

BIOGRAPHICAL SKETCH

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NAME: William Hersh, MD, FACP, FACMI, FAMIA

eRA COMMONS USER NAME (credential, e.g., agency login): hershw

POSITION TITLE: Professor and Chair, Department of Medical Informatics & Clinical Epidemiology, School of Medicine, Oregon Health & Science University, Portland, OR

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
University of Illinois, Champaign-Urbana, IL	BS	12/1979	Biology
University of Illinois, Chicago, IL	MD	6/1984	Medicine
University of Illinois Hospital, Chicago, IL	-	6/1987	Residency, Internal Medicine
Harvard University, Boston, MA	-	6/1990	Postdoctoral Fellowship, Medical Informatics
Harvard University Extension School, Cambridge, MA	Certificate	6/1990	Computer Science

A. Personal Statement

I am Professor and Chair of the Department of Medical Informatics & Clinical Epidemiology in the School of Medicine at Oregon Health & Science University (OHSU) in Portland, Oregon, USA. I am a leader and innovator in biomedical informatics both in education and research. I have made many contributions in research. My research originally focused in the area of information retrieval (IR, also known as search), where I have authored over 200 scientific papers and abstracts as well as the book, *Information Retrieval: A Health and Biomedical Perspective* (Springer, 2009), now in its third edition. I have been interested in developing and evaluating IR systems and users in the biomedical domain. More recently, I have focused on the application of IR techniques to patient cohort discovery from the electronic health record, including via secure systems. Other areas have included producing systematic reviews of informatics-related topics and assessing the size and characteristics of the informatics workforce.

In education, I developed and continue to serve as Director of all of OHSU's graduate biomedical informatics education programs, including the Master of Science, the Master of Biomedical Informatics, the Graduate Certificate, and the Doctor of Philosophy. I have also been the Director of OHSU's National Library of Medicine (NLM) Biomedical Informatics Training Grant (T15) since 2002. I also spearheaded OHSU's efforts in distance learning for biomedical informatics, which are available up to the master's degree level. In addition, I conceptualized and implemented the first offering of the American Medical Informatics Association (AMIA) 10x10 ("ten by ten") program, which has been completed by over 2500 health care professionals and others in biomedical informatics. I also serve as Director of the AMIA Clinical Informatics Board Review Course, and am active in implementation of the new medical subspecialty of clinical informatics. I also serve as Co-Editor of the textbook, *Health Informatics: Practical Guide, Seventh Edition* (Lulu.com, 2018).

B. Positions and Honors**Positions and Employment**

1989-1990 Instructor in Medicine, Harvard Medical School

1990-1995 Assistant Professor, Oregon Health Sciences University (OHSU)
1995-2001 Associate Professor, OHSU
1997-2003 Head, Division of Medical Informatics & Outcomes Research, OHSU
1997-2007 Associate Director, Evidence-Based Practice Center, OHSU
2001- Professor with Tenure, OHSU
2003- Chair, Department of Medical Informatics & Clinical Epidemiology, OHSU

Other Experience and Professional Memberships

1996- Director, Graduate Program in Biomedical Informatics, OHSU
1999-2003 Secretary, American Medical Informatics Association
1997-2003 Editorial Board, *Journal of the American Medical Informatics Association*
2003-2009 Chair, Medical Informatics Subcommittee, American College of Physicians
2005- Director, AMIA-OHSU 10x10 Program
2005-2010 Co-Editor, *Information Retrieval*
2006-2014 Director, Biomedical Informatics Program, Oregon Clinical & Translational Research Institute, OHSU
2006-2012 Chair, Education Working Group, International Medical Informatics Association
2006-2008 Chair, National Informatics Steering Committee, Clinical & Translational Science Award Program, National Institutes of Health
2008-2011 Member, Board of Scientific Counselors, National Center for Public Health Informatics, Centers for Disease Control and Prevention
2012- Director, Clinical Informatics Subspecialty Board Review Course, American Medical Informatics Association

Honors

1980 Bachelor of Science with Distinction, University of Illinois
1994 Fellow, American College of Physicians (FACP)
1996 Fellow, American College of Medical Informatics (FACMI)
2007 Distinguished Faculty Award – Outstanding Teaching, OHSU Faculty Senate
2008 AMIA Donald A.B. Lindberg Award for Innovation in Informatics
2010 Modern Healthcare Top 25 Clinical Informaticists Award
2011 Modern Healthcare Top 25 Clinical Informaticists Award
2012 Modern Healthcare Top 25 Clinical Informaticists Award
2015 HIMSS Physician IT Leadership Award
2017 Inaugural Fellow, International Academy of Health Sciences Informatics (FIAHSI)
2019 Fellow, American Medical Informatics Association (FAMIA)

C. Contribution to Science

1. My initial research focused on the development and implementation of information retrieval (IR, also called search) systems in biomedicine and health. I experimented with concept-based approaches to indexing and retrieval of knowledge-based information. Subsequently, I found that methods for evaluation systems were inadequate, and developed an interest in new approaches to evaluation. My interests in search have also evolved with the emergence of new content for retrieval, such as medical images and electronic health record data.
 - a. Hersh WR, Greenes RA, SAPHIRE: an information retrieval system featuring concept matching, automatic indexing, probabilistic retrieval, and hierarchical relationships, *Computers and Biomedical Research*, 1990, 23: 410-425.
 - b. Hersh WR, Crabtree MK, Hickam DH, Sacherek L, Friedman CP, Tidmarsh P, Moesbaek C, Kraemer D, Factors associated with success for searching MEDLINE and applying evidence to answer clinical questions, *Journal of the American Medical Informatics Association*, 2002, 9: 283-293. PMC344588.
 - c. Hersh W, Kalpathy-Cramer J, Müller H, The ImageCLEFmed medical image retrieval task test collection, *Journal of Digital Imaging*, 2009, 22: 648-655.

- d. Hersh W, Voorhees E, TREC Genomics special issue overview, *Information Retrieval*, 2009, 12: 1-15.
2. My work in IR has converged with additional interest in the re-use (or secondary use) of clinical (especially electronic health record) data. I have made contributions not only in attempting to leverage such data, but also addressing caveats and recommendations for its use.
 - a. Voorhees E, Hersh W, Overview of the TREC 2012 Medical Records Track, *The 21st Text Retrieval Conference - TREC 2012*. <http://trec.nist.gov/pubs/trec21/papers/MED12OVERVIEW.pdf>.
 - b. Edinger T, Cohen AM, Bedrick S, Ambert K, Hersh W, Barriers to retrieving patient information from electronic health record data: failure analysis from the TREC Medical Records Track, *Proceedings of the AMIA 2012 Annual Symposium*, 2012, 180-188, PMC3540501.
 - c. Hersh WR, Weiner MG, Embi PJ, Logan JR, Payne PR, Bernstam EV, Lehmann HP, Hripcsak G, Hartzog TH, Cimino JJ, Saltz JH, Caveats for the use of operational electronic health record data in comparative effectiveness research, *Medical Care*, 2013, 51(Suppl 3): S30-S37. PMC3748381.
 - d. Wu ST, Liu S, Wang Y, Timmons T, Uppili H, Bedrick S, Hersh W, Liu H, Intra-institutional EHR collections for patient-level information retrieval. *Journal of the American Society for Information Science & Technology*, 2017, 68: 2636-2648.
3. I have also made contributions in conducting systematic reviews of evaluative research of informatics technologies. These reviews can be challenging because many evaluations use weak evaluation methodologies, in part because these technologies are tools rather than typical medical tests or treatments.
 - a. Hersh WR, Hickam DH, How well do physicians use electronic information retrieval systems? A framework for investigation and systematic review, *Journal of the American Medical Association*, 1998, 280: 1347-1352.
 - b. Hersh WR, Hickam DH, Severance SM, Dana TL, Krages KP, Helfand M, Diagnosis, access, and outcomes: update of a systematic review on telemedicine services, *Journal of Telemedicine and Telecare*, 2006, 12(Suppl 2): 3-31.
 - c. Stanfill MH, Williams M, Fenton SH, Jenders R, Hersh W, A systematic review of automated clinical coding and classification systems, *Journal of the American Medical Informatics Association*, 2010, 17: 646-651. PMC3000748.
 - d. Hersh W, Totten A, Eden K, Devine B, Gorman P, Kassakian S, Woods SS, Daeges M, Pappas M, McDonagh MS, Outcomes from health information exchange: systematic review and future research needs, *JMIR Medical Informatics*, 2015, 3(4): e39. <http://medinform.jmir.org/2015/4/e39/>.
4. Being the leader of a major biomedical informatics educational program, I have also carried out research characterizing the informatics professional workforce. My study on the need for health IT professionals played a role in workforce development being a component of the Health Information Technology for Clinical and Economic Health (HITECH) Act of the American Recovery and Reinvestment Act (ARRA).
 - a. Hersh W, Who are the informaticians? What we know and should know, *Journal of the American Medical Informatics Association*, 2006, 13: 166-170. PMC1447543.
 - b. Hersh W, Wright A, What workforce is needed to implement the health information technology agenda? Analysis from the HIMSS Analytics™ Database, *Proceedings of the AMIA 2008 Annual Symposium*, 2008, 303-307. PMC2656033.
 - c. Hersh WR, Margolis A, Quirós F, Otero P, Building a health informatics workforce in developing countries, *Health Affairs*, 2010, 29: 274-277.
 - d. Hersh W, Boone KW, Totten AM, Characteristics of the healthcare information technology workforce in the HITECH era: underestimated in size, still growing, and adapting to advanced uses, *JAMIA Open*, 2018, <https://doi.org/10.1093/jamiaopen/ooy029>. (Data in Dryad Digital Repository, <https://doi.org/10.5061/dryad.mv00464>.)
5. Also as a result of being an educational leader, I have carried out evaluation of educational programs in informatics, including those using distance learning technologies.
 - a. Hersh W, Williamson J, Educating 10,000 informaticians by 2010: the AMIA 10x10 program, *International Journal of Medical Informatics*, 2007, 76: 377-382.

Preparing Future Physicians: A Bold Proposal for Oregon and Beyond
Develop e-portfolio and informatics curriculum for OHSU medical students.
Role: Co-I

1333ND19PNB770469 Hersh (PI) 8/1/2019-10/31/2019
Text Retrieval Conference (TREC) - Clinical Decision Support Effort
Support relevance judgments for the NIST TREC 2019 Precision Medicine Track.
Role: PI

1U24TR002306 Haendel (PI) 9/20/2017-6/30/2022
A National Center for Digital Health Informatics Innovation
Create a national network for enabling digital health research, innovation, and continuous improvement.
Role: Co-I

Additional International Activities

Co-Instructor
Gateway to Health Informatics
Distance learning introductory course in biomedical and health informatics taught in partnership with Gateway Consulting, Singapore
Course offered twice annually

Scientific Advisory Board
Health and Human Heredity in Africa, Bioinformatics Network (H3ABionet)
Funded by NIH grant U24HG006941
Annual trip to Cape Town, South Africa for Scientific Advisory Board meeting