffe, E.H. Representing clinical guidelines in GLIF: Individual and collaborative expertise. **J Am Med Inform Assoc** 1998;5(5):467-483.
95. Oliver, D.E., Shahar, Y., Musen, M.A., Shortliffe, E.H. Representation of change in controlled medical terminologies. **Artificial Intelligence in Medicine**, 1999;15(1):53-76.
96. Shortliffe, E.H. The evolution of electronic medical records. **Academic Medicine** 1999;74(4):414-419.
97. Patel, V.L., Kaufman, D.R., Allen, V.G., Shortliffe, E.H., Cimino, J.J., Greenes, R.A. Toward a framework for computer-mediated collaborative design in medical informatics. **Meth Inf Med**, 1999;38(3):158-176.
98. Patel, V.L., Cytryn, K.N., Shortliffe, E.H., Safran, C. The collaborative health care team: The role of individual and group expertise. **Teaching and Learning in Medicine**, 2000;12(3):117-132.
99. Fu, L.M., Shortliffe, E.H. The application of certainty factors to neural computing for rule discovery. **IEEE Transactions on Neural Networks**, 2000;11(3):1-11.
100. Masys, D.R., Brennan, P.F., Ozbolt, J.G., Corn, M., and Shortliffe, E.H. Are medical informatics and nursing informatics distinct disciplines? The 1999 ACMI Debate. **J Am Med Inform Assoc** 2000;7(3): 304-312.
101. Shortliffe, E.H. and Rindfleisch, T.C. Presentation of the 1999 Morris F. Collen Award to Joshua Lederberg, PhD. **J Am Med Inform Assoc** 2000;7(3):326-332.
102. Patel, V.L., Arocha, J., Shortliffe, E.H. Cognitive models in training health professionals to protect patients' confidential information. **International Journal of Medical Informatics** 2000;60:143-150.
103. Shortliffe, E.H. Networking health: Learning from others, taking the lead. **Health Affairs** 2000;19(6):9-22.
104. Elkin, P.L., Peleg, M., Lacson, R., Bernstam, E., Tu, S., Boxwala, A., Greenes, R.A., Shortliffe, E.H. Toward the standardization of electronic guidelines. **MD Computing** 2000;17(6):39-44.
105. Patel, V.L., Cytryn, K.N., Shortliffe, E.H., Safran, C. The collaborative health care team: The role of individual and group expertise. **Teaching and Learning in Medicine** 2000;12(3):117-132.
106. Patel, V.L., Arocha, J.F., Diermeier, M., Greenes, R.A., and Shortliffe, E.H. Methods of cognitive analysis to support the design and evaluation of biomedical systems: The case of clinical practice guidelines. **Journal of Biomedical Informatics** 2001;34(1)52-66.
107. Kukafka R, O'Carroll PW, Gerberding JL, Shortliffe EH, Aliferis C, Lumpkin JR, and Yasnoff WA. Issues and opportunities in Public Health Informatics: A panel discussion. **Journal of Public Health Management and Practice** 2001;7(6):31-42.

108. Peleg M, Boxwala AA, Bernstam E, Tu S, Greenes RA, Shortliffe EH. Sharable representation of clinical guidelines in GLIF: Relationship to the Arden Syntax. **Journal of Biomedical Informatics** 2001;34(3):170-181.
109. Boxwala AA, Tu S, Zeng Q, Peleg M, Ogunyemi O, Greenes RA, Shortliffe EH, Patel VL. Toward a representation format for sharable clinical guidelines. **Journal of Biomedical Informatics** 2001;34(3):157-169.
110. Shortliffe EH, Garber AM. Training synergies between medical informatics and health services research: Successes and challenges. **J Am Med Inform Assoc** 2002;9(2):133-139.
111. Peleg M, Tu S, Bury J, Ciccarese P, Fox J, Greenes RA, Hall R, Johnson PD, Jones N, Kumar A, Miksch, S, Quaglini S, Seyfang A, Shortliffe EH, and Stefanelli M. Comparing Computer-Interpretable Guideline Models: A Case-Study Approach. **J Am Med Inform Assoc** 2002;10:52-68.
112. Wang D, Peleg M, Tu SW, Boxwala AA, Greenes RA, Patel VL, Shortliffe EH. Representation primitives, process models and patient data in computer-interpretable clinical practice guidelines: A literature review of guideline representation models. **International Journal of Medical Informatics** 2002;68:59-70.
113. Zhang J, Patel VL, Johnson TR, and Shortliffe EH. A cognitive taxonomy of medical errors. **Journal of Biomedical Informatics** 2004;37(3):193-204.
114. Peleg M, Boxwala AA, Tu S, Zeng Q, Ogunyemi O, Wang D, Patel VL, Greenes RA, and Shortliffe EH. The InterMed approach to sharable computer-interpretable guidelines: A review. **J Am Med Inform Assoc** 2004;11:1-10.
115. Friedman CP, Altman RB, Kohane IS, McCormick KA, Miller PL, Ozbolt JG, Shortliffe EH, Stormo GD, Szczepaniak MC, Tuck D, Williamson J. Training the Next Generation of Informaticians: The Impact of BISTI and Bioinformatics. **J Am Med Inform Assoc** 2004;11:167-172.
116. Lehmann HP and Shortliffe EH. Information Technology Support of Clinical Research: An Introduction. **Information Systems Frontiers** 2003;5(4):415–419.
117. Boxwala AA, Peleg M, Tu S, Ogunyemi O, Zeng QT, Wang D, Patel VL, Greenes RA, Shortliffe EH. GLIF3: a representation format for sharable computer-interpretable clinical practice guidelines. **Journal of Biomedical Informatics** 2004;37(3):147-161.
118. Wang D, Peleg M, Tu S, Boxwala AA, Ogunyemi O, Zeng QT, Greenes RA, Patel VL, Shortliffe EH. Design and Implementation of the GLIF3 Guideline Execution Engine. **Journal of Biomedical Informatics** 2004;37(5):305-318.
119. Shortliffe EH. Strategic Action in Health Information Technology: Why the Obvious Has Taken So Long. **Health Affairs** 2005;24:1222-1233.
120. Shortliffe EH and Sondik E. The public health informatics infrastructure: Anticipating its role in cancer. **Cancer Causes and Control**, 2006;17(7):861-9.
121. Cohen T, Blatter B, Almeida C, Shortliffe EH, Patel VL. A cognitive blueprint of collaboration in context: Distributed cognition in the psychiatric emergency department. **Art Intel Med** 2006;37:73-83.
122. Malholtra S, Jordan D, Shortliffe E, Patel VL. Workflow modeling in critical care: Piecing together your own puzzle. **J Biomed Inform** 2007;40(2):81-92.
123. Greenes RA, Panchanathan S, Patel VL, Silverman H, Shortliffe EH. Biomedical informatics in the desert - A new and unique program at Arizona State University. Geissbuhler A, Kulikowski C, editors. **IMIA Yearbook of Medical Informatics 2008. Methods Inf Med** 2008; 47 Suppl 1: 138-143.
124. Patel VL, Yoskowitz NA, Kaufman DR, Shortliffe EH. Discerning patterns of HIV risk in healthy young adults. **Am J Med** September 2008; 121(9):758-764.
125. Patel VL, Shortliffe EH, Stefanelli M, Szolovits P, Berthold MR, Bellazzi R, Abu-Hanna A. The coming of age of artificial intelligence in medicine. **Artif Intell Med** 2009;46:5-17.
126. Ohno-Machado L, Ellison D, Shortliffe EH. Presentation of the 2008 Morris F. Collen Award to Robert A. Greenes. **J Am Med Inform Assoc** 2009;16:413– 418.
127. Patel VL, Yoskowitz NA, Arocha JF, Shortliffe EH. Cognitive and learning sciences in biomedical and health instructional design: A review with lessons for biomedical informatics education. **J Biomed Inform** 2009;42:176–197.

128. Greenes RA, Shortliffe EH. Informatics in Biomedicine and Health Care. **Acad Med** 2009;84(7):818-820.
129. Shortliffe EH, Bates DW, Bloomrosen M, Greenwood K, Safran C, Steen EB, Tang P, Williamson JJ, Don E, Detmer and the American Medical Informatics Association: An appreciation. **J Am Med Inform Assoc** 2009;16(4):429-438.
130. Shortliffe EH. Biomedical informatics in the education of physicians. **J Am Med Assoc** 2010;304(11):1227-1228.
131. Stead WW, Searle JR, Fessler HE, Smith JW, Shortliffe EH. Biomedical informatics: Changing what physicians need to know and how they learn. **Acad Med** 2011;86:429-434
132. Bloomrosen M, Starren J, Lorenzi NM, Ash JS, Patel VP, Shortliffe EH. Anticipating and addressing the unintended consequences of health IT and policy: A report from the AMIA 2009 Health Policy Meeting. **J Am Med Inform Assoc** 2011;18:82-90.
133. Li YC, Detmer DE, Shabbir SA, Nguyen PA, Jian WS, Mihalas GI, Shortliffe EH, Tang P, Haux R, Kimura M. A global travelers' electronic health record template standard for personal health records. **J Am Med Inform Assoc** 2012 Jan-Feb;19(1):134-6.
134. Mitchell JA, Gerdin U, Lindberg DAB, Lovis C, Martin-Sanchez FJ, Miller RA, Shortliffe EH, Leong TY. 50 years of informatics research on decision support: What's next. **Meth Info Med** 2011;50(6):525-535.
135. Kulikowski CA, Shortliffe EH, Currie LM, Elkin PL, Hunter LE, Johnson TR, Kalet IJ, Lenert LA, Musen MA, Ozbolt JG, Smith JW, Tarczy-Hornoch PZ, Williamson JJ. AMIA Board white paper; Definition of biomedical informatics and specification of core competencies for graduate education in the discipline. **J Am Med Inform Assoc** 2012;19:931-938.
136. Shortliffe EH. The future of biomedical informatics: a perspective from academia. *Stud Health Technol Inform.* 2012;180:19-24.
137. Yasnoff WA, Sweeney L, Shortliffe EH. Putting health IT on the path to success. **J Am Med Assoc** 2013;309(10):989-990.
138. Cases M, Furlong LI, Albanell J, Altman RB, Bellazzi R, Boyer S, Brand A, Brookes AJ, Brunak S, Clark TW, Gea J, Ghazal P, Graf N, Guigó R, Klein TE, López-Bigas N, Maojo V, Mons B, Musen MA, Oliveira JL, Rowe A, Ruch P, Shabo (Shvo) A, Shortliffe EH, Valencia A, van der Lei J, Mayer MA, Sanz F. Improving data and knowledge management to better integrate health care and research. **J Int Med** 2013;274:321-8.
139. Yasnoff WA, Shortliffe EH. Lessons learned from a Health record Bank start-up. **Methods Inf Med** 2014; 53:66-72.
140. Shortliffe EH. Good research in biomedical informatics: Getting the word out. *In: Hasman A, Hersh W, Lorenzi NM, Shortliffe EH, van Bommel JH. Commentaries on the IMIA Award of Excellence Lecture by Reinhold Haux. IMIA Yearbook of Medical Informatics 2014* (Schattauer), pp. 5-7.
141. Detmer DE, Shortliffe EH. Clinical informatics: Prospects for a new medical subspecialty. **J Am Med Assoc** 2014;311(20):2067-8..
142. Yasnoff WA, Shortliffe EH, Shortell SM. A proposal for financially sustainable population health organizations. **Population Health Management**, 2014;17(5):255-6.].
143. Phelps C, Madhavan G, Rappuoli R, Levin S, Shortliffe E, Colwell R. Strategic planning in population health and public health practice: A call to action for higher education. **Milbank Quarterly** 2016;94(1):109-25.
144. Patel VL, Kannampallil T, Shortliffe EH. Role of cognition in generating and mitigating clinical errors. *BMJ Quality and Safety*, 2015;24:468-74.
145. Medlock, S, Wyatt JC, Patel VL, Shortliffe EH, Abu-Hanna A. Modeling information flows in clinical decision support systems: A first step toward understanding CDSS effectiveness. **J Am Med Inform Assoc** 2016;23:1001-1006.
146. Shortliffe EH. The organization and content of informatics doctoral dissertations. **J Am Med Inform Assoc** 2016;23:840-843.
147. Shortliffe EH. Digital medicine and biomedical informatics: What's in a name? **Meth Info Med** 2016;55:389-391.

