Creating A Broader Pathway to Resilience - Health Information Management (HIM) to Health Informatics (HI)

I.   Pathway of HIM and Health Informatics.

Moving today's healthcare technology forward with indisputable great speed is evidenced by technological advances such as artificial intelligence and machine learning. Examples of required skill sets of the future were published in 2010 by Robin Crow. He was excellent at predicting the future with content such as "Change is a Choice" and "The Alarm is Sounding…and We Keep Hitting the Snooze Button." [6] But, it's not too late. Now is the time to upskill, join in the data revolution, and thrive.

Those familiar with the Health Information Management profession around 2010 may know the names of the original authors and instructors by their data evangelism in HIM, such as Dr. Merida Johns, Dr. Mervat Abdelhak, Margret Amatyakul, and others. Their textbooks outlined a new frontier, seemingly intangible data in bits and bytes rather than the outline of characters on a traditional page. They were wise to be of the mindset that climbing a mountain requires one to see the mountain. Conceptualizing electronic data seemed to be a vision until acquiring new ways of thinking including the skill set of understanding relational databases. The digital environment has radically transformed how medical information is collected, stored, used, and retained.

Digitization of data, largely driven by political and economic drivers [13], has landed healthcare across the world to this point in time. Informatics tasks in Health Information Management are connected to healthcare activities of quality improvement, data integrity, corporate compliance, revenue cycle management, and patient privacy. Maximization of the data environment involves creating wisdom within organizations through efficiency and knowledge. Operationally in the activities described, applied clinical informatics in the form of data drives the foundation. And, big data promises to improve the quality of healthcare delivery through the use of data analytics. [11]

How has HIM education evolved?

- 2011 American Health Information Management Association (AHIMA) HIM Curriculum – introducing data management

- 2014 AHIMA HIM Curriculum – broad focus on data structure and analytics

- 2018 AHIMA HIM Curriculum – revised to group data content and data analytics with more specific requirements.

- Curriculum learning taxonomy is Bloom's taxonomy, which is also used in nursing curriculum.

What is the history of Health Informatics curriculum?

- Health Informatics curriculum was last defined in 2017 by American Medical Informatics Association (AMIA).

- o First school for medical/Health Informatics was founded in 1968, compared to decades earlier for HIM.

- o On the CAHIIM Health Informatics program directory, the first Health Informatics master's program was accredited in 2010.

- o Curriculum learning taxonomy is based on Miller's taxonomy, which is used for medical clinical disciplines.

Gibson, Dixon, and Abrams, 2015, define HIM and Health Informatics:

- o "HIM: Current research and practice in HIM address the nature, structure, and translation of data into usable forms of information for advancing the health and health care of both individuals and populations.
- o Health Informatics: Health Informatics studies and applies theories, methods, and processes for the generation, storage, retrieval, use, management, and sharing of health data and information; and Health Informatics builds on and contributes not only to the root informatics discipline but the related disciplines of computer and information sciences."

The subject of increased informatics, data analytics, and information governance competencies in the HIM curriculum transformation is well described in a report published in the Journal of American Health Information Medical Association, *Teaching the 'New' HIM: Educators Integrating Informatics, Data Analytics, and Information Governance Into HIM Programs*. In the article, Kyle McElroy, MS-HSA, RHIA states, "….knowledge in data analytics and informatics is increasingly important." [5]

Before the article by Butler in the AHIMA Journal, Gibson, Dixon, and Abrams, 2015, provided a Venn diagram defining the intersection of Health Informatics and Health Information Management, with a clear overlap of all of the disciplines.
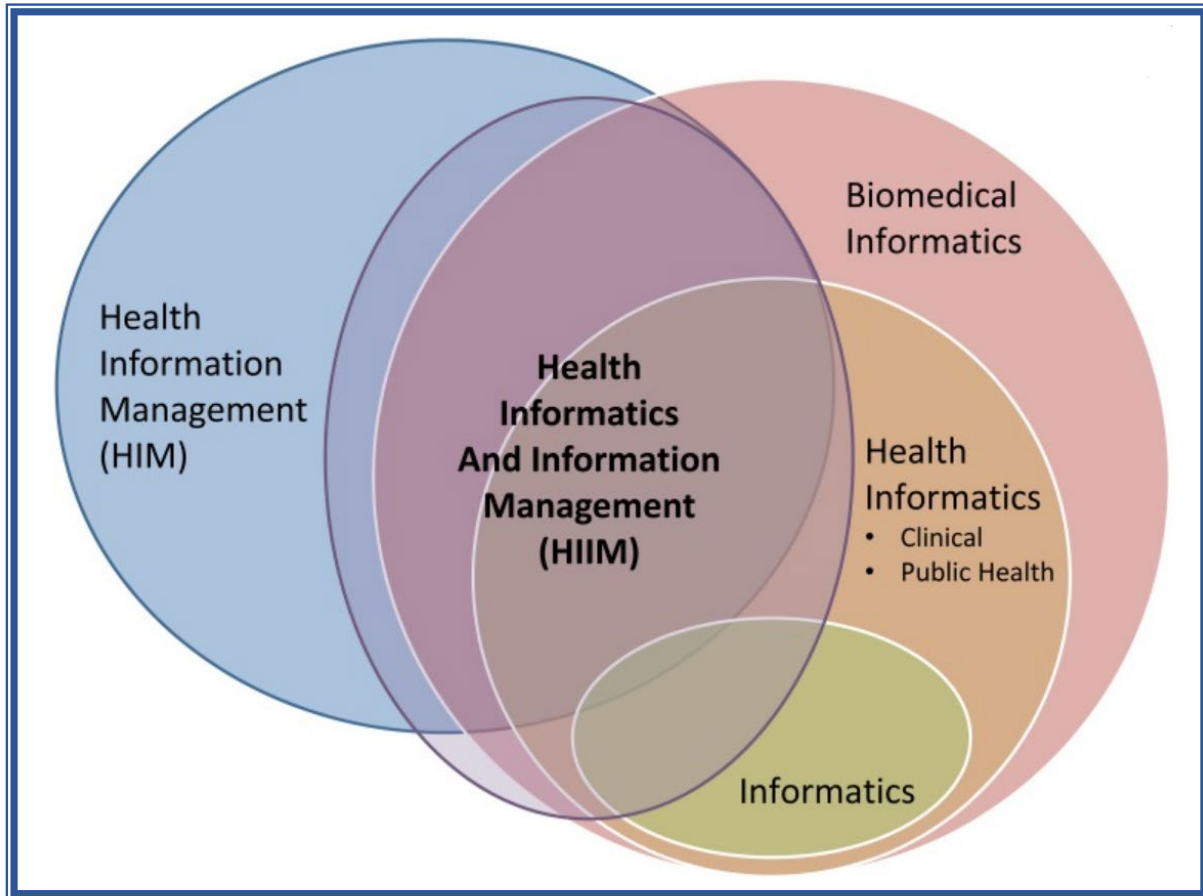
Fig. 1 [8]

Even earlier, the skill set of clinical informatics and its relationship to the HIM workforce was studied by Dr. Brooke Palkie. The parallels in the competencies of both sciences, HIM and Health Informatics, brought a conclusion: "HIM professionals already possess foundational skills for health informatics, additional growth in Health Information Technology *[sic]* competencies and deep analytical skills will be required." [13]

II.   Pathway of projections based on professional industry competencies and workforce.

To follow the discussion of curriculum evolution, for skill sets shown in the study by Gibson, Dixon, and Abrams, it is noted they provided a table snapshot of curriculum mappings of required competencies between HIM and Health Informatics.

They define a similarity, "HIM and HI are increasingly supporting the acquisition, management, and use of health information to improve outcomes for individuals, populations, and organizations in similar ways." [8]

- In this evolution of study of the knowledge domains, all covered in the research are now present in HIM competencies after the 2018 HIM curriculum revision.
- Health Informatics domains now cover, "Educate the public and consumers on privacy, security, access to and maintenance of personal health information, including laws and policies governing data use," [8] as of the AMIA 2017 curriculum.
- Not seen within Health Informatics domains, but present in HIM: Performance metrics, including benchmarking, productivity standards, report cards.

This seems to indicate competencies covered in the study are more operationally focused in HIM than in Health Informatics. In the AMIA 2017 Health Informatics curriculum, there is a competency focus on human/computer/social interaction.

In 2014 at the height of electronic health record implementations, AHIMA published an article to delineate terminologies and definitions associated with Health Informatics. Although the published article has been retired, they make a profound statement, "The need for health informatics has never been greater." [1]

This statement has been justified in other publications, both from that time period and today. A systematic review of literature from 2017 studying the challenges of the use of big data in healthcare revealed 11% of the publications in the study revealed a lack of skill in data analysts as a challenge. [10]

AHIMA's call for the need for Health Informatics is also supported in reporting future industry workforce trends by the World Economic Forum [14] and specifically for future healthcare workforce trends by Deloitte [7].

World Economic Forum	Deloitte
Analytical thinking and innovation	Promoting interoperability, privacy/security
Active learning and learning strategies	Derive insights and define algorithms that power health
Technology use, monitoring, and control	Conduct research, develop analytical tools
Technology design and programming	Generate data insights that go far beyond human capabilities
Resilience, stress tolerance, and flexibility	Infrastructure to serve highly engaged individuals
Reasoning, problem-solving, and ideation	Site-less health infrastructure

III.   Pathway of awareness and preparation for emerging skill sets.

In a recent webinar titled, "Health Informatics Professional Education and Industry Opportunities" with AMIA, there is a quote by one of the contributors, "When I take a look at where the future of healthcare is going, I see it tied directly to health informatics, because that's the way we're going to be able to leverage the knowledge we already have, and turn that into things that that practitioners can use, not

necessarily to absolutely diagnose and treat people, but to get within eighty to ninety percent of a correct diagnosis treatment regimen before they even jumped into seeing the patient and doing the full work up." [2]

How are we getting so close to the George Jetson-ization of the healthcare environment?

Technology advances such as artificial intelligence and machine learning are transforming care. Two avenues in which humans are critical are in the primary programming and then the optimization and management of the technology interactions. These interactions are described by a Dove Press Journal, Medical Devices: Evidence and Research: "As machine learning systems begin to cross-examine an array of databases, we must ensure that clinicians retain autonomy over the diagnostic process and understand the algorithmic processes generating diagnoses." [4] Enter the informatician.

The healthcare consumer will also be interacting with these technologies. A recent call from AMIA for papers was for the topic, "Visualization of Health Data for Lay Audiences" [3]

These advances open a new world of employment possibilities for individuals who have upskilled.

IV.   Pathway of opportunities for positioning during change.

In their study, Assessing the Prevalence of AHIMA-Identified Health Informatics and Information Management Careers and Related Skills: A Cross-Sectional Study, the core of the study is based upon how the AHIMA career map is divided into four broad categories of HIM jobs: Coding and revenue cycle, information governance, informatics, and data analytics [12]. An analysis and evaluation were done for current job opportunities in each category. The resulting job titles were associated with the scaling of salary. The workforce skills associated with each job category can be used as a barometer for locating available open-source and formal education skill resources.

Job titles associated with entries on Indeed that include these technology-based skill sets:

Technology upskilling is more available than ever before. Adult education-focused colleges, such as Charter Oak State College, offer a one-stop shop with certificates and badging that begin with one or two steps and combine steps to allow the learner to direct a personalized pathway to education, career-building, and financial success.

V.   Pathway of action.

An abundance of evidence of the connection between the skill sets of HIM and Health Informatics is present in the articles shared within this document. A bridge of the workforce skill from AHIMA to AMIA should exist beyond the pages of documents. It must be melded and cultivated. Without this synergy, AMIA provides a barrier to an opportunity for its own association. Within the membership of AHIMA is a primed Health Informatics workforce.

In closing the discussion of action, an important message for the workforce: In the flurry of discussions on social media about the release of ChatGPT open-source artificial intelligence, a posting to portend the future stated, "Artificial Intelligence *[sic]* won't replace jobs People using artificial intelligence *[sic]* will replace people not using artificial intelligence *[sic]*." [9] On which side of this revolution will we find ourselves?

References

1. AHIMA Work Group. "Defining the Basics of Health Informatics for HIM Professionals - Retired" Journal of AHIMA 85, no.9 (September 2014): 60-66.
2. AMIA. Health Informatics Professional Education and Industry Opportunities. Webinar [unlisted]. (September 2022)

3. AMIA. Focus Issue Call for Papers: Visualization of Health Data for Lay Audiences. (September 2022)   Retrieved from: https://academic.oup.com/jamia/pages/cfp-visualization-health-data?login=false

4. Arora, Anmol. "Conceptualising Artificial Intelligence as a Digital Healthcare Innovation: An Introductory Review." Medical devices (Auckland, N.Z.), (2020) 13, 223–230. https://doi.org/10.2147/MDER.S262590 Retrieved from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7455610/pdf/mder-13-223.pdf

5. Butler, Mary. "Teaching the 'New' HIM: Educators Integrating Informatics, Data Analytics, and Information Governance Into HIM Programs" Journal of AHIMA 88, no.5 (May 2017): 16-19. Retrieved from: https://bok.ahima.org/doc?oid=302102#.Y9L1bXbMIuU

6. Crow, Robin. Evolve or Die: Seven Steps to Rethink the Way You Do Business, Wiley & Sons. (April 6, 2010)

7. Deloitte. The Future of Health, Innovation is Blurring Traditional Healthcare Boundaries. Deloitte Online. (2022) Retrieved from: https://www2.deloitte.com/us/en/pages/life-sciences-and-health-care/articles/future-of-health.html

8. Gibson, Candace J et al. "Convergent evolution of health information management and health informatics: a perspective on the future of information professionals in health care." Applied clinical informatics vol. 6,1 163-84. 18 Mar. 2015, doi:10.4338/ACI-2014-09-RA-0077 Retrieved from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4377568/

9. Honig, Z. [@zolihonig]. "AI won't replace jobs. People using AI will replace people not using AI." Twitter. (December 28, 2022)

10. Kruse, Clemmons Scott. "Challenges and Opportunities of Big Data in Health Care: A Systematic Review." JMIR Med Inform 2016;4(4):e38) doi: 10.2196/medinform.5359 Retrieved from: https://medinform.jmir.org/2016/4/e38/PDF

11. Luo, Jake et al. "Big Data Application in Biomedical Research and Health Care: A Literature Review." Biomedical Informatics Insights 2016:8 1–10 doi: 10.4137/BII.S31559. Retrieved from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4720168/pdf/bii-8-2016-001.pdf

12. Madlack-Brown, Charisse et al. "Assessing the Prevalence of AHIMA-Identified Health Informatics and Information Management Careers and Related Skills: A Cross-Sectional Study." Perspectives In Health Information Management. (Spring 2021) Retrieved from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8120672/

13. Palkie, Brooke. "Perceived Knowledge of Health Informatics Competencies by Health Information Management Professionals". Educational Perspectives in Health Informatics and Information Management. (Winter, December 2013) Retrieved from: https://library.ahima.org/doc?oid=300534#.Y9Lz-nbMIuU

14. Whiting, Kate. "These Are the Top 10 Skills of Tomorrow – And How Long it Takes to Learn Them." World Economic Forum. (October 21, 2020) Retrieved from: https://www.weforum.org/agenda/2020/10/top-10-work-skills-of-tomorrow-how-long-it-takes-to-learn-them/