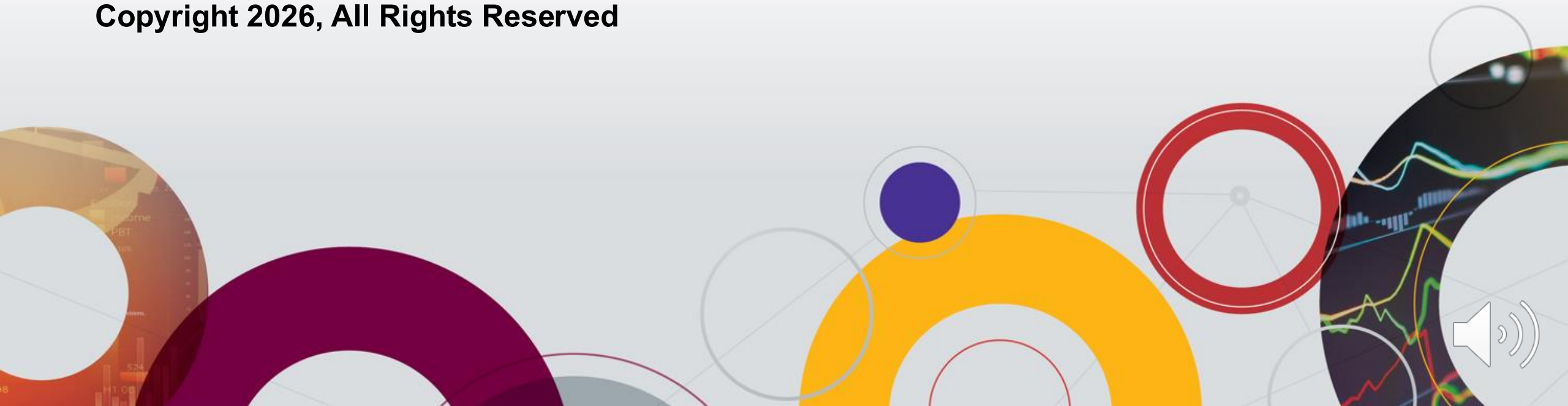


1.5 Resources for Fields – Organizations, Information, Education

10x10 – Introduction to Biomedical Informatics & Artificial Intelligence
William Hersh, MD, FACMI, FAMIA, FIAHSI
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Resources

Organizations

Information

Education

Professional organizations



[American Medical Informatics Association \(AMIA\)](#)

Mission

- AMIA advances the informatics professions relating to health and disease. To this end it advances the use of health information and communications technology in clinical care and clinical research, personal health management, public health/population, and translational science with the ultimate objective of improving health.

Other professional organizations

[Healthcare Information and Management Systems Society \(HIMSS\)](#)

[American Health Information Management Association \(AHIMA\)](#)

[Association of Medical Directors of Information Systems \(AMDIS\)](#)

[Alliance for Nursing Informatics \(ANI\)](#)

[Public Health Informatics Institute \(PHII\)](#)

[International Society for Computational Biology \(ISCB\)](#)

[Society for Imaging Informatics in Medicine \(SIIM\)](#)

[Association for Computing Machinery \(ACM\)](#)

[Medical Library Association \(MLA\)](#)

Medical and nursing specialty societies (non-exhaustive)

[American Medical Association \(AMA\)](#)

[American Nurses Association \(ANA\)](#)

[Association of American Medical Colleges \(AAMC\)](#)

[American College of Physicians \(ACP\)](#)

[American Academy of Family Physicians \(AAFP\)](#)

US government agencies

Department of Health & Human Services (HHS)

- Assistant Secretary for Technology Policy/Office of the National Coordinator for Health Information Technology (ASTP) – formerly ONC
- National Institutes of Health (NIH)
 - National Library of Medicine (NLM)
- Agency for Healthcare Research & Quality (AHRQ)
- Centers for Disease Control & Prevention (CDC)
- Food & Drug Administration (FDA)

Where does one find more information? Textbooks

- Hersh W, Ed. (2022). *Health Informatics: Practical Guide, 8th Edition*. Lulu.com
– [Web site](#)
- Shortliffe, EH et al., Eds. (2021). *Biomedical Informatics: Computer Applications in Health Care and Biomedicine, 5th Edition*. Springer
- Finnell JT and Dixon BE, Eds. (2022). *Clinical Informatics Study Guide – Text and Review, 2nd Edition*. Springer

Some other general textbooks

Digital Health (Rivas, 2018)

Digital Health: Mobile and Wearable Devices for Participatory Health Applications (Syed-Abdul, 2020)

Informatics Education in Healthcare: Lessons Learned, 2nd ed (Berner, 2020)

Foundations of Health Information Management - E-Book (Davis, 2019)

Healthcare Information Management Systems: Cases, Strategies, and Solutions, 5th ed. (Kiel, 2022)

The Health Information Workforce: Current and Future Developments, 1st ed. (Butler-Henderson, 2022)

Making a Difference: Careers in Health Informatics (Meehan, 2023)

AI books

Artificial Intelligence in Health Care: The Hope, the Hype, the Promise, the Peril (Matheny, 2019)

Deep Medicine (Topol, 2019)

Digitizing Diagnosis – early history of AI (Lea, 2023)

How Data Happened (Wiggins, 2023)

AI in Healthcare (Davenport, 2022)

AI Revolution in Medicine (Lee, 2023)

Clinical Applications of AI in Real-World Data (Asselbergs, 2023)

Translational Applications in Healthcare (Reddy, 2023)

AI and ML in Health Care and Medical Sciences (Simon, 2024)

Speech and Language Processing – including with LLMs (Jurafsky, 2025)

More information (cont.), Journals

Journals of AMIA

- JAMIA
- JAMIA Open

Methods of Information in Medicine (MIM)

International Journal of Medical Informatics (IJMI)

Journal of Biomedical Informatics (JBI)

Applied Clinical Informatics (ACI)

- ACI Open

Bioinformatics

Journal of Digital Imaging (JDI)

Journal of Medical Internet Research (JMIR)

- JMIR Medical Informatics
- JMIR AI

From major journals

- NEJM AI
- JAMA + AI
- BMJ Health & Care Informatics
- Nature: npj Digital Medicine

Biomed Central (BMC,)

- BMC Medical Informatics and Decision Making
- BMC Bioinformatics

More information (cont.), Meetings

AMIA meetings

- Annual Symposium
- Informatics Summit
- Clinical Informatics Conference

Medinfo (biennial)

Other clinical informatics meetings

- HIMSS, national meeting and local chapters
- AMDIS Physician-Computer Connection

Bioinformatics meetings

- Pacific Symposium on Biocomputing (PSB)
- International Society for Computational Biology (ISCB)



More information (cont.), Web sites

US government

- [HHS ASTP](#)
- [Health IT Playbook](#)
- [ONC HIT curriculum](#)
- [AHRQ Digital Healthcare Research](#)
- [US Health Information Knowledgebase](#)

Other

- [HealthIT Answers](#)
- [Clinfowiki](#)
- [AMA Introduction to AI in Health Care](#)

More information (cont.), email lists, blogs, podcasts, and social media

Email lists

- [HISTalk](#)
- From organizations such as AMIA, HIMSS, AMDIS, etc.

Blogs

- [Digital Health Frontier](#)
- [Healthcare Standards \(Keith Boone\)](#)
- [Health IT Buzz \(ASTP\)](#)
- [Informatics Professor](#)

Podcasts

- [AMIA](#)
 - For Your Informatics (FYInformatics) from Women in AMIA
 - AMIA Clinical Informatics Fellows (ACIF) Go-Live
- Kevin Johnson – [Informatics in the Round](#)

Social media – X/Twitter, LinkedIn, Facebook, BlueSky, etc.



More information (cont.), acronyms

[Health IT Answers](#)

[Shortliffe glossary, which includes acronyms](#)

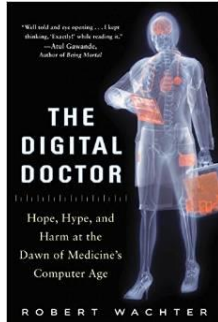
[Wikipedia](#)

Sampling from the popular press

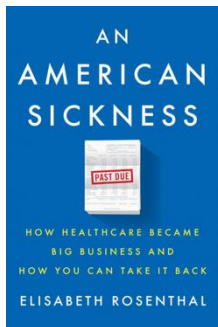


Topol, 2012. *The Creative Destruction of Medicine: How the Digital Revolution Will Create Better Health Care*

Topol, 2015. *The Patient Will See You Now: The Future of Medicine is in Your Hands*

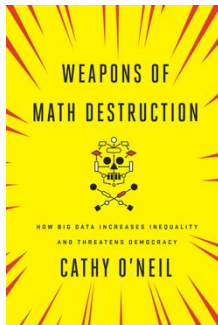


O'Neil, 2016. *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy*



Rosenthal, 2017. *An American Sickness: How Healthcare Became Big Business and How You Can Take It Back*

Steele, 2017. *ProvenCare: How to Deliver Value-Based Healthcare the Geisinger Way*

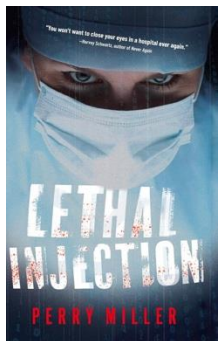


Wachter, 2017. *The Digital Doctor: Hope, Hype, and Harm at the Dawn of Medicine's Computer Age*

Shapiro, 2018. *Hype: A Doctor's Guide to Medical Myths, Exaggerated Claims, and Bad Advice - How to Tell What's Real and What's Not*

Zuboff, 2019. *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power*

Miller, 2019. *Lethal Injection*



Sampling from the popular press (cont).

Robertson, 2020. *B C, Before Computers: On Information Technology from Writing to the Age of Digital Data*

Johnson, 2021. *I'm A Biomedical Informatics Expert Now!*

Shneiderman, 2022. *Human-Centered AI*

Lycette, 2023. *The Algorithm Will See You Now*

Mollick, 2024. *Co-intelligence – Living and Working with AI*

Fox, 2024. *Rebel Health: A Field Guide to the Patient-Led Revolution in Medical Care*

Narayanan, 2024. *AI Snake Oil: What Artificial Intelligence Can Do, What It Can't, and How to Tell the Difference*

Harari, 2024. *Nexus: A Brief History of Information Networks from the Stone Age to AI*

Bender, 2025. *The AI Con: How to Fight Big Tech's Hype and Create the Future We Want*

Gallant, 2025. *The Opposite of Cheating: Teaching for Integrity in the Age of AI*

Education and training in informatics

Inter-disciplinary field

- Many programs with diverse curricula
- Programs come in many flavors: clinical, biomedical, health, bio-, nursing, etc.

Graduate-level training – master's and PhD degrees

- About 80 master's programs at 76 universities in US (Cox, 2021)
- Among 6 “highest-paying” master's degrees (Wells, 2024)

Fellowship programs

- 18 NLM-funded programs for PhD and postdoc students (Greenes, 2022)
- Physicians in clinical informatics – ACGME accreditation (Patel, 2024)

Baccalaureate programs

- Growing number in US; highly variable in scope (McCarthy, 2024)

Individual courses

- Introduction to Biomedical Informatics & Artificial Intelligence (10x10, “ten by ten”) (Hersh, 2022; Hersh, 2024)

Academic programs

[List of US informatics programs on AMIA Web site](#)

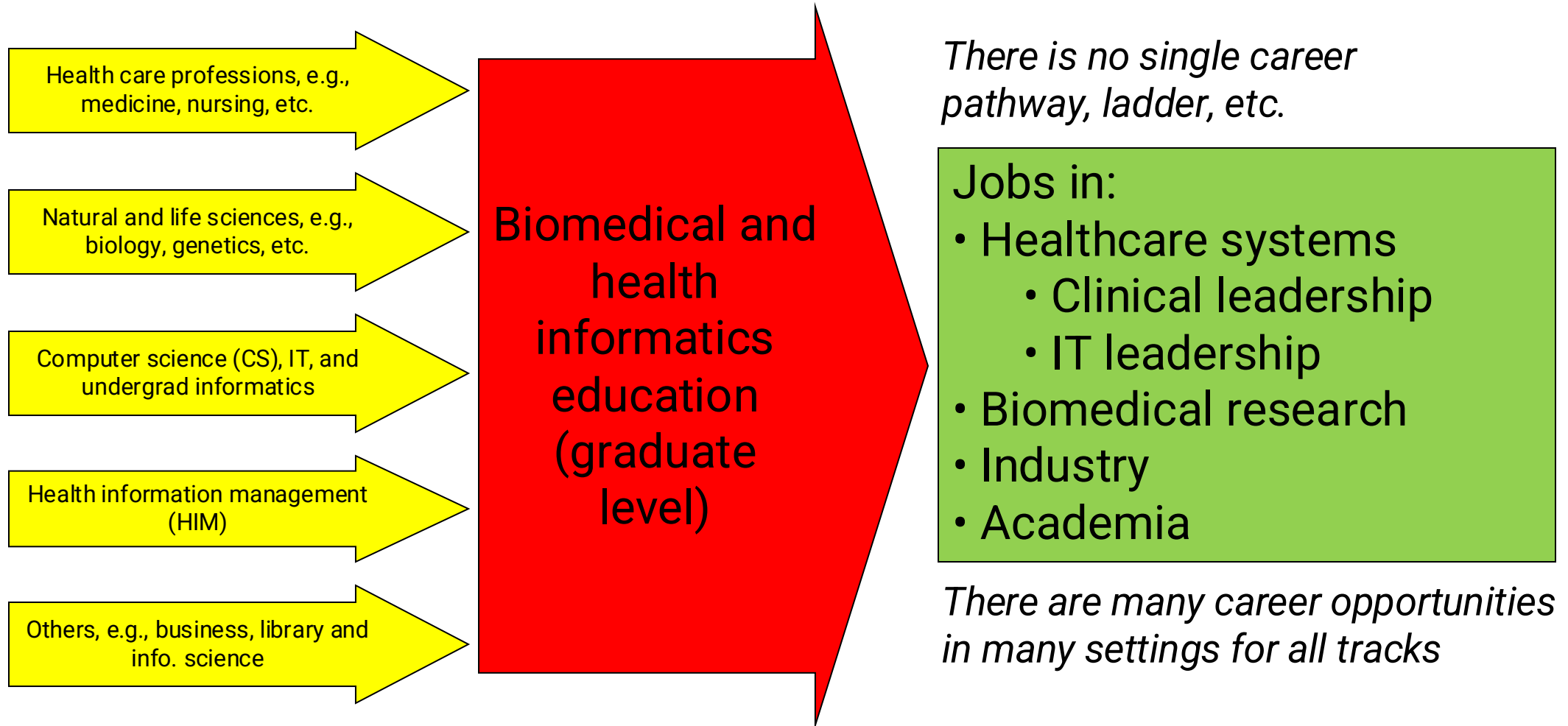
Aspects of 85-95 master's degree programs in US (Cox, 2021; Patel, 2022)

[NLM-funded programs](#) (Greenes, 2022)

Clinical informatics fellowship programs (Patel, 2024)



Career pathways have diverse inputs and outputs (Hersh, 2009)



Cardinal rule (formula) of informatics education

$$\begin{array}{c} \text{What you do} \\ \text{when you} \\ \text{get out} \end{array} = f \left(\begin{array}{c} \text{What you did} \\ \text{before you} \\ \text{started} \\ + \\ \text{What you} \\ \text{learned in the} \\ \text{program} \end{array} \right)$$

My legacy in informatics education – additional publications

Early description of “full-spectrum” OHSU program (Hersh, 2007)

Competencies and curricula across spectrum of learners (Hersh, 2022)

Quarter-century of teaching online (Hersh, 2024)

Generative AI implications for education (Hersh, 2025)

Culminating in election to National Academy of Medicine (NAM) (Robinson, 2025)

Conclusions

These are exciting times for BMHI and AI, with many opportunities in a wide variety of settings

Attention must also be paid to professional practice and education of informaticians

But main focus of field must be how to optimally use information and technology properly to advance human health