148. Somashekhar SP, Sepúlveda M-J, Puglielli S, Norden AD, Shortliffe EH, Rohit KC, Rauthan A, Arun KN, Patil P, Rhee K, Ramya YE. Watson for Oncology and breast cancer treatment recommendations: Agreement with an expert multidisciplinary tumor board. **Ann Oncol** 2018;29(2):418-423.
149. Shortliffe EH, Sepúlveda M-J. Clinical decision support in the era of artificial intelligence. **J Am Med Assoc**, 2018;320(21):2199-2200; (<https://doi.org/10.1001/jama.2018.17163>).
150. Vankipuram A, Patel VL, Traub S, Shortliffe EH. Overlaying multiple sources of data to identify bottlenecks in clinical workflow. **J Biomed Inform**, Volume 100, 2019, 100004. (<https://doi.org/10.1016/j.ybinx.2019.100004>)
151. Shortliffe EH. Artificial intelligence in medicine: Weighing the accomplishments, hype, and promise. **IMIA Yearbook of Medical Informatics** 2019;28(01):257-62, (<https://doi.org/10.1055/s-0039-1677891>).
152. Xu F, Sepúlveda M-J, Jiang Z, Wang H, Li J, Yin Y, Liu Z, Roebuck MC, Shortliffe EH, Yan M, Song Y, Geng C, Tang J, Rhee K. Artificial Intelligence Treatment Decision Support For Complex Breast Cancer Among Oncologists With Varying Expertise. **JCO Clinical Cancer Informatics** 2019;August 16:1-15. (<https://doi.org/10.1200/CCI.18.00159>).
153. Xu F, Sepúlveda M-J, Jiang Z, Wang H, Li J, Liu Z, Yin Y, Roebuck MC, Shortliffe EH, Yan M, Song Y, Geng C, Tang J, Jackson GP, Preininger A, Rhee K. Effect of an artificial intelligence clinical decision support system on treatment decisions for complex breast cancer. **JCO Clinical Cancer Informatics** 2020;4:824-38. (<https://doi.org/10.1200/CCI.20.00018>)
154. Suwanvecho S, Suwanrusme H, Issarachai S, Jirakulaporn T, Taechakraichana N, Lungchukiet P, Thanakarn N, Decha W, Boonpakdee W, Wongrattananon P, Preininger A, Arriaga YE, Solomon M, Wang S, Dankwa-Mullan I, Esquivel J, Patel VL, Shortliffe EH, Jackson GP, Kiatikajornthada N. Concordance between a clinical decision-support system and treatments selected by clinicians as a function of cancer type or stage. **J Glob Onc** 2019; (<https://doi.org/10.1200/JGO.2019.5.suppl.95>).
155. Suwanvecho S; Suwanrusme H; Jirakulaporn T; Issaracha S; Taechakraichana N; Lungchukiet P; Decha W; Boonpakdee W; Thanakarn N; Wongrattananon P; Preininger AM; Solomon M; Wang S; Hekmat R; Dankwa-Mullan I; Shortliffe EH; Patel VL; Arriaga Y; Jackson GP; Kiatikajornthada N. Comparison of an oncology clinical decision-support system's recommendations with actual treatment decisions. **J Am Med Inform Assoc**, 2021;28(4):832-8. (<https://doi.org/10.1093/jamia/ocaa334>).
156. Shortliffe EH, Lyman, GH, Amankwah FK. Medications in single-dose vials and implications of discarded injectable drugs: A National Academies report. **J AM Med Assoc**, 2021;325(15):1507-8. (<https://doi.org/10.1001/jama.2021.2414>).
157. Patel VL, Shidhaye R, Dev P, Shortliffe EH. Building resilience in emergency room physicians: Anticipating the next catastrophe. **BMJ Health & Care Informatics**, 2021;28(1):e100343. (<https://doi.org/10.1136/bmjhci-2021-100343>)
158. Miller RA, Shortliffe EH. The roles of the US National Library of Medicine and Donald A.B. Lindberg in revolutionizing biomedical and health informatics. **J Am Med Inform Assoc**, 2021;28(12):2728-37. <https://doi.org/10.1093/jamia/ocab245>
159. Shortliffe EH. Informatics as science. **Yearb Med Inform** 2022;31(01):303-306. <https://doi.org/10.1055/s-0042-1742541>.
160. Peng Y, Rousseau JF, Shortliffe EH, Weng C. AI-generated text may have a role in evidence-based medicine. **Nature Medicine** 2023 (published online 23 May 2023). <https://doi.org/10.1038/s41591-023-02366-9>
161. Patel VL, Shortliffe EH. Designing and implementing mHealth technology: The challenge of meeting the needs of diverse communities (editorial). **BMJ Health & Care Informatics**, 2023;0:e100925.. <https://doi.org/10.1136/bmjhci-2023-100813>
162. Shortliffe EH. Role of evaluation throughout the life cycle of biomedical and health AI applications. **BMJ Health & Care Informatics**, 2023; 30(1): e100813. <https://doi.org/10.1136/bmjhci-2023-100925>

Refereed Conference Proceedings

163. Briggs, R.L., Cohen, S.N., Armstrong, M.F., Feinberg, L.S., Hannigan, J.F., Hansten, P.D., Hunn, G.S., Moore, T.N., Nishimura, T.G., Podlone, M.D., Shortliffe, E.H., Smith, L.A., and Yosten, L. "The Stanford

- MEDIPHOR System.' **Proceedings of the 1973 MUMPS User's Group Meeting**, pp. 58-60; St. Louis, MO., 24 September 1973.
164. Shortliffe, E.H., Axline, S.G., Buchanan, B.G., and Cohen, S.N. 'Design considerations for a program to provide consultations in clinical therapeutics.' **Proceedings of the 13th San Diego Biomedical Symposium**, pp. 311-319; San Diego, California; 4-6 February 1974.
 165. Shortliffe, E.H., Axline, S.G., Buchanan, B.G., and Cohen, S.N. 'The computer as a consultant for selection of infectious disease therapy.' Presented at the 1974 SAMA-UTMB National Student Research Forum; Galveston, Texas; 24-27 April 1974; Abstract in **Texas Reports On Biology And Medicine** 32,834 (1974).
 166. Cohen, S.N., Armstrong, M.F., Briggs, R.L., Chavez-Pardo, R., Feinberg, L.S., Hannigan, J.F., Hansten, P.D., Hunn, G.S., Illa, R.V., Moore, T.N., Nishimura, T.G., Podlone, M.D., Shortliffe, E.H., Smith, L.A., and Yosten, L. 'Computer-based monitoring and reporting of drug interactions.' **Proceedings of Medinfo 74**, pp. 889-894; Stockholm, Sweden; 5-10 August 1974.
 167. Shortliffe, E.H., Rhame, F.S., Axline, S.G., Cohen, S.N., Buchanan, B.G., Davis, R., Scott, A.C., Chavez-Pardo, R., and van Melle, W.J.; 'MYCIN: A computer program providing antimicrobial therapy recommendations.' Presented at the 28th Annual Meeting, Western Society For Clinical Research, Carmel, CA, 6 Feb 1975. **Clin. Res.** 23,107a (1975). Reproduced in **Clinical Medicine**, p. 34, August 1975.
 168. Clancey, W.J., Shortliffe, E.H., and Buchanan, B.G. 'Intelligent computer-aided instruction for medical diagnosis.' **Proceedings of the Third Annual Symposium on Computer Applications in Medical Care**, Silver Spring, Maryland, October 1979.
 169. Louie, A.C., Torti, F.M., Shortliffe, E.H., and Glassberg, A. 'Decision theory as an aid to therapeutic decisions in oncology: the role of post operative radiation therapy in adjuvant breast cancer' (abstract only), **Proceedings of the Annual Meeting, American Society of Clinical Oncology (ASCO)**, C-448, p. 447, Washington, D.C., March 1981.
 170. Shortliffe, E.H. 'Consultation systems for physicians: the role of artificial intelligence techniques.' **Proceedings of the Third National Conference, Canadian Society for Computational Studies of Intelligence**, Victoria, British Columbia, 14 May 1980. Also in **Readings in Artificial Intelligence**. (B. Webber and N. Nilsson, eds.), Tioga Publishing Co., Menlo Park, CA., 1981. Republished in **Computation & Intelligence** (G.F. Luger, ed.), AAAI Press, Menlo Park, CA, pp. 511-528, 1995.
 171. Shortliffe, E.H., Scott, A.C., Bischoff, M.B., Campbell, A.B., van Melle, W., and Jacobs, C.D. 'ONCOCIN: An expert system for oncology protocol management.' **Proceedings of the 7th International Joint Conference on Artificial Intelligence**, pp. 876-881, Vancouver, B.C., 28 August 1981.
 172. Bischoff, M.B., Shortliffe, E.H., Scott, A.C., Carlson, R.W. and Jacobs, C.D. Integration of a computer-based consultant into the clinical setting. Memo HPP-83-14, Heuristic Programming Project, Stanford University. **Proceedings of the 7th Annual Symposium on Computer Applications in Medical Care**, pp. 149-152, Baltimore, Maryland, 1983.
 173. Hickam, D.H., Shortliffe, E.H., and Jacobs, C.D. 'A blinded evaluation of computer-based cancer chemotherapy treatment advice' (abstract). **Clin. Res.** 31(2):297A (1983).
 174. Teach, R.L., and Shortliffe, E.H. 'Impact of the explanatory content of clinical consultation reports' (abstract) **Clin. Res.** 31(2): 297A(1983).
 175. Shortliffe, E.H., Bischoff, M.B., Carlson, R.W., and Jacobs, C.D. 'Clinical integration to promote use and acceptance of a computer-based consultant' (abstract), **Med. Dec. Mak.** 3:358 (1983).
 176. Kent, D.L., Shortliffe, E.H., Bischoff, M.B., and Jacobs, C.D. 'The impact on quality of data management of a computer-based consultant program' (abstract), **Med. Dec. Mak.** 3:363 (1983).
 177. Hickam, D.H., Shortliffe, E.H., and Jacobs, C.D. 'An evaluation of the treatment recommendations of a computer-based cancer chemotherapy protocol advisor' (abstract), **Med. Dec. Mak.** 3:362 (1983).
 178. Kent, D.L., Carlson, R.W., Jacobs, C.D., and Shortliffe, E.H. 'Evaluation of computer-based interactive data management for clinical trials' (abstract), **Clin. Res.** 32:31A (1984).
 179. Carlson, R.W., Shortliffe, E.H., Jacobs, C.D., Koretz, M.M., and Kushlan, P. 'Physician attitudes toward a computer-based expert oncology consulting system: the ONCOCIN experience' (abstract), **Proc. Am. Soc. Clin. Oncol.** 3:13 (1984).

180. Hickam, D.H., Shortliffe, E.H., Bischoff, M.B., and Jacobs, C.D. 'The effect of enhancing cancer chemotherapy protocol guidelines with expert knowledge in a computer-based treatment consultant' (abstract), Annual Meeting, Society for Medical Decision Making, November 1984.
181. Musen, M., Langlotz, C.P., Fagan, L.M., and Shortliffe, E.H. 'Rationale for knowledge base redesign in a medical advice system.' **Proceedings of AAMSI Congress 85**, pp. 197-201, San Francisco, CA., May 1985.
182. Kahn, M.G., Ferguson, J.C., Shortliffe, E.H., and Fagan, L.M. 'Structuring temporal information in ONCOCIN.' **Proceedings of the 9th SCAMC**, pp. 172-176, Baltimore, MD, November 1985. Republished in **Medical Expert Systems** (M.K. Chytil and R. Engelbrecht, eds), Sigma Press, Wilmslow, England, pp. 35-44, 1988.
183. Langlotz, C.P., Fagan, L.M., Tu, S.W., Sikic, B.I., and Shortliffe, E.H. 'Combining artificial intelligence and decision analysis in a therapy planning consultation system' (abstract). Presented at the Annual Meeting of the Society for Medical Decision Making, Asilomar, Calif., October 1985.
184. Musen, M., Differding, J., Combs, D., Shortliffe, E., and Fagan, L. 'Automating knowledge acquisition for clinical trial advice systems' (abstract). Presented at the Annual Meeting of the Society for Medical Decision Making, Asilomar, Calif., October 1985.
185. Kahn, M.G., Shortliffe, E.H., and Fagan, L.M. 'Detecting time-oriented features for use in a computer-based advice system' (abstract). **Clin. Res.** 34:36A (1986).
186. Rennels, G.D., Shortliffe, E.H., Stockdale, F.E., and Miller, P.L. 'Reasoning from the clinical literature: a 'distance' metric.' **Proceedings of AAMSI Congress 86**, pp. 19-23, Anaheim, CA, 8-10 May 1986.
187. Langlotz, C.P., Fagan, L.M., and Shortliffe, E.H. 'Overcoming limitations of artificial intelligence planning techniques.' **Proceedings of AAMSI Congress 86**, pp. 92-96, Anaheim, CA, 8-10 May 1986.
188. Musen, M.A., Rohn, J.A., Fagan, L.M., and Shortliffe, E.H. 'Knowledge engineering for a clinical trial advice system: uncovering errors in protocol specification.' **Proceedings of AAMSI Congress 86**, pp. 24-27, Anaheim, CA, 8-10 May 1986. Reprinted in **Bulletin du Cancer** 74:291-296 (1987).
189. Lane, C.D., Frisse, M.E., Fagan, L.M., and Shortliffe, E.H. 'Object-oriented graphics in medical interface design.' **Proceedings of AAMSI Congress 86**, pp. 293-297, Anaheim, CA, 8-10 May 1986.
190. Musen, M.A., Fagan, L.M., and Shortliffe, E.H. 'Graphical specification of procedural knowledge for an expert system.' **Proceedings of the 1986 Workshop on Visual Languages**, p. 167-178, Dallas, Tx., June 1986. Reprinted in **Expert Systems: The User Interface** (J. Hendler, ed.), pp 15-35 (Chapter 2), Norwood, NJ: Ablex Publishing Company, 1988.
191. Musen, M.A., Fagan, L.M., Combs, D.M., and Shortliffe, E.H. 'Facilitating knowledge entry for an oncology therapy advisor using a model of the application area.' **Proceedings of Medinfo 86**, pp. 46-50, Washington, D.C., October 1986.
192. Kahn, M.G., Fagan, L.M., and Shortliffe, E.H. 'Context-specific interpretation of patient records for a therapy advice system.' **Proceedings of Medinfo 86**, pp. 175-179, Washington, D.C., October 1986.
193. Langlotz, D.P., Fagan, L.M., Tu, S.W., Sikic, B.I., and Shortliffe, E.H. 'Combining artificial intelligence and decision analysis for automated therapy planning assistance.' **Proceedings of Medinfo 86**, pp. 794-798, Washington, D.C., October 1986.
194. Rennels, G.D., Shortliffe, E.H., Stockdale, F.E., and Miller, P.L. 'Reasoning from the clinical literature: the ROUNDSMAN System.' **Proceedings of Medinfo 86**, pp. 771-775, Washington, D.C., October 1986.
195. Shortliffe, E.H. and Fagan, L.M. 'The ONCOCIN and OPAL systems.' In **Proceedings of Medinfo 86** (abstract), p. 1139, Washington, D.C., October 1986.
196. Musen, M.A., Fagan, L.M., Combs, D.M., and Shortliffe, E.H. 'A domain model to drive knowledge acquisition for a cancer therapy advisor.' In **Proceedings of the AAI Workshop on Knowledge Acquisition**, Banff, Canada, November 1986.
197. Langlotz, C.P., Shortliffe, E.H., and Fagan, L.M. 'Using decision theory to justify heuristics.' **Proceedings of AAAI-86**, pp. 215-219, Philadelphia, Pa., 10-15 August 1986.
198. Langlotz, C.P., Shortliffe, E.H., and Fagan, L.M. 'Computer-based explanation of decision analysis' (abstract). Presented at the Annual Meeting of the Society for Medical Decision Making, Chicago, IL., October 1986 (First prize, predoctoral competition, for C. Langlotz).
199. Musen, M.A., Combs, C.M., Walton, J.D., Shortliffe, E.H., and Fagan, L.M. 'OPAL: Toward the computer-aided design of oncology advice systems.' **Proceedings of the Tenth Annual Symposium on Computer**

- Applications in Medical Care**, pp. 43-52, Washington, D.C., October 1986. Reprinted in **Topics in Medical Artificial Intelligence** (P.M. Miller, ed.), Springer-Verlag, New York, 1987.
200. Rennels, G.D., Shortliffe, E.H., Stockdale, F.E., and Miller, P.L. 'Updating an expert knowledge base as medical knowledge evolves: examples from oncology management.' **Proceedings of AAMSI Congress 87**, pp. 228-232, San Francisco, CA., May 1987.
 201. Musen, M.A., Shortliffe, E.H., and Fagan, L.M. 'Use of a structural model of clinical trials to ease knowledge entry for a computer-based protocol management system' (abstract). **Clin. Res.** 35(3):357A (1987).
 202. Langlotz, C.P. and Shortliffe, E.H. 'An analysis of categorical and quantitative methods for planning under uncertainty.' **Proceedings of the 12th Annual Symposium on Computer Applications in Medical Care**, pp 114-118, Washington, D.C., November 1988.
 203. Shortliffe, E.H. 'Artificial intelligence methods for clinical medicine: a case study' [abstract]. **Acta Clinica Belgica** 43[Suppl.], S34 (1988).
 204. Fagan, L., Wulfman, C., Rua, M., Isaacs, E., Lane, C., Rohn, J., Webber, B., and Shortliffe, E. 'The practical application of continuous-speech recognition to the task of medical record keeping'. **Proceedings of the AAAI Workshop on Spoken Language Systems**, Palo Alto, CA., March 1989.
 205. Rucker, D.W. and Shortliffe, E.H. 'A methodology for implementing clinical algorithms using expert-system and database tools.' **Proceedings of the 13th Annual Symposium on Computer Applications in Medical Care**, pp. 33-37, Washington, D.C., November 1989.
 206. Klein, D.A. and Shortliffe, E.H. 'Integrating artificial intelligence and decision theory in heuristic process control systems.' **Proceedings of the 10th International Workshop on Expert Systems and Their Applications**, pp. 165-177, Avignon, France, 1990.
 207. Klein, D.A. and Shortliffe, E.H. 'Explaining decision theoretic choices.' **Proceedings of the 8th Biennial Conference of the Canadian Society for Computational Simulation of Intelligence**, pp. 46-53, Ottawa, Canada, 1990.
 208. Klein, D.A. and Shortliffe, E.H. 'Automated summarization of value-theoretic advice' (abstract). **Med. Dec. Mak.** 10(4):332 (1990).
 209. Langlotz, C.P. and Shortliffe, E.H. 'Pilot evaluation of a computer program that explains the results of decision analyses' (abstract). **Med. Dec. Mak.** 10(4):334 (1990).
 210. Klein, D.A., Lehmann, H.P., and Shortliffe, E.H. 'Computer-based evaluation of randomized clinical trials: A value-theoretic approach.' **Proceedings of the 14th Annual Symposium on Computer Applications in Medical Care**, Washington, D.C., November 1990.
 211. Lehmann, H.P. and Shortliffe, E.H. 'THOMAS: Building Bayesian statistical expert systems to aid in clinical decision making.' **Proceedings of the 14th Annual Symposium on Computer Applications in Medical Care**, Washington, D.C., November 1990.
 212. Klein, D.A., Weber, M., and Shortliffe, E.H. 'A framework for computer-based explanation of multiattribute decisions.' **Proceedings of the 9th International Conference on Multiple Criteria Decision Making**, Richmond, Virginia, September 1990.
 213. Klein, D.A. and Shortliffe, E.H. 'Interactive diagnosis and repair of decision-theoretic models.' **Proceedings of the Seventh IEEE Conference on Artificial Intelligence Applications**, Miami, Florida, February 1991, pp. 289-293.
 214. Acuff, R.D., Carlson, R.W., and Shortliffe, E.H. 'Computer-based chemotherapy protocol management: A core building block for the integrated oncology workstation' (abstract). Annual Meeting, American Society for Clinical Oncology, May 1992.
 215. Musen, M.A., Carlson, R.W., Fagan, L.M., Deresinski, S.C., and Shortliffe, E.H. 'T-HELPER: Automated support for community based clinical research.' **Proceedings of the Symposium on Computer Applications in Medical Care**, pp. 719-723, Washington, D.C., American Medical Informatics Association, 1992.
 216. Musen, M.A., Schreiner, J.G., Campbell, K.E., Tu, S.W., Shortliffe, E.H., and Fagan, L.M. T-Helper I: 'An electronic medical record supporting the treatment of AIDS' [abstract only]. **Proceedings of the Symposium on Computer Applications in Medical Care**, p. 958, Washington, D.C., American Medical Informatics Association, 1993.

217. Tang, P.C., Fafchamps, D., and Shortliffe, E.H. 'The medical record as a source of data for clinical decision making.' **Proceedings of the Symposium on Computer Applications in Medical Care**, pp. 575-579, Washington, D.C., November 1994.
218. Purcell, G.P., Rennels, G.D., and Shortliffe, E.H. 'Contextual document representations of clinical publications' [abstract]. **Proceedings of the Annual Meeting of the Northern California and Nevada Medical Library Group**, Napa, CA., February 1995.
219. Felciano, R. M., Harris, M., Rindfleisch, T., Strain, J., & Shortliffe, E. H. 'Using paper prototypes as interface design tools for building clinical information systems. Knowledge Systems Laboratory, Medical Computer Science, Technical Report KSL-95-16.
220. Harris, M. Z., Felciano, R. M., Strain, J. J., Rindfleisch, T. C., Shortliffe, E. H., & Saxberg, B. E. H. 'RightRX: Decision support for the optimization of prescribing practice.' Knowledge Systems Laboratory, Medical Computer Science, Technical Report KSL-95-22.
221. Purcell, G.P. & Shortliffe, E.H. 'Contextual model of clinical publications for enhancing retrieval from full-text document collections.' **Proceedings of the Symposium on Computer Applications in Medical Care**, pp. 851-857, New Orleans, LA, November 1995.
222. Detmer, W.M. & Shortliffe, E.H. 'A model of clinical query management that supports integration of biomedical information over the World Wide Web.' **Proceedings of the Symposium on Computer Applications in Medical Care**, pp. 898-902, New Orleans, LA, November 1995.
223. Shortliffe, E.H., Barnett, G.O., Cimino, J.J., Greenes, R.A., and Patel, V.L. 'InterMed: An Internet-based medical collaboratory.' **Proceedings of INET '96** [published on CD-ROM], Montreal, Quebec, The Internet Society, June 1996.
224. Shortliffe, E.H., Barnett, G.O., Cimino, J.J., Greenes, R.A., Huff, S.M., and Patel, V.L. 'Collaborative medical informatics research using the Internet and the World Wide Web.' **Proceedings of the AMIA Fall Conference**, pp. 125-129, Washington, D.C., Hanley&Belfus, 1996.
225. Oliver, D.E., Shortliffe, E.H. and the InterMed Collaboratory. 'Collaborative model development for vocabulary and guidelines' [abstract only]. **Proceedings of the AMIA Fall Conference**, p. 826, Washington, D.C., Hanley&Belfus, 1996.
226. Purcell, G.P., Detmer, W.M., Heycke, T.E., and Shortliffe, E.H. 'Context-based searching of the full-text clinical literature' [abstract only]. **Proceedings of the AMIA Fall Conference**, p. 931, Washington, D.C., Hanley&Belfus, 1996.
227. Detmer, W.M. and Shortliffe, E.H. 'WebMedline: Transforming Medline into a hypertext environment with links to full-text documents' [abstract only]. **Proceedings of the AMIA Fall Conference**, p. 933, Washington, D.C., Hanley&Belfus, 1996.
228. Campbell, K.E., Cohn, S.P., Chute, C.G., Rennels, G.D., & Shortliffe, E.H. 'Gálapagos: Computer-based support for evolution of a convergent medical terminology.' **Proceedings of the AMIA Fall Conference**, pp. 269-273, Washington, D.C., Hanley&Belfus, 1996.
229. Shortliffe, E.H., Davie, B., Glaser, J.P., Kohane, I.S., & Clayton, P.D. 'Enhancing the Internet for Health Applications' [abstract only]. **Proceedings of the AMIA Fall Conference**, Washington, D.C.: Hanley&Belfus, 1999.
230. Peleg, M., Boxwala, A.A., Ogunyemi, O., Zeng, Q., Tu, S., Lacson, R., Bernstam, E., Ash, N., Mork, P., Ohno-Machado, L., Shortliffe, E.H., & Greenes, R.A. 'GLIF3: The evolution of a guideline representation format.' **Proceedings of the AMIA Fall Conference**, Los Angeles, CA: 2000:645-649.
231. Bernstam, E.V., Ash, N., Peleg, M., Boxwala, A., Mork, P., Greenes, R.A., & Shortliffe, E.H. 'Guideline classification to assist modeling, authoring, implementation and retrieval. **Proceedings of the AMIA Fall Conference**, Los Angeles, CA. 2000:66-70.
232. Boxwala, A., Mehta, P., Ash, N., Lacson, R., Greenes, R.A., Shortliffe, E.H., Peleg, M., & Bury, J. 'Modeling guidelines using domain-level knowledge representation components' [abstract only]. **Proceedings of the AMIA Fall Conference**, Los Angeles, CA: Hanley&Belfus, 2000.
233. Zeng, Q., Tu, S., Boxwala, A.A., Peleg, M., Greenes, R.A., & Shortliffe, E.H. 'A three-layer domain ontology for guideline representation and sharing.' **Proceedings of the AMIA Fall Conference**, Los Angeles, CA: Hanley&Belfus, 2000.

234. Wang, D., Peleg, M., Tu, S., Shortliffe, E.H., & Greenes, R.A. 'Representation of clinical practice guidelines for computer-based implementations.' **Proceedings of Medinfo 2001**, pp. 285-289, London, UK, September 2001.
235. Peleg, M., Boxwala, A.A., Tu, S., Greenes, R.A., Shortliffe, E.H., Patel, V.L. 'Handling expressiveness and comprehensibility requirements in GLIF3.' **Proceedings of Medinfo 2001**, pp. 241-245, London, UK, September 2001.
236. Greenes, R.A., Peleg, M., Boxwala, A., Tu, S., Patel, V.L., and Shortliffe, E.H. 'Sharable computer-based clinical practice guidelines: Rationale, obstacles, approaches, and prospects.' **Proceedings of Medinfo 2001**, pp. 201-205, London, UK, September 2001.
237. Bernstam, E., Ash, N., Peleg, M., Tu, S., Shortliffe, E.H., & Greenes, R.A. 'Preliminary evaluation of a guideline classification system' (poster). **Proceedings of the AMIA Fall Symposium**, Washington, DC: Hanley&Belfus, November 2001.
238. Peleg, M., Ogunyemi, O., Tu, S., Boxwala, A.A., Zeng, Q., Greenes, R.A., & Shortliffe, E.H. 'Using features of Arden Syntax with object-oriented medical data models for guideline modeling.' **Proceedings of the AMIA Fall Symposium**, Washington, DC. 2001:523-527.
239. Zhang, J., Patel, VL, Johnson, TR, Shortliffe, EH. 'Toward a cognitive taxonomy of medical errors.' **Proceedings of the AMIA Fall Symposium**, San Antonio, TX. 2002:934-938.
240. Peleg, M., Patel, V.L., Snow, V., Tu, S., Mottur-Pilson, C., Shortliffe, E.H., and Greenes, R.A. 'Support for guideline development through error classification and constraint checking.' **Proceedings of the AMIA Fall Symposium**, San Antonio, TX: 2002:607-611.
241. Tao, Y., Wang, D., Shortliffe, E.H., and Lussier, Y. 'Extended attributes of event monitor systems for criteria-based notification modalities.' **Proceedings of the AMIA Fall Symposium**, San Antonio, TX: 2002:762-766.
242. Wang, D. and Shortliffe, E.H. 'GLEE: A model-driven execution system for computer-based implementation of clinical practice guidelines.' **Proceedings of the AMIA Fall Symposium**, San Antonio, TX: 2002:855-859.
243. Wang, D.; Peleg, M.; Bu, D.; Cantor, M.; Landesberg, G.; Lunenfeld, E.; Tu, S; Kaiser, G.; Hripcsak, G.; Patel, V.L., and Shortliffe, E.H. GESDOR – A generic execution model for sharing of computer-interpretable clinical practice guidelines. **Proceedings of the AMIA Fall Symposium**, Washington, DC. 2003:694-698.
244. Mantas J, Hasman A, Shortliffe EH. Assessment of the IMIA educational accreditation process. **Proceedings of Medinfo 2013**, Copenhagen, August 2013. **Stud Health Technol Inform** 2013;192:702-706.
245. Shabo SA, Ball M, Haux R, Shortliffe EH. Defragmenting individual's health date: It's time for health record banking. **Proceedings of Medinfo 2013**, Copenhagen, August 2013. **Stud Health Technol Inform** 2013;192:1242.
246. Gray K, Shortliffe EH, Ho K, Taylor P, Mars M. Health informatics education for the clinical workforce. **Proceedings of Medinfo 2013**, Copenhagen, August 2013. **Stud Health Technol Inform** 2013;192:1233.
247. Williamson J, Safran C. Shortliffe EH, Starren J, Hersh W. The new clinical informatics medical subspecialty in the United States. **Proceedings of Medinfo 2013**, Copenhagen, August 2013. **Stud Health Technol Inform** 2013;192:1232.
248. Somashekhar SP, Sepúlveda MJ, Shortliffe EH, Kumar RC, Rauthan A, Patil P, Yethadka R. A prospective blinded study of 1000 cases analyzing the role of artificial intelligence: Watson for oncology and change in decision making of a Multidisciplinary Tumor Board (MDT) from a tertiary care cancer center. **Journal of Clinical Oncology** 37, no. 15_suppl (May 20 2019) 6533-6533. DOI: 10.1200/JCO.2019.37.15_suppl.6533
249. Suwanvecho S, Shortliffe EH, Suwanrusme H, Issarachai S, Jirakulaporn T, Taechakraichana N, Lungchukiet P, Thanakarn N, Decha W, Boonpakdee W, Wongrattananon P, Preininger A, Kefayati S, Dankwa-Mullan I, Esquivel J, Patel VL, Jackson G, Kiatikajornthada N. A blinded evaluation of a clinical decision-support system at a regional cancer care center. **Journal of Clinical Oncology** 37, no. 15_suppl (May 20 2019) 6553-6553. DOI: 10.1200/JCO.2019.37.15_suppl.6553

Invited Conference Papers

250. Shortliffe, E.H. 'MYCIN: A rule-based computer program for advising physicians regarding antimicrobial therapy selection.' **Proceedings of the ACM National Congress** (SIGBIO Session), p. 739, November 1974. Reproduced in **Computing Reviews** 16:331 (1975).

251. Shortliffe, E.H. 'Judgmental knowledge as a basis for computer-assisted clinical decision making.' **Proceedings of the 1975 International Conference On Cybernetics And Society**, pp. 256-257, San Francisco, CA., September 1975.
252. Shortliffe, E.H. 'The MYCIN project: a computer-based consultation system in clinical therapeutics.' In **Computer Networking In The University: Success And Potential**, Proceedings of the EDUCOM Fall Conference, pp.183-185, November 1976.
253. Shortliffe, E.H. 'MYCIN: A knowledge-based computer program applied to infectious diseases.' **Proceedings of the First Annual Symposium on Computer Applications in Medical Care**, pp. 66-69, Washington, D.C., October 1977.
254. Shortliffe, E.H. 'Clinical decisions based on physician-computer interactions: a symbolic reasoning approach'. Symposium on Making and Using Medical Decisions, **Proceedings of the Annual Meeting, Society for Computer Medicine**, Las Vegas, Nevada, 1977.
255. Shortliffe, E.H. 'Conceptual barriers to the successful implementation of computer systems in clinical environments.' **Proceedings of the 4th Annual Workshop on Artificial Intelligence in Medicine**, Rutgers University, New Brunswick, New Jersey, June 1978.
256. Shortliffe, E.H. 'Interactive programs for physicians: benefits and limitations of artificial intelligence techniques.' **Proceedings of the International Conference on Cybernetics and Society**, Tokyo, Japan, 3-5 November 1978.
257. Shortliffe, E.H. 'Clinical knowledge engineering: the MYCIN Project.' **Proceedings of the First Japanese Conference on Artificial Intelligence in Medicine**, pp. 1-8, Tokyo, Japan, August 1979.
258. Shortliffe, E.H., Buchanan, B.G., and Feigenbaum, E.A. 'Knowledge engineering for infectious disease therapy selection.' **Proceedings of the International Conference on Cybernetics and Society**, Denver, Colorado, 8-10 October 1979.
259. Shortliffe, E.H. 'Performance issues for expert systems.' **Proceedings of the Expert Systems Workshop**, Sponsored by the Rand Corporation (Santa Monica, CA), San Diego, CA., August 1980.
260. Shortliffe, E.H. 'Problems encountered in the development of a clinical consultation system.' **Proceedings of the Annual Meeting, American Society for Information Science**, Anaheim, CA., October 1980.
261. Shortliffe, E.H. 'Medical computing: another basic science?' **Proceedings of the Fourth Symposium on Computer Applications in Medical Care**, Washington, D.C., November 1980.
262. Shortliffe, E.H. 'Expert systems research: adapting technical knowledge for computer-based consultation system.' **Proceedings of the Sixth Symposium on Legal Data Processing in Europe**, Sponsored by the Council of Europe, Thessaloniki, Greece, July 1981.
263. Shortliffe, E.H. 'Clinical consultation systems: designing for the physician as computer user.' **Proceedings of the Fifth Symposium on Computer Applications in Medical Care**, Washington, D.C., November 1981.
264. Shortliffe, E.H. 'ONCOCIN: an aid for the outpatient management of cancer patients.' **Proceedings of the Society for Computer Medicine**, Washington, D.C., October 1981.
265. Shortliffe, E.H. 'Computer-based clinical decision aids: some practical considerations.' **Proceedings of the AMIA Conference 82**, pp. 295-298, San Francisco, California, 3-5 May 1982.
266. Shortliffe, E.H. 'The computer and therapeutic decision making' (abstract), **Proceedings of the Eighteenth Annual Meeting of the Drug Information Association**, Kansas City, Missouri, 16 June 1982.
267. Scott, A.C., Bischoff, M.B., Jacobs, C.D., and Shortliffe, E.H. 'ONCOCIN: A cancer protocol consultant.' In **Proceedings of the Workshop on the Role of Computers in Cancer Clinical Trials**, pp. 81-89, National Cancer Institute, Bethesda, MD, July 1982 (NIH Publication No. 83-2627).
268. Shortliffe, E.H. 'Hypothesis generation in medical consultation systems: artificial intelligence approaches. In **MEDINFO 83** (J.H. van Bommel, M. Ball, and O. Wigertz, eds.), pp. 480-483, North Holland, Amsterdam, 1983.
269. Tsuji, S. and Shortliffe, E.H. 'Graphical access to the knowledge base of a medical consultation system.' **Proceedings of AAMSI Congress 83**, pp. 551-555, San Francisco, Ca., May 1983.
270. Shortliffe, E.H. 'The science of biomedical computing' (keynote address). In **Meeting the Challenge: Informatics and Medical Education**, (J.C. Pages, A.H. Levy, F. Gremy, and J. Anderson, eds.), pp. 1-10,

- Amsterdam: North-Holland, 1983. Reprinted in **Medical Informatics**, 1984.
<https://doi.org/10.3109/14639238409015189>
271. Shortliffe, E.H. 'Computer-based medical decision making using knowledge engineering techniques.' (abstract) **Clinical Chemistry** 29:1140 (1983).
 272. Shortliffe, E.H. 'Explanation capabilities for medical consultation systems (tutorial)'. **Proceedings of the AAMSI Congress 84**, pp. 193-197, San Francisco, Ca., May 21-23, 1984.
 273. Shortliffe, E.H. and Fagan, L.M. 'Artificial intelligence: the expert systems approach to medical consultation.' **Proceedings of the Sixth Annual International Symposium on Computers in Critical Care and Pulmonary Medicine**, 4-7 June 1984, Heidelberg, Germany.
 274. Shortliffe, E.H. 'Update on ONCOCIN: A computer-based consultant for clinical oncology.' **Proceedings of the Symposium on Computer Applications in Medical Care**, Washington, D.C., November 1984. Reprinted in **Medical Informatics**, 11:19-21 (1986).
 275. Shortliffe, E.H. 'Management of inexact reasoning and uncertainty in expert systems' (abstract). **Mathematical Social Sciences** 10:281-282 (1985).
 276. Shortliffe, E.H. 'Medical expert systems research at Stanford University.' **Proceedings of the 20th Computer Science Symposium**, sponsored by IBM Japan, Shizuoka, Japan, October 1986.
 277. Shortliffe, E.H. and Fagan, L.M. 'Research training in medical informatics: The Stanford experience.' **Proceedings of the International Symposium on Medical Informatics and Education**, pp. 490-495, Victoria, British Columbia, May 1989.
 278. Shortliffe, E.H. 'Knowledge-based systems in medicine' [keynote address]. **Proceedings of Medical Informatics Europe 1991**, pp. 5-9; Springer-Verlag; Vienna, Austria; August 1991.
 279. Shortliffe, E.H. 'Computational biology and the cross-disciplinary challenge: Finding a home in academia.' **Proceedings of the 10th Anniversary Symposium of the Computer Science and Telecommunications Board (CSTB)**, National Research Council, National Academy Press, Washington, D.C., May 1996.
 280. Shortliffe, E.H. 'How will the information revolution change the practice of medicine?' **Proceedings of the 1997 ABIM Summer Conference on Society Forces Reshaping American Medicine**, American Board of Internal Medicine, Durango, California, August 1997.
 281. Shortliffe, E.H. 'The evolution of health-care records in the era of the Internet' [semi-plenary address]. **Proceedings of Medinfo 98**, pp. 8-14, Seoul, Korea, August 1998.
 282. Shortliffe, E.H. 'The Next Generation Internet and health care: A civics lesson for the informatics community.' **Proceedings of the AMIA Fall Symposium**, pp. 8-14, Orlando, Florida, November 1998.
 283. Shortliffe, E.H. and Sondik, E. 'The informatics infrastructure: Anticipating its role in cancer surveillance.' **C-Change Summit on Cancer Surveillance and Information: The Next Decade**, Phoenix, Arizona, January 2004.
 284. Shortliffe, E.H. 'Biomedical informatics: Defining the science and its role in health professional education.' **Information Quality in e-Health** (Proceedings of the 7th Conference of the Workgroup on Human-Computer Interaction and Usability Engineering of the Austrian Computer Society), Graz, Austria, November 2011; LNCS 7058 (Holzinger A and Simonik K-M, eds), Heidelberg: Springer, pp. 711-714, 2011.
 285. Shortliffe, E.H. 'The future of biomedical informatics: A perspective from academia.' **Quality of Life through Quality of Information** (MIE2012: Proceedings of the XXIV Conference of the European Federation for Medical Informatics), Pisa, Italy, August 2012. **Stud Health Technol Inform.** 2012;180:19-24

Book Chapters

286. Cohen, S.N., Armstrong, M.F., Briggs, R.L., Feinberg, L.S., Hannigan, J.F., Hansten, P.D., Hunn, G.S., Moore, T.N., Nishimura, T.G., Podlone, M.D., Shortliffe, E.H., Smith, L.A., and Yosten, L. 'A computer-based system for the study and control of drug interactions in hospitalized patients.' In **Drug Interactions** (P.L. Morelli, S. Garattini, and S.N. Cohen, Eds), pp. 363-374; Raven Press, New York (1974).
287. Shortliffe, E.H., Axline, S.G., Buchanan, B.G., Davis, R., and Cohen, S.N. 'A computer-based approach to the promotion of rational clinical use of antimicrobials.' In **Clinical Pharmacy And Clinical Pharmacology** (W.A.

- Gouveia, G. Tognoni, and E. van der Kleijn, Eds.), pp. 259-274, Elsevier/North Holland Biomedical Press, New York, 1976.
288. Shortliffe, E.H. 'A rule-based approach to the generation of advice and explanations in clinical medicine.' In **Computational Linguistics in Medicine** (W. Schneider and A.L. Sagvall Hein, Eds.), North-Holland, Amsterdam, 1977.
 289. van Melle, W., Shortliffe, E.H., and Buchanan, B.G. 'EMYCIN: a domain-independent system that aids in constructing knowledge-based consultation programs.' In **Pergamon-Infotech Report on Machine Intelligence**, pp. 249-263, Infotech Limited, Maidenhead, Berkshire, England, 1981.
 290. Shortliffe, E.H. 'Medical consultation systems: designing for doctors.' In **Designing for Human-Computer Communication** (M.S. Sime and M.J. Coombs, eds.), Chapter 8, pp. 209-238, Academic Press, London, 1983.
 291. Gaschnig, J., Klahr, P., Pople, H., Shortliffe, E.H., and Terry, A. 'Evaluation of expert systems: issues and case studies.' In **Building Expert Systems** (R. Hayes-Roth, D. Waterman, and D. Lenat, eds.), pp. 241-280, Reading, MA: Addison-Wesley, 1983.
 292. Shortliffe, E.H. and Fagan, L.M. 'Modeling the medical decision making process.' In **Integrated Approaches to Patient Monitoring** (R.S. Newbower, J.S. Gravenstein, A.K. Ream, and T.N. Smith, eds.), pp. 183-200, Woburn, MA: Butterworth's, 1983.
 293. Shortliffe, E.H. 'Medical cybernetics: the challenges of clinical computing.' In **Technology, International Stability, and Growth** (S. Basheer Ahmed and Alice P. Ahmed, eds.), Chapter 12, pp. 148-165, Associated Faculty Press, Inc., Port Washington, New York, 1984.
 294. Shortliffe, E.H. 'Coming to terms with the computer'. In **The Machine at the Bedside: Strategies for Using Technology in Patient Care** (S.J. Reiser and M. Anbar, eds.), pp. 235-240, New York: Cambridge University Press, 1984.
 295. Kunz, J.C., Shortliffe, E.H., Buchanan, B.G., and Feigenbaum, E.A. 'Comparison of techniques of computer-assisted decision making in medicine.' In **Modeling and Analysis in Biomedicine** (Claudio Nicolini, Ed.), pp. 335-367, World Scientific, Singapore, June 1984.
 296. Rennels, G.D. and Shortliffe, E.H. 'Medical advice systems'. In the **Encyclopedia of Artificial Intelligence** (S. Shapiro, ed), pp. 584-591, New York: John Wiley and Sons, 1987.
 297. Shortliffe, E.H. 'Medical informatics: the emergence of a discipline.' In **Past, Present, and Future of Biomedical Information** (H.S. Schoolman, ed.), pp. 73-87, NIH Publication No. 88-2911, Bethesda, MD: National Library of Medicine, 1987.
 298. Shortliffe, E.H. 'The state of the art in medical information sciences,' In **Frontiers of Medical Information Sciences** (R.L. Kuhn, ed), pp. 11-20, New York: Praeger Publishers, 1988.
 299. Shortliffe, E.H. 'Artificial intelligence in management decisions: ONCOCIN,' In **Frontiers of Medical Information Sciences** (R.L. Kuhn, ed), pp. 173-187, New York: Praeger Publishers, 1988.
 300. Shortliffe, E.H. and Hubbard, S.M. 'Information Systems in Oncology.' In **Cancer: Principles and Practice of Oncology** (V.T. DeVita, S. Hellman, and S.A. Rosenberg, eds.), pp. 2403-2412, Philadelphia, PA: J.B. Lippincott Company, 1989.
 301. Langlotz, C.P. and Shortliffe, E.H. 'The critiquing approach to automated advice and explanation: rationale and examples.' In **Expert Knowledge and Explanation: The Knowledge-Language Interface** (C. Ellis, ed.), pp. 179-200, Chichester, U.K.: Ellis Horwood, Ltd., 1989.
 302. Galper, A., Rennels, G.D., Shortliffe, E.H., and Patil, R. 'Artificial intelligence in Medicine' (Memo KSL-90-). In the **Encyclopedia of Artificial Intelligence** (S. Shapiro, ed), 2nd edition, New York: John Wiley and Sons, 1991.
 303. Blois, M.S. and Shortliffe, E.H. 'The computer meets medicine: emergence of a discipline.' In **Medical Informatics: Computer Applications in Health Care** (E.H.Shortliffe, L.E. Perreault, G. Wiederhold, and L.M. Fagan, eds), Reading, MA: Addison-Wesley, 1990.
 304. Shortliffe, E.H. and Barnett, G.O. 'Medical data: Their acquisition, storage, and use.' In **Medical Informatics: Computer Applications in Health Care** (E.H.Shortliffe, L.E. Perreault, G. Wiederhold, and L.M. Fagan, eds), Reading, MA: Addison-Wesley, 1990.

305. Shortliffe, E.H. 'Clinical decision-support systems.' In **Medical Informatics: Computer Applications in Health Care** (E.H.Shortliffe, L.E. Perreault, G. Wiederhold, and L.M. Fagan, eds), Reading, MA: Addison-Wesley, 1990.
306. Shortliffe, E.H. 'The networked physician: practitioner of the future.' In **Healthcare Information Management Systems: A Practical Guide** (M.J. Ball, J.V. Douglas, R.I. O'Desky, and J.W. Albright, eds), New York: Springer-Verlag, 1990.
307. Shortliffe, E.H., Tang, P.C., Amatayakul, M.K., Cottington, E., Jencks, S.F., Martin, A., MacDonald, R., Morris, T.Q., and Nobel, J.J. 'Future vision and dissemination of computer-based patient records.' In **Aspects of the Computer-based Patient Record** (M.J. Ball and M.F. Collen, eds), New York: Springer-Verlag, 1992.
308. Shortliffe, E.H. 'AI meets decision science: Emerging synergies for decision support.' In **Advanced Models of Cognition for Medical Training and Practice** (D.A. Evans and V.L. Patel, eds.), NATO Advanced Symposium Series, Heidelberg: Springer-Verlag, 1992.
309. Sherman, E.H. and Shortliffe, E.H. 'A user-adaptable interface to predict users' needs.' In **Adaptive User Interfaces: Principles and Practice** (M. Schneider-Hufschmidt, T. Kuehme, and U. Malinowski, eds), pp 285-316, Amsterdam: North-Holland Elsevier, 1993.
310. Shortliffe, E.H. 'Medical informatics training at Stanford University School of Medicine.' In **IMIA Yearbook of Medical Informatics** (J.H. vanBemmel and A.T. McCray, eds), pp 1-5, Stuttgart, Germany: Schattauer Publishing Company, 1995.
311. Shortliffe, E.H. 'The changing nature of telecommunications and the information infrastructure for health care.' In **The Changing Nature of Telecommunications/ Information Infrastructure** (G. Turin, ed), pp 67-73, Washington, D.C.: National Academy Press, 1995.
312. Shortliffe, E.H. 'Computers in Support of Clinical Decision Making.' In **Textbook of Internal Medicine** (William N. Kelley, ed.), pp. 37-40, Philadelphia, PA: J.B. Lippincott Company, 1988. 2nd edition, pp. 31-34, Philadelphia, PA: J.B. Lippincott Company, 1991. 3rd edition, pp. 231-234, Philadelphia, PA: J.B. Lippincott Company, 1995. 4th edition, Chapter 44, pp. 264-268, J.B. Lippincott Company, 2000.
313. Shortliffe, E.H., Fagan, L.M., and Yu, V.L. 'The Infectious Diseases Physician and the Internet.' Chapter 317 in **Principles and Practice of Infectious Diseases** (G.L. Mandell, J.E., Bennett, and R. Dolin, eds). New York: Churchill-Livingstone, 1999 (5th edition, in press).
314. Shortliffe, E.H. and Patel, V.L. 'Internet.' Article 181 in **International Encyclopedia of the Social and Behavioral Sciences** (N.J. Smelser and P.B. Baltes, eds). Section on Cognitive Psychology and Cognitive Science (W. Kintsch, ed). Oxford, U.K.:Elsevier Science (Pergamon), 2001 [in press].
315. Shortliffe, E.H. and Blois, M.S. 'The computer meets medicine and biology: Emergence of a discipline.' Chapter 1 in **Medical Informatics: Computer Applications in Health Care and Biomedicine** (E.H.Shortliffe and L.E. Perreault, eds.; G. Wiederhold, and L.M. Fagan, assoc. eds), pp. 3-40, New York: Springer-Verlag, 2000.
316. Shortliffe, E.H. and Barnett, G.O. 'Medical data: Their acquisition, storage, and use.' Chapter 2 in **Medical Informatics: Computer Applications in Health Care and Biomedicine** (E.H.Shortliffe and L.E. Perreault, eds.; G. Wiederhold, and L.M. Fagan, assoc. eds), pp. 41-75, New York: Springer-Verlag, 2000.
317. Wiederhold, G. and Shortliffe, E.H. 'System design and engineering.' Chapter 5 in **Medical Informatics: Computer Applications in Health Care and Biomedicine** (E.H.Shortliffe and L.E. Perreault, eds.; G. Wiederhold, and L.M. Fagan, assoc. eds), pp. 180-211, New York: Springer-Verlag, 2000.
318. Musen, M.A., Shahar, Y., and Shortliffe, E.H. 'Clinical decision-support systems.' Chapter 16 in **Medical Informatics: Computer Applications in Health Care and Biomedicine** (E.H.Shortliffe and L.E. Perreault, eds.; G. Wiederhold, and L.M. Fagan, assoc. eds), pp. 573-609, New York: Springer-Verlag, 2000.
319. Fagan LM, Shortliffe EH. 'The Future of Computer Applications in Health Care.' Chapter 20 in **Medical Informatics: Computer Applications in Health Care and Biomedicine** (EH Shortliffe and LE Perreault, eds.; G Wiederhold, LM Fagan, assoc. eds), pp. 697-710, New York: Springer-Verlag, 2000.
320. Shortliffe EH, Patel VP. 'The Internet: Psychological Perspectives.' In **International Encyclopedia of the Social & Behavioral Sciences** (N. J. Smelser and Paul B. Baltes, eds), pp 7852-7855, Oxford: Pergamon, 2001.
321. Greenes RA, Tu S, Boxwala AA, Peleg M, Shortliffe EH. 'Toward a shared representation of clinical trial protocols: Application of the GLIF guideline modeling framework.' Chapter 16 in **Cancer Informatics:**

- Essential Technologies for Clinical Trials** (JS Silva, MJ Ball, CG Chute, et al, eds), pp. 212-228, New York: Springer-Verlag, 2002.
322. Shortliffe EH, Johnson SB. 'Medical informatics training and research at Columbia University.' In **IMIA Yearbook of Medical Informatics** (R. Haux and A.T. McCray, eds), pp 173-180, Stuttgart, Germany: Schattauer Publishing Company, 2002.
323. Lussier YA, Shortliffe EH. 'Grand challenges of medicine and health for information technology.' In **Aspects of the Computer-based Patient Record**, 2nd Edition (H Lehmann, N Roderer, A Rothschild, eds.), pp. 441-452, New York: Springer, 2006.
324. Shortliffe EH, Patel VP. 'Generation and formulation of knowledge: Human-intensive techniques.' Ch. 3-1 in **Clinical Decision Support: The Road Ahead** (First Edition; R.A. Greenes, ed), pp. 207-226, New York: Elsevier, 2006
325. Shortliffe EH. 'Weaving a Strong Trust Fabric: Demonstrating Value to Secure Trust'. In **Digital Infrastructure for the Learning Health System: The Foundations for Continuous Improvement in Health and Health Care** (C. Grossmann, B. Powers, and J.M. McGinnis, eds.), pp 151-55. Washington, DC: The National Academies Press, 2012.
326. Shortliffe EH. 'Reflections on the Role of Cognitive Science in Biomedical Informatics.' Chapter 23 in Patel VL, Kaufman D, Cohen T (Eds), **Cognitive Informatics in Health and Biomedicine: Case Studies on Critical Care, Complexity and Errors**, pp. 467-475. Springer (London, UK), 2013.
327. Patel VP, Shortliffe EH. 'Sources of knowledge for clinical decision support: Human-intensive techniques.' Ch. 10 in **Clinical Decision Support: The Road to Broad Adoption** (Second Edition; R.A. Greenes, ed), pp. 285-307, New York: Elsevier, 2014
328. Shortliffe EH. 'The evolving academic home for biomedical informatics research, education, and practice' In **ICT in Health 2013: Survey on the Use of Information and Communication Technologies in Brazilian Healthcare Facilities (Tic Saúde 2013: Pesquisa Sobre O Uso Das Tecnologias de Informação E Comunicação nos Estabelecimentos de Saude Brasileiros)**, pp. 51-58 (Portuguese), pp. 187-194 (English), São Paulo: Dados Internacionais de Catalogação na Publicação (CIP), 2014.
329. Shortliffe EH, Detmer DE, Munger BS. 'Clinical Informatics: Emergence of a New Profession.' Chapter 1 in **Clinical Informatics Study Guide: Text and Review** (Finell JT and Dixon BE, eds). London: Springer, 2015, pp. 3-22.
330. Collen MF, Shortliffe EH. 'The Creation of a New Discipline.' Chapter 2 in **History of Medical Informatics** (Collen MF and Ball M, eds). London: Springer, 2015, pp. 75-120
331. Detmer DE, Munger BS, Steen E, Shortliffe EH,. 'The Discipline of Clinical Informatics: Maturation of a New Profession.' Chapter 1 in **Clinical Informatics Study Guide: Text and Review** (Finell JT and Dixon BE, eds). London: Springer, 2022 (in preparation).
332. Miller RA, Shortliffe EH. 'Biomedical and health informatics: The transformative roles of Donald A.B. Lindberg and the U.S. National Library of Medicine.' Chapter 1 in **Transforming Biomedical Informatics and Health Information Access: Don Lindberg and the U.S. National Library of Medicine** (Humphreys BL, Miller RA, Siegel ER, Logan RA, eds). Volume 288 of *Studies in Health Technology and Informatics*, IOS Press, February 2022.
333. van Bommel JH, Ball MJ, Shortliffe EH. 'Donald A.B. Lindberg, pioneer in biomedical and health informatics: His involvement in creating professional organizations.' Chapter 2 in **Transforming Biomedical Informatics and Health Information Access: Don Lindberg and the U.S. National Library of Medicine** (Humphreys BL, Miller RA, Siegel ER, Logan RA, eds). Volume 288 of *Studies in Health Technology and Informatics*, IOS Press, February 2022.
334. Shortliffe EH. 'AI in Medicine: Some Pertinent History'. Chapter 2 in **Intelligent Systems in Medicine and Health: The Role of AI** (Cohen TA, Patel VL, Shortliffe EH, eds). London: Springer Nature, 2022. https://doi.org/10.1007/978-3-031-09108-7_2.
335. Shortliffe EH, Sepúlveda MJ, Patel VL. 'Framework for the Evaluation of Clinical AI Systems'. Chapter 17 in **Intelligent Systems in Medicine and Health: The Role of AI** (Cohen TA, Patel VL, Shortliffe EH, eds). London: Springer Nature, 2022. https://doi.org/10.1007/978-3-031-09108-7_17.

336. Cohen TA, Patel VL, Shortliffe EH. 'Introducing AI in Medicine: A Cognitive Informatics Perspective'. Chapter 1 in **Intelligent Systems in Medicine and Health: The Role of AI** (Cohen TA, Patel VL, Shortliffe EH, eds). London: Springer Nature, 2022. https://doi.org/10.1007/978-3-031-09108-7_1.
337. Cohen TA, Patel VL, Shortliffe EH. 'Reflections and Projections'. Chapter 20 in **Intelligent Systems in Medicine and Health: The Role of AI** (Cohen TA, Patel VL, Shortliffe EH, eds). London: Springer Nature, 2022. https://doi.org/10.1007/978-3-031-09108-7_20.

Miscellaneous Publications

338. Shortliffe, E.H. **A Computer-Based Medical Record System: The Interface Problem**. Unpublished undergraduate thesis, Department of Applied Mathematics, Harvard College, Cambridge, MA, May 1970.
339. Shortliffe, E.H. **MYCIN: A Rule-Based Computer Program To Advise Physicians Regarding Antimicrobial Therapy Selection**. Doctoral dissertation, Stanford University, October 1974. Technical Report AIM-251, Stanford Artificial Intelligence Laboratory, Stanford, CA. Abstract reproduced in **Computing Reviews** 1975;16,385.
340. Shortliffe, T. and Davis, R. Some considerations for the implementation of knowledge-based expert systems. **SIGART Newsletter**, No. 55, pp. 9-12, December 1975.
341. Scott, A.C., Bischoff, M., and Shortliffe, E.H. Oncology protocol management using the ONCOCIN system: a preliminary report. Memo HPP-80-15, Heuristic Programming Project, Departments of Medicine and Computer Science, Stanford University, July 1980.
342. Shortliffe, E.H. and Buchanan, B.G. Artificial intelligence (letter). **N. Eng. J. Med.** 1980;302:1482.
343. Shortliffe, E.H. Evaluating expert systems. Memo HPP-81-9, Heuristic Programming Project, Departments of Medicine and Computer Science, Stanford University, July 1981.
344. Shortliffe, E.H. Designing for doctors: why turn to artificial intelligence techniques? Article prepared for tutorial workshop at the Annual Meeting, American Society for Clinical Pathology, Las Vegas, Nevada, October 1981.
345. Shortliffe, E.H. and Crapo, L.M. Thyroid carcinoma with spinal cord compression (letter). **JAMA** 1982;247:1565-1566.
346. Shortliffe, E.H. Artificial Intelligence in Medicine (book review). **JAMA** 1983;250:829-830.
347. Interview: Edward H. Shortliffe on the MYCIN expert system. *Comput Compact*. 1983;1(6):283-289. [https://doi.org/10.1016/0167-7136\(83\)90079-3](https://doi.org/10.1016/0167-7136(83)90079-3)
348. Shortliffe, E.H. What the future holds. **The Internist**, vol. xxiv, No. 5, pp. 15-16, July 1983.
349. Schoolman, H.M. and Shortliffe, E.H. Computer Fair (editorial). **Ann Intern Med** 1984;100:148.
350. Shortliffe, E.H. Information Systems for Patient Care (book review). **JAMA** 1985;253:1336-1337.
351. van Bommel, J.H. and Shortliffe, E.H. Medical informatics: from art to science (foreword), **Proceedings of Medinfo 86**, Washington, D.C., 26-31 October 1986.
352. Shortliffe, E.H. Foreword to **A Computational Model of Reasoning from the Clinical Literature** by Glenn D. Rennels. Heidelberg: Springer Verlag, 1987.
353. Shortliffe, E.H. Computer programs to support medical decision making (letter), **JAMA** 1987;258:2374-2376.
354. Shortliffe, E.H. Medical knowledge and decision making' [An introduction to one of five subsections in a special issue entitled 'Data, Information, and Knowledge in Medicine: Developments in Medical Informatics with a Historical Perspective']. **Meth. Inf. Med.**, pp 209-218, 1988.
355. Walton, J.D. and Shortliffe, E.H. Automated design of a user interface. Report KSL-88-17, revised July 1989.
356. Walton, J.D. and Shortliffe, E.H. A future view of the physician's workstation, **California Physician**, pp. 38-44, November 1989.
357. Shortliffe, E.H. Inflammatory images of medical artificial intelligence (letter), **AI Magazine** 1989;10(3):10.
358. Shortliffe, E.H. Foreword to **Probabilistic Similarity Networks** by David E. Heckerman (ACM Doctoral Dissertation Awardee, 1990). pp. xv-xvii, Cambridge, MA: MIT Press, 1991.
359. Shortliffe, E.H. Greek tragedy. **British Journal of Healthcare Computing** 1991;8(9):13-14.

360. Shortliffe, E.H., Tang, P.C., and Detmer, D.E. Computerizing patient records (letter), **Ann Intern Med** 1992;116:959.
361. Buchanan BG, Cooper GE, Friedman CP, Gardner R, Haynes RB, Schoolman HM, Shortliffe EH, Webber BL. Evaluation of Knowledge-Based Systems: Report of a Workshop at the National Library of Medicine [Internet]. Bethesda, Maryland: National Library of Medicine; 1995 Dec p. 35. Available from: <http://www.shortliffe.net/docs/Evaluation-of-Knowledge-Based-Systems-1995.pdf>
362. Shortliffe, E.H. Foreword to **Evaluation Methods in Medical Informatics** by Charles P. Friedman and Jeremy C. Wyatt, New York: Springer Verlag, 1996.
363. Shortliffe, E.H. Research takes on a second life. Interview by John McCornack. **Health Data Management** 1996;4(11):25, 27-28, 30.
364. Shortliffe, E.H. Medical informatics meets medical education. **Stanford Medical Review** 1999;1(1):45-47.
365. Shortliffe, E.H. and Patel, V.L. Informatics at the NIH (letter). **Journal of the American Medical Informatics Association** 2000;7(1):109-110.
366. Shortliffe, E.H. Welcome, PIER, a new Physicians' Information and Education Resource (announcement). **Ann Intern Med** 2002;136(7):553.
367. Shortliffe, E.H. JBI Status Report (editorial). **J Biomed Inf** 2002;35:279-280.
368. Shortliffe EH, Johnson SB. Medical informatics training and research at Columbia University. **IMIA Yearbook of Medical Informatics 2002**, Schattauer: Heidelberg, 2002.
369. Shortliffe, E.H. American College of Medical Informatics Fellows and International Associates, 2003. **J Amer Med Infor Assoc** 2004;11:225-233.
370. Shortliffe, E.H. Message from the Organizing Committee. **Proceedings of Medinfo 2004**, San Francisco, CA, September 7-11, 2004, p. xxv, IOS Press: Amsterdam, September 2004.
371. Shortliffe, E. H. Reassessing the role of the computer in clinical decision support and patient safety. **Clin Invest Med** 2004;27(4):168 (abstract).
372. Shortliffe, E.H. American College of Medical Informatics Fellows and International Associates, 2004. **J Amer Med Infor Assoc** 2005;12:234-240 (2005).
373. Shortliffe, E.H. CPOE and the facilitation of medication errors (editorial). **J Biomed Inf** 2005;38:256-258.
374. Shortliffe, E.H. Foreword to **Evaluation Methods in Medical Informatics (2nd edition)** by Charles P. Friedman and Jeremy C. Wyatt, New York: Springer Verlag, 2005.
375. Miller, R.A., Groth, T., Hasman, A., Haux, R., McCray, A.T., Safran, C., and Shortliffe, E.H. On exemplary scientific conduct regarding submission of manuscripts to biomedical informatics journals (editorial published simultaneously in several journals). **Journal of the American Medical Informatics Association** 2006;13:113-114; **Journal of Biomedical Informatics** 2006;39:1-2. **Methods of Information in Medicine** 2006;45:1-3. **Computer Methods and Programs in Biomedicine** 2006;81(3):195-6. **International Journal of Medical Informatics** 2006;75(5):343-5.
376. Shortliffe EH, Califano A, Hunter L. New JBI emphasis on translational bioinformatics. **J Biomed Inf** 2009;42:199-200.
377. Shortliffe EH. Tracking E-health. ("Digital Medicine" book review). **Issues in Science and Technology** pp. 92-95, Summer 2010.
378. Shortliffe EH. What societies want: The society's view. Workshop on Future-Proofing Your Journal: Today's Essentials, Tomorrow's Strategies. Westin San Francisco, June 2010. http://group.bmj.com/group/affinity-and-society-publishing/affinity_proceedings_2010.pdf
379. Shortliffe EH. AMIA president's message: Rebranding of AMIA. **J Am Med Inform Assoc.** 2011 Jan 1;18(1):107.
380. Shortliffe EH. AMIA president's message: Computer science and informatics. **J Am Med Inform Assoc.** 2011 May 1;18(3):349-50.
381. McCune BP, Shortliffe EH. In Memoriam: Darlene P Vian. **J Am Med Inform Assoc.** 2011 July 1;18(4):369.
382. Shortliffe EH. AMIA president's column: AMIA and HIT policy activities. **J Am Med Inform Assoc.** 2011 July 1;18(4):537-38.

383. Shortliffe EH. AMIA president's column: AMIA's corporate relations activities. **J Am Med Inform Assoc.** 2011 Sept 1;18(5):727-728].
384. Shortliffe EH. President's column: Subspecialty certification in clinical informatics. **J Am Med Inform Assoc.** 2011 Nov 1;18(6):890-891.
385. Shortliffe EH. President's column: reflections on AMIA's past 3 years **J Am Med Inform Assoc.** 2012 Mar 1;19(2):325-326.
386. Shortliffe EH. Foreword to VL Patel, TG Kannampallil, DR Kaufman (eds), **Cognitive Informatics for Biomedicine: Human-Computer Interaction in Health Care**, London: Springer, 2015, pp vii-x.
387. Shortliffe EH. Foreword to S.B. Bhattacharyya, **Introduction to SNOMED CT**. London: Springer, 2015.
388. Shortliffe EH, Patel VL. Foreword to H.F. Marin, E. Mazssad, D. Sigulem, M.A. Gutierrez, R.J. Rodregues (eds), **Global Health Informatics: How Information Technology Can Change Our Lives in a Globalized World**. Amsterdam: Elsevier, 2016.
389. Patel VL, Shortliffe EH. Connecting the dots: The influence of risk perception on patient safety (editorial). **Crit Care Med.** 2018 Jan;46(1):163-164.
390. Shortliffe EH. 50th Anniversary Retrospective: Computers and Biomedical Research and Journal of Biomedical Informatics (editorial). **J Biomed Inform** 2018 (November 8). <https://www.sciencedirect.com/journal/journal-of-biomedical-informatics/special-issue/10D6LKQ8DT7>.
391. Suwanvecho S, Suwanrusme H, Jirakulaporn T, Lungchukiet P, Taechakraichana N, Thanakarn N, Decha W, Boonpakdee W, Wongrattananon P, Preininger AM, Wang S, Solomon M, Hekmat R, Esquivel J, Dankwa-Mullan I, Shortliffe EH, Arriaga Y, Jackson GP, Kiatikajornthada N. Concordance with Oncology Clinical Decision Support and Clinical Outcomes in Breast and Colorectal Cancer Patients (poster). **Proceedings of the AMIA Annual Symposium**, Nov 3-7, 2020.
392. Shortliffe EH, Peleg M, Combi C, Chang AC, Vinci J. Publishing artificial intelligence research papers: A tale of three journals (editorial). **J Biomed Inform** March 2021; 1037008. <https://doi.org/10.1016/j.jbi.2021.103708>
393. Patel K, Donohue JM, Shortliffe EH. Discarded drugs: A wasteful and costly problem that requires whole-of-government approaches. *STAT First Opinion*, 25 Feb 2021. <https://www.statnews.com/2021/02/25/discarded-drugs-wasteful-costly-problem/>
394. Watanabe J, Lieu T, Shortliffe EH. Discarded medications in vials are a symptom of our health care system: A call to action (letter). **Journal of Managed Care & Specialty Pharmacy**, 2021;27(5):689-90. <https://doi.org/10.18553/jmcp.2021.27.5.689>
395. Brennan PF, Detmer D, Jackson GP, Lehmann C, Ohno-Machado L, Safran C, Shortliffe EH, Williamson J. A tribute to Karen Greenwood and her Contributions to the American Medical Informatics Association. **J Am Med Inform Assoc**, 2022;29(5):1011-3. <https://doi.org/10.1093/jamia/ocac039>.