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Examining Today's HIM Workforce with Recommendations for Elevating the Profession

IFHIMA Whitepaper

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IFHIMA
INTERNATIONAL FEDERATION OF HEALTH INFORMATION MANAGEMENT ASSOCIATIONS

About IFHIMA

The International Federation of Health Information Management Associations (IFHIMA) is a non-governmental organization (NGO) in official relations with the World Health Organization (WHO). The Federation acts as the global voice of the health information management profession, supporting the importance of education and training, high quality health data, and privacy of health information. IFHIMA is committed to the advancement of health information management practices and the development of its members for the purpose of improving health data and health outcomes.

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Introduction

Health information management (HIM) has entered a time of significant change, a "transformation," where attention is increasingly focused on the fact that data and information have never been more important to health, healthcare delivery, and effective management of services and the system. HIM professionals need to prepare for a future that is expected to be vastly altered from today. The purpose of this whitepaper is to examine the status of the HIM profession in various environments, explore the impact of technology, policy, and other changes to the profession, thus informing international HIM workforce development.

HIM is the practice of acquiring, analyzing, and protecting digital and traditional medical information vital to providing quality patient care.[1] HIM professionals often serve as a bridge connecting clinical, operational, and administrative functions within the healthcare system. HIM is recognised as an occupation in the International Standard Classification of Occupations as "3252 Medical Records and Health Information Technicians."[2] However, in countries where there is a formal qualification recognized by employers, with a structured career pathway, a body of knowledge informed by empirical research, and an active peak organization supporting the activities of the discipline, HIM is recognised as a profession. Throughout this whitepaper we reference HIM as a profession. This paper covers the HIM workforce broadly, irrespective of education and job classification.

In this whitepaper, IFHIMA focuses on the HIM profession, while acknowledging there may be overlap with other professions such as health informatics, medical/health librarians, health statisticians, or even specialized information technologists in the healthcare environment.

History of the HIM Profession

The roots of HIM can be traced back to the 1920s, when healthcare providers realized that documenting patient care benefited both providers and patients, enabled increased state legislated vital statistics reporting, and provided a vital source of evidence for emergent medical research areas such as cancer treatments,

Overview of the HIM Profession Today

The health information management (HIM) profession plays an important role in supporting functions essential to healthcare and healthcare delivery, and has done so for almost a century. During this time, the patient record has moved from maintenance in paper form to the widespread use of electronic health records (EHRs). This has resulted in the generation and use of enormous amounts of data contributing to a transformation of healthcare systems worldwide. However, the original goals of providing safe, secure, high-quality data and information for planning and decision making, remains consistent for the profession.

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Changes in technology, health service delivery models, and health policy (e.g., funding, outcomes-base, secondary use, etc.) now and into the future, will alter the ways in which health information is generated, managed, governed, and used. Across the globe, differences in the HIM educational environments are generally dependent upon the needs of the healthcare systems or the evolution of the profession in each country. Yet, the structures of professionalization and institutionalization, such as course accreditation programs, are missing in many countries, potentially resulting in varied educational offerings and differences in work readiness in graduates. The HIM workforce will need to meet these challenges to remain relevant and future proofed. This starts with exploring the HIM competencies, globally and nationally, as discussed in this whitepaper.

ulcer care, and radiography.[3,4] Documentation became the standard and was used throughout the United States (US) as healthcare providers realized they were better able to treat patients with a complete and accurate medical history. Health records were soon recognized as being critical to the safety and quality of the patient experience. In 1928, The American College of Surgeons (ACS) standardized these clinical records by establishing the Association of Record Librarians of North America (ARLNA), now two professional associations that exist today under the names American Health Information Management Association (AHIMA) and the Canadian Health Information Management Association (CHIMA).

Today's HIM industry is still based on the founding goal of the first medical record librarians: to increase and improve the clinical documentation standards so the highest quality data and information are available for patient care.

By 1949, there were four known medical record professional associations, in the US, Canada, Australia, and the United Kingdom. The First International Congress on Medical Records was held in London in 1952.[5] Although additional congresses were scheduled and held, it was not until the Fifth International Congress on Medical Records in 1968 in Sweden, that an international organization was formed.[4] Originally known as the International Federation of Medical Record Organizations (IFMRO), the name was changed several times, finally becoming the International Federation of Health Information Management Associations (IFHIMA) in 2010.[4]

Paper medical records were steadily maintained from the 1920s onward, but during the 1960s-1970s, advancing technology introduced the beginnings of a new system with the development of computers. American universities began to explore the marriage of computers and medical records, and often partnered with large health facilities to develop software to become the early electronic health records (EHR). The '80s produced huge leaps in healthcare software development, and with the advent of computerized registration, the introduction of the master patient index (MPI) became widely used across all departments of a healthcare organization.[6] Software developers continued to expand and refine their EHRs, with legislation and regulations continuing to change across nations to keep up with the technological advances.

Today's HIM industry is still based on the founding goal of the first medical record librarians: to increase and improve the clinical documentation standards so the highest quality data and information are available for patient care. The industry has come a long way from keeping basic paper copies of health records, but resource-limited and remote areas may use manual records, with many systems using both paper and digital. More changes are expected in the future for the HIM industry as we collectively work toward ensuring all stakeholders (providers, consumers, policy makers, researchers, patients, etc.) have the best data and information available to make timely, informed decisions.

Existing Workforce Literature

Most of the workforce literature has emerged from the United States, Canada, and Australia, and this is reflected in the activities by professional associations in these countries. There have been several drivers for literature about the workforce, including technology and funding, which has resulted in exponential growth in the sources and amount of data and information.

In the United States, there have been several initiatives to prepare the American Health Information Management Association (AHIMA) and its members for coming changes in the world and healthcare industry. In 2007, AHIMA announced their "Vision 2016," recognizing "many workers are now working remotely or off-shore, being retrained, or seeing jobs eliminated as new methods and systems emerge."[7] The bottom line for the group working on the AHIMA document was the increasing recognition of the need for trained professionals to assist organizations in the effective management of health information systems, as well as the data and information contained in those systems.[7,8] Researchers in the US reviewed looming changes in the HIM workforce[9],

sometimes taking a broader view, estimating the requirements for both the workforce and expected demand.[7] In 2014, AHIMA conducted a survey of HIM professionals and related stakeholders to forecast the future needs[10], especially in regards to the transformation of mandatory workforce competencies.[11]

There is not a comprehensive global approach to the collection of data related to the profession.

The Canadian Health Information Management Association (CHIMA) began planning for the future in their country in 2012,[12] for many of the same reasons as the United States. CHIMA developed a new clinical terminology and standards certification, distinctly different from traditional coding functions.[13] In 2014, the Canadian health information-related organizations commissioned a report examining the employment outlook for the next 5 years.[14,15]

Health Workforce Australia conducted a review of the Australian Health Information Workforce in 2012.[17] The findings were consistent with the studies from the US and Canada, which found that the field is not well-known or understood, nor are there enough persons trained in the required competencies and skills.[16] However, since that report, Australia and New Zealand have taken the lead with regards to the large-scale collection of data regarding the health information workforce, by launching a national census of the health information workforce in those countries.[18] They have used the results from this extensive survey to define the current structure and content of the health information discipline, in order to better prepare that workforce for the future. The publication of a HIM2025 report, detailing changes needed to future proof the HIM profession in Australia,[19] prompted a review of the Health Information Management Association of Australia (HIMAA) core HIM graduate competency standards, last updated in 2012, to add new domains such as clinical documentation improvement and data analytics.[20]

There are other initiatives and analyses attempting to determine the impact of the essential and ubiquitous use of information technology on the HIM and health informatics (HI) workforce competencies needed for the future. The Health Information Management and Systems Society (HIMSS) is sponsoring the development of a framework of global informatics core competencies for health professionals, known as the Technology Informatics Guiding Education Reform (TIGER) Initiative.[21] While the TIGER Initiative is focused on the entire health workforce, it evolves out of the informatics field and includes detailed competencies for the health information workforce.[19] In 2019, a group of researchers reviewed current workforce trends by downloading job posting data from an international site (Indeed.com) and analysing the results.[22] The overall goal of this analysis was to inform health informatics and information management educators regarding current and potential future skill requirements.[22] In 2019, the International Medical Informatics Association (IMIA) Yearbook of Medical Informatics, Stanfill and Marc, examined the potential effect of artificial intelligence on HIM, by conducting a literature review and interviewing key informants.[23] They concluded that essential operational HIM functions such as automated coding, data management and governance, privacy and confidentiality, as well as training and education, are likely to be impacted by the emergence of artificial intelligence.[23] They also stated that HIM professionals "are in a unique position to take on emerging roles with their depth of knowledge on the sources and origins of healthcare data."[23] Butler-Henderson[18] suggests the profession needs to move from information operationalists to information strategists.

Despite these efforts, there is not a comprehensive global approach to the collection of data related to the profession. This represents a significant opportunity for international level research into the HIM workforce, especially in the areas of staffing ratios, job roles, skill gaps, leadership qualifications, the potential for growth in the field, and more.

Current Educational Trends

As stated previously, the HIM profession is undergoing substantial transformation due to the widespread use of EHRs, the use of telemedicine, and increased use of the devices connected to the internet, such as Bluetooth blood pressure cuffs, fitness trackers, and many more technological innovations. The growing digital health environment and the rapidity with which it is being adopted, are resulting in changes needed in the HIM educational content to ensure an adequately trained workforce is available to support operations.

By incorporating the newly evolving skills and knowledge domains in the curriculum, the skills gap in the workforce can be closed

By incorporating the newly evolving skills and knowledge domains in the curriculum, the skills gap in the workforce can be closed. While the studies reviewed above are important to ensure a competent workforce, it is also important to engage with employers, as their needs will change between countries and regions.

Knowledge domains and expected skill sets in an HIM curriculum

The knowledge domains and digital HIM skill sets, sometimes called e-HIM, proposed below, are not all-inclusive. Depending upon the level of detail desired, the curriculum can either be expanded into additional domains and skills or it can be condensed. For example, the AHIMA 2018 Health Information Management Curricula Competencies consist of six domains deemed to be important for all HIM students and practitioners regardless of academic degree.[24] The Global Academic Curricular Competencies for Health Information Professionals, developed by AHIMA in 2015, through a global workgroup co-chaired by IFHIMA, was broken into three modules (HIM, Health Informatics (HI), and Health Information and Communication Technologies, at entry, intermediate, and advanced levels.[25] The international HIMSS TIGER Competencies consist of literally hundreds of competencies.[21]

The team developing this whitepaper converged on the following list of HIM Curriculum - Knowledge Domains and newly evolving digital HIM skill sets:

- Healthcare systems and services, including health insurance, reimbursement, and healthcare funding methodologies
- Health data management, structure, content, and standards, including clinical classification systems, standard terminologies, and methodologies
- Clinical documentation quality and standards
- Healthcare analytics, statistics, decision support, epidemiology, and clinical research
- Clinical quality management and performance improvement
- Legal, regulatory, ethical, privacy and confidentiality issues of healthcare systems, including data and information governance
- Organizational development and resource management, including project and operations management
- Information systems and technologies

Competencies and skills in HIM, as well as many health professions, will vary to meet country and region requirements.

Accreditation and certification

Accreditation is a process by which educational institutions and programs demonstrate that they meet a specified standard for educational quality. The organization of both undergraduate and graduate studies varies greatly between countries around the world. In some, it is the educational authority itself that grants the university accreditation to carry out HIM studies, and in others, there are government agencies or even other types of professional organizations with authorization delegated by the educational authority.[19]

Certification is generally used to indicate a person has achieved a defined level of proficiency by the awarding organization, and it demonstrates a person has the specific skills employers seek, dedication to excellence,

and the capacity to perform at the required levels. The certifying organization may be a professional association or educational institution, and usually the certification has international value.[25] Appendix B is a partial list of HIM credentials and certifications available from IFHIMA member nations.

Government Involvement

There is a well-established relationship between government and healthcare. In most nations, government funds some or all of healthcare delivery and therefore has a vested interest in monitoring and improving outcomes. With the digitization of health information, governments have a stake in protecting the privacy of patient data, as explored in the whitepaper: Privacy of Health Information, an IFHIMA Global Perspective. On a global scale, as we are witnessing with the pandemic, government is playing an expanded role in public health. Therefore, all health professions, including HIM, are impacted by government.

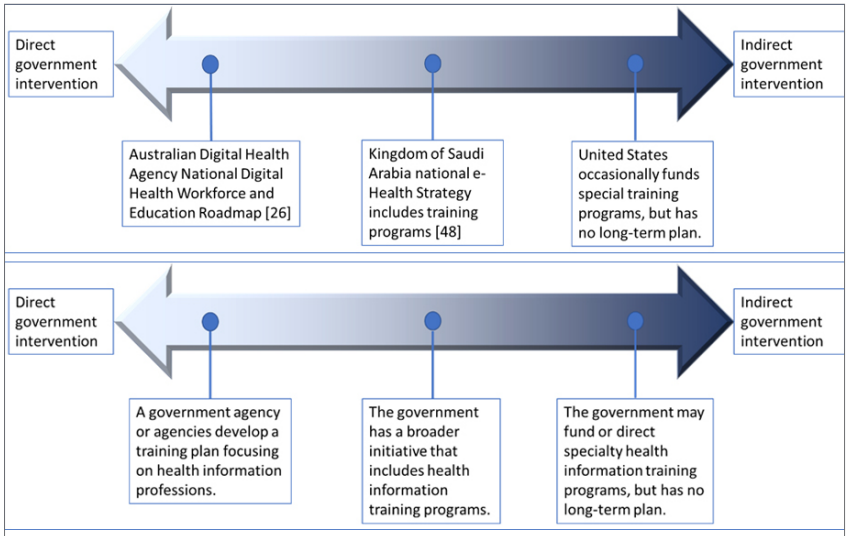


Figure 1. Examples of Government Involvement in the HIM Workforce

Within the broader policy context, any government involvement, such as any major structural reform or investment decision within information technology, health, or related sectors, will influence the HIM profession. Since we live in a data-driven world where results can impact funding, resource allocations, population health monitoring, etc., the need for "digitally capable" HIM professionals will continue to increase. For example, increases in organizational attention and pressure on healthcare activity and patient-outcomes, can impact HIM functions (coding, release of information, data quality) and in turn, standards, for the timely and accurate capture and report of all patient activity. These functions impact care, requiring the uptake of increasingly complex and specialized competencies to meaningfully manage and use data in new ways. [26]

One way in which governments directly intervene in the development of the HIM profession is through policy or governing mechanisms, such as the Australian Digital Health Agency's National Digital Health Workforce and Education Roadmap[26], or Health Education England's Digital Literacy Capability Framework, which are critical drivers of change.[27] However, equally important is how these mechanisms are applied to meet policy objectives, which can considerably influence the extent to which stakeholders respond.

Figure 1 uses several examples to illustrate the continuum of direct government intervention to indirect government intervention. A illustrative review can be found in Appendix C.

Although a less commonly used approach, government intervention through professional regulation is a hard policy and risk-based approach that directly affects the profession.

The perceived benefits of government involvement is consistent with growing comparative health systems evidence showing that governance mechanisms, such as a government developing a strategy for digital health or investing in human capital, are essential determinants for the advancement of policy objectives within the field in both developed and developing contexts[28,29].

While the degree of direct government involvement may vary between countries and regions, the absence of government involvement

does not mean governments will not become more engaged in the future; nor does it preclude HIM professionals from self-organizing and mobilizing efforts to engage or influence policy decision-makers to set new priorities for HIM. There are also other important actors, including those already supporting HIMs, such as through international development or communities of practice, who may assist with advocacy, funding and sharing knowledge and resources to strengthen the HIM profession.

Global View of the HIM Professionals' Role in Healthcare

Healthcare funding and delivery of healthcare varies significantly between countries; however, health information management is essential to the functioning of high-quality healthcare systems.

In low-resource practice settings or remote geographical locations, HIM professionals may not be found in every care setting. In these instances, it is common for nurses or other allied health workers to carry out basic medical record and data collection duties. In many of these settings and countries, the medical record workforce is clerical in nature, where filing and retrieving medical records, as well as limited release of information functions, are performed.[30] Some developing countries have HIM professionals spearheading the creation of HIM professional associations, along with the establishment of HIM educational programs. The IFHIMA 2020-2025 Strategic Plan prioritizes these efforts.

In some countries the HIM leader may in fact be a physician. This physician leadership may be illustrative of how the health system has evolved, a lack of formal HIM education programs in some countries, who performs the clinical coding, and the expansiveness of the HIM leadership role.

In countries with more extensive resources, the role of the HIM professional includes traditional functions, such as maintaining accurate health data, clinical coding, and classification tasks. Additionally, they may also be responsible for ensuring the privacy and security of patient data and information governance.

HIM professionals may play an even broader role with management and supervisory responsibilities, such as regional/corporate HIM director, or governmental leader for coding and other purposes. In these leadership roles, the HIM professionals set a strategic vision, supervise staff and budgets, establish policies and procedures, and communicate internally and externally with other leaders to ensure required standards are utilized.

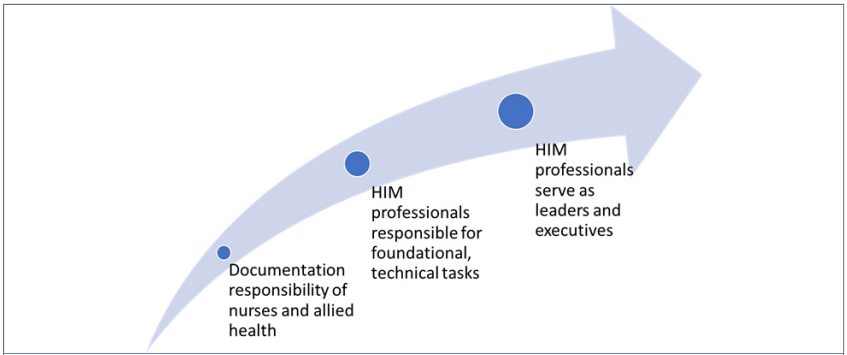


Figure 2. HIM Role Differences

Figure 2 is a visualization of the continuum of HIM role differences. Select country-level details are described in Appendix D.

Technology and Policy Trends

The existence of the HIM profession over more than 90 years is testament to its value to quality healthcare. However, the world we live in today is one of fast-moving change requiring the HIM profession to evolve to stay relevant and fulfil its vital role in the healthcare delivery ecosystem. The changes impacting HIM include, but are not limited to:

- Cloud computing,
- The increased use of application programming interfaces (APIs) and the concomitant development of standards such as Fast Healthcare Interoperability Resources (FHIR) and blockchain,

- Widespread use of voice recognition and natural language processing,
- Telemedicine/remote monitoring, the Internet of Medical Things (IoMT),
- The increasing usage of machine learning (ML) and augmented intelligence (AI), and
- Constant changes in the healthcare delivery system in all aspects of work.

As these trends become commonplace, the traditional HIM functions of coding, documentation review and improvement, abstracting, and manual release of information, may be augmented or replaced by technology. At the same time, the data that HIM professionals must handle will expand well beyond the standard healthcare encounter.

> However, the world we live in today is one of fast-moving change requiring the HIM profession to evolve to stay relevant and fulfil its vital role in the healthcare delivery ecosystem

This section explores several technology and policy trends to anticipate the future environment for the HIM workforce.

First and foremost, what's needed is a growing recognition that data and information, along with its effective use, is one of the most valuable assets in healthcare. It is literally impossible to accomplish anything of value in healthcare without using or exchanging health data and information. This requires healthcare organizations to develop a data asset strategy. As we enter the time of machine learning and artificial intelligence, driven by the use of data, success will depend upon the efficient and effective use of all of the data impacting human health.[31] On the policy side, we see more countries endeavouring to exert control over the privacy and security of information. For example, the General Data Protection Regulation (GDPR) regulation from the European Union[32] has set an international standard for privacy pertinent to all HIM professionals working in privacy. (GDPR is covered in the IFHIMA data privacy whitepaper mentioned above.) HIM professionals must stay abreast of these technologies and embrace the value they will bring to health information practices.

Health information managers across the globe have been intimately involved in the development and use of the International Classification of Diseases (ICD) which is used globally for the collection and collation of morbidity and mortality statistics since the establishment of the World Health Organization Family of International Classifications (WHO-FIC) Network in 1970.[33] With the 11th revision, the ICD has gone digital via the WHO ICD-11 digital platform.[34] Tools included on the platform include an ICD-11 browser, automated account creation to provide a method for making comments or proposals, participating in field testing, and contributing to language translations. In addition, there is an application programming interface (API) to support the integration of ICD-11 into EHRs and other digital tools. From a policy standpoint, it is vital that HIM professionals take part in the implementation discussions in their countries to ensure accurate and effective use of ICD-11, as this may be a driver for health reimbursement and funding changes, as discussed in the recent IFHIMA whitepaper: ICD-11 Adoption: Your Journey Starts Here![35]

This use of an API for the ICD-11 highlights another trend that will have an impact on the HIM profession: the development and integration of technology and data standards such as Fast Healthcare Interoperability Resources (FHIR) and blockchain into healthcare. The FHIR standard was promulgated by Health Level-Seven International Index.[36] It is the currently accepted international standard for healthcare data exchange. Many EHR vendors now include FHIR-friendly capability in their EHR products. For the HIM professional who has historically managed a self-contained record generated by healthcare providers during the delivery of healthcare, this means the amount and diversity of data existing in the EHR is and will continue to grow. This joins with the emergence of the Internet of Medical Things. IoMT is used to describe all of the different medical devices that have the capability of interacting with the internet. Examples of these include tracking apps for symptoms, diet, and physical activity; Bluetooth-enabled scales, blood pressure cuffs, inhalers, and glucose monitoring devices; and ingestible sensors, among others. HIM professionals will need to learn how to manage app and patient-generated data, turning it into information that can be easily understood by providers, patients, and their families. Many governments are choosing

to mandate the use of FHIR in EHRs or for other purposes, another example of the confluence of emerging technology and policy essential to HIM operations.

Telemedicine and remote monitoring are enhanced with the implementation of new and improved data standards. The COVID-19 pandemic that continues to plague the world, has done much to accelerate the move to the use of telemedicine and remote monitoring. The need to minimize in-person contact saw ambulatory care delivery move to the telemedicine space at an exponential rate. "In March of 2020, the Cleveland Clinic was on track to log more than 60,000 telemedicine visits, according to officials there. Before March, that health system - which has hospitals in Ohio and Florida - averaged about 3,400 virtual visits a month."[37]

HIM professionals will need to learn how to manage app and patient-generated data

Before COVID-19, Australia reported 0.1% of federally funded healthcare provided virtually prior to COVID, with extensive efforts currently in process to support the delivery of virtual care.[37] According to the Medicare Benefits Schedule (MBS) activity in Australia, as reported in Centre for Online Health - University of Queensland, the total number of telehealth consultations since COVID-19 (March 20 – June 21) was 62.2 million.[38,39]

Blockchain has the potential to revolutionize HIM functions

A significant challenge facing HIM professionals during and after this shift to virtual visits is a complete understanding of what the documentation requirements are, along with where and how the visits are recorded. Many professionals and countries are now advocating making these changes permanent. An understanding of how existing policies and regulations need to be altered to efficiently and effectively support emergent changes is imperative.

Another evolving standard with the potential to impact HIM professionals is blockchain. As defined by IBM, blockchain is "a shared, immutable ledger that facilitates the process of recording transactions and tracking assets in a business network. An asset can be tangible (a house, a car, cash, land) or intangible (intellectual property, patents, copyrights, branding)."[40] A systematic review of the blockchain research in healthcare revealed the following uses relevant to HIM: data sharing (access and disclosure), access control (who has which type of privileges to see/edit/copy data and information), EHRs and EMRs (access and disclosure), and management of an audit trail (compliance and security).[41] Although still in the early stages, blockchain has the potential to revolutionize HIM functions such as release of information, access control, and compliance.

HIM has already seen a slice of the future in the adoption of voice recognition (VR). Voice recognition is one small part of machine learning and natural language processing (NLP). The use of VR has seen those professionals known as transcriptionists largely disappear from the 21st century HIM workforce. While recognizing the human voice and producing accurate text from a voice is one part of NLP, the ability to interpret and manipulate human language is also important. As much as 80% of healthcare data may be unstructured, in the form of text, images, and signals.[42] There are many examples in the literature of NLP being used to mine clinical notes for disease detection, disease prediction, quality measurement, health outcomes research, and more. Using NLP to identify and interpret the nuance and details to be found in the unstructured text and images can replace the traditional HIM function of data abstraction.

Of course, machine learning in healthcare goes beyond NLP to use data that is structured for a wide variety of uses in healthcare. These uses range from medical diagnosis and prediction to drug discovery to behavioural modification to clinical decision support to automated image recognition. Machine learning requires a level of analysis beyond standard descriptive and inferential analyses. The algorithms generated by machine learning are likely to result in more automated processing for traditional HIM functions. For example, computer-assisted coding is already in use, as is ML-supported

clinical documentation improvement. The tools developed to perform these functions may not currently be accurate enough to be entirely automated. However, if coding should become fully automated, the HIM coding role may switch to clinical documentation auditing and validating, analysing, managing privacy. Policies for the use of ML and AI in healthcare are only now being proposed and discussed. HIM professionals will need to be educated and prepared to take part in these discussions, as well as the implementation projects.

...there are many current and emerging trends that will impact the HIM profession now and in the future. Of course, these trends do not impact all countries at the same time and in the same way, due to a wide variety of reasons.

Added to the technological changes, HIM practice can expect to be impacted by significant changes in the health sector including 'self-delivered' healthcare, a continued migration away from inpatient acute care to the ambulatory setting and/or the "hospital at home", a sustained focus on preventative healthcare, along with population ageing and its impact on healthcare. These, as well as undiscussed or other emerging healthcare delivery innovations will change which data is collected, where it is collected, how it is stored, and what is required to use the data effectively.

To summarize, there are many current and emerging trends that will impact the HIM profession now and in the future. Of course, these trends do not impact all countries at the same time and in the same way, due to a wide variety of reasons.

Conclusion

The vision of IFHIMA is a healthy world enabled by quality health information. Its mission is to represent and advance the global health information management (HIM) profession. As healthcare continues to transform, the role of HIM professionals should be elevated. Data and information, managed by HIM professionals, is integral to the delivery of high-quality care, and the importance of data and information to healthcare cannot be overemphasized.

The thorough review of the history of the profession, the different educational offerings, and current and emerging technologies influencing the profession, is distilled in the six areas for discussion highlighted below:

[1] The HIM profession differs from country to country. This is largely due to the significant differences found in each country's healthcare delivery system design and the various educational systems. Although most industrialized countries have some type of nationalized or universal healthcare system, they vary from totally government-provided healthcare, to those that are largely based on some type of third-party insurance system.[43] These differences impact how the digital health systems are implemented, clinicians document, the technology is utilized, as well as how important tasks, such as clinical coding, are accomplished. Similarly, each country controls the educational system within its borders. For example, what is known as a diploma in Canada, is termed an associate degree in the United States, and is a technical degree in Australia. Baccalaureate or bachelor's degrees seem to be consistent, but, again, each country establishes their own requirements so there can be significant differences. All of this culminates in the HIM profession in each country evolving to educate or train the practitioners needed by the relevant stakeholders.

[2] Evolving challenges for managing health-related data continue. Data is flowing into health organizations in increasing volume and at ever-increasing rates, making effective management difficult. Challenges for managing health-related data and information include the explosion of sources of data including patient-generated data such as Bluetooth-enabled personal devices and environmental data, among others. Consumers are becoming more aware of the value of their data and governments are responding with more stringent data protection regulations. Organizations are being compelled to comply with multiple standards from different organizations and from their governments. For example, the European Union caught the attention of the entire world with the passage of the GDPR. This law mandates compliance to its data privacy regulation for citizens of the EU living in the EU,

and wherever they may reside outside of the EU. American National Standards Institute (ANSI) and International Standards Organization (ISO) also have privacy standards, further illustrating the complexity of how organizations address privacy and security.

[3] Technological advances concerning the use of data are accelerating. Many healthcare organizations are establishing data science units. The goal of these units is to conduct advanced data analytics including creating decision-making dashboards, creating predictive algorithms, and otherwise taking advantage of machine learning. One challenge includes the overall quality, or lack of quality and quantity, of EHR data since algorithms do not perform well with inaccurate or sparse datasets. Another is the lack of expertise required for the effective implementation of the algorithms or other analytics into the workflow. Presenting information at the wrong place in a workflow all but ensures it will be ignored at least or lead to poor patient outcomes at worst. There are significant issues around the ethics and potential biases of advanced analytics. We are also witnessing many of these analytical methods being used to transform the way many mid-level functions are performed. These, as well as other policy and regulatory questions, often result in a time-lag between the development of the technology and the ability of governments to draft and implement laws and regulations.

> Data is flowing into health organizations in increasing volume and at ever-increasing rates, making effective management difficult.

[4] ICD-11 has largely gone digital. HIM has already seen transcription largely eliminated as a function. The World Health Organization (WHO) will not produce ICD-11 books. Instead, they have provided a coding tool and browser, along with Uniform Resource Identifiers (URIs) and an application programming interface (API). These advances, as well as others not yet imagined, will radically change the way essential HIM functions are performed.

In 2022, an ICD-11 training program will be launched in the WHO Academy. An individual who successfully completes this program will be eligible for micro-certification in different areas of ICD-11 and data use. While the goals for this program are diverse, the micro-certification may have a significant impact on training a global workforce for select ICD-11 use cases.

[5] The impact of the HIM workforce on healthcare outcomes should be traced. There is a lack of empirical evidence examining the impact of the HIM workforce on healthcare outcomes. As healthcare has become ever more evidence-based, the impact of the HIM workforce on the quality of healthcare should be documented and substantiated. This could result in greater support from governments, requirements for appropriately trained HIM professionals by regulatory bodies, and more.

[6] HIM professionals should lead on policy, ethical and legal practices. HIM professionals "work in the trenches" and can bring valuable insights to the development of policy and practices. They often serve as a bridge between all members of the interprofessional healthcare team. It is important that HIM professionals be intimately involved in identifying policy issues and advocating for ethical, legal practices now and into the future, in the management of health information at all levels of the health system.

Clearly, HIM professionals are a key resource for the success of the healthcare system. The points highlighted above represent a significant opportunity for international level research into the HIM workforce, especially in the areas of staffing ratios, job roles, skill gaps, leadership qualifications, the potential for growth in the field, and more.

Call to Action

As the global health information management association, IFHIMA believes the HIM profession and workforce is vital to healthcare transformation and the expected benefits as evidenced by the IFHIMA vision and our 40+ year NGO relationship with the WHO.

IFHIMA encourages HIM professionals worldwide, our members, the healthcare community, governments, and other stakeholders to:

1

Embrace technology, as it is the future.

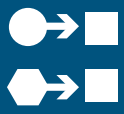
Gain knowledge and skills in data analysis, data visualization, clinical coding, etc., and stay abreast of emerging trends.

2

Incorporate newly evolving skills and knowledge in the HIM curriculum.

Thus, the skills gap in the workforce can be closed.

3



Standardize HIM educational requirements

Ensure a competent workforce is created to meet national or regional goals within countries or within the WHO regions. This includes developing job requirements that clearly articulate the requisite skills, thus creating better compensation and professionalism.

4

Welcome specialization and diversification.

Healthcare transformation and the rapid technology and policy changes require an agile approach to identifying evolving workforce needs. These needs may best be met through specialization and diversification.

5

Assist today's workforce in adapting

Help train for the new digital world that includes new models of care, evolving health delivery environments and the extensive use of data in all aspects of care.

6

Increase the visibility and engagement of HIM professionals as data stewards.

Related to effective and efficient global data exchange, the quality of data, and the successful use of data and information.

7

Become better champions of what HIM professionals do and their unique skill set.

Especially in an evidence-based way. This will require meaningful engagement and research with a wide variety of stakeholders across the industry and society.

It is imperative that HIM professionals adapt and evolve their knowledge, skills and functions to become educated, effective users and policy advisors of the different technologies currently emerging, as well as those not yet envisioned. It is vital to the quality health information needed for a healthy world.

In summary, as health information leaders, HIM professionals need to embrace this era of significant change to assume the position of information strategists at all levels, by aligning HIM education and HIM functions with technology and policy.

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Appendix A

Thought paper list

Arunga, T. (2020). New times and future opportunities for health information managers.

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Appendix B

Partial List of HIM Credentials and Certifications

Country	Credential/Certification	URL
Australia	Certified Health Information Manager, Certified Health Information Practitioner Certified Health Informatician Australasia (CHIA)	https://himaa.org.au/professional-credentialing/ https://www.healthinformaticscertification.com/
Canada	Certified Health Information Management Professional, Certified Terminology Standards Specialist, Certified Classification and Coding Specialist, Certified Clinical Documentation Improvement Specialist	https://www.echima.ca/college/certification/
Nigeria	Health Records Officers Registration Board issue practicing License National Board for Technical Education, issues accreditation to train HIM professionals at HIT,ND and HND levels in Nigerian Monotechnic and Polytechnic institutions National University Commission issues accreditation to academically train HIM students at BSc, MSc and PhD levels in the Universities that offer HIM Courses.	http://www.hrorbn.org.ng/ https://net.nbte.gov.ng/ https://www.nuc.edu.ng/
Republic of Korea	Korean HIM national license is issued and managed by the Ministry of Health and Welfare in accordance with the law Korean Accreditation Board for Health & Medical Information Management Education (KAHIME)	https://www.mohw.go.kr https://www.kahime.or.kr

United Kingdom	Associate, Health Records & Information Management; Professional, Health Records & Information Management; Fellow, Health Records & Information Management	https://www.ihrim.co.uk/about-us/categories-of-membership
United States	Registered Health Information Administrator; Registered Health Information Technician, Certified Coding Specialist, Certified Health Data Analyst, etc.	https://www.ahima.org/certification-careers/certifications-overview/

Appendix C

Descriptions of Regions and Country-specific Government Involvement in Healthcare

The examples listed below are illustrative of select regions and countries and the role government may play in health policy, healthcare funding, and HIM workforce development. It is not a comprehensive review. Contact IFHIMA Member Nations directly for further information.

AFRICA

Like many of the regions around the world, the HIM profession differs dependent on the country in which it is located, as well as the type of healthcare delivery and funding system in a given country. The education of HIM professionals is dependent upon the educational system structure and the various requirements that may exist from a given national government. For existing health record and information management (HRIM) and HIM staff, on-the-job training appears to be the most prominent and effective mode of learning. Other modes include distant learning courses, attendance at workshops, inviting visiting lecturers and consultants, as well as online courses from IFHIMA and WHO. Some countries are very involved in setting the standards and requirements, while others leave the profession to self-organize and determine educational requirements.

AUSTRALIA

The Australian Digital Health Agency, formerly the National E-Health Transition Authority, is a Commonwealth government statutory authority for digital health in Australia. The Agency's priority is to establish the nation's digital health strategy, including the recently launched National Digital Health Workforce and Education Roadmap.[44] The roadmap outlines the three horizons to transform the health workforce to be digitally capable by 2025. The Agency is the custodian of the national personally controlled electronic health record, My Health Record, and has regulatory oversight on digital health standards. All secondary data from the My Health Record will be governed by a Data Governance Board, with the Australian Institute of Health and Welfare (AIHW) as the Data Custodian.[45] The AIHW is also responsible for establishing national health data and information standards under the National Health Information Agreement and is the custodian of most of the national health data assets. It is also currently establishing a National Health Information Strategy. Oversight of Australia's activity-based funding system is regulated by the Independent Hospital Pricing Authority, such as management of the various classification systems, including ICD-10-Australian Modification (AM) and the Australian Coding Standards. Lastly, the Australian Commission of Safety and Quality in Healthcare is the regulator of the national patient safety and quality standards, including the National Safety and Quality Health Service Standards, which establish the standards for health services in Australia.

BARBADOS

To improve health information island-wide, the Government, Ministry of Health, and other key stakeholders (private & public sector) are exploring options to effectively integrate a health information exchange network to ensure the continuum of care. This follows a 2014 Health Metrics Assessment and the WHO e-Health Assessment conducted as the basis for the development of a health information systems strategic plan for the Ministry of Health. This initiative was supported by the second HIV/AIDS World Bank project and Pan American Health Organization (PAHO)/WHO. To date, Barbados' electronic health information system, known as MedData, has been implemented into all nine polyclinics and two satellite clinics.

INDIA

The government of India's 'National Health Policy -2017' envisions a national e-health architecture, health information exchanges and a national health information network by 2025. Since EHRs are the fundamental infrastructure required for an e-health system, which is envisioned in the policy, India's Health Ministry initiates the move by issuing EMR/EHR standards and guidelines.[46]

JAMAICA

The Jamaica National Health Information System Strengthening (NHIS) and e-Health Strategic Plan were developed over the period July 2012 to March 2013. Financial support was received from the World Bank, PAHO/WHO and the Government of Jamaica.

The Information Systems for Health (IS4H) commenced in 2016. Consultations surrounded the design and implementation of a sustainable EHR platform and support for health systems strengthening program. Financial support was received from the Inter-American Development Bank (IDB), European Union and the Government of Jamaica.

KINGDOM OF SAUDI ARABIA

The Kingdom of Saudi Arabia (KSA) has created a national e-Health strategy. As a fundamental requirement to reach their e-health vision, EHR implementation has been encouraged in the government, as well as in private sector healthcare facilities in the Kingdom. Workforce development programs have also been instigated by the authorities through providing training and expanding HIM education with the participation of higher education institutions throughout the Kingdom. Medical coding training programs are being organized to develop a medical coding workforce from qualified hospital staff.

UNITED STATES

The United States (US) government is not directly involved in setting any standards for HIM education. The Department of Labor, Bureau of Labor Statistics publishes data regarding the rate at which different professions are expected to grow or shrink. However, 15 of the 50 states have regulations that require a credentialed HIM professional to lead the health data and information functions in healthcare organizations. The Department of Education is responsible for overseeing accreditation in the US. They have given regional accrediting agencies and commissions the power to accredit universities, i.e., provide universities with the power to grant degrees. The Council for Higher Education Accreditation (CHEA) accredits discipline-specific accreditation organizations.

Appendix D

WHO Regions and Country-specific Descriptions of HIM Roles

This appendix represents examples provided to the Workgroup authors regarding HIM roles, functions, and educational systems. It is not a comprehensive review. Readers can seek further information through local sources including the IFHIMA Member Nations.

AFRICA

Some African countries have HIM professionals in place, but their presence is not manifest on the internet or internationally. Various HIM educational activities and national workshops are organised regularly but are not published for wide circulation. Engaging with IFHIMA could assist in publicizing these efforts.

Agencies such as the World Health Organisation (WHO), Eastern, Central, and South Africa (ECSA), United States Agency for International Development (USAID) and the Centers for Disease Control and Prevention (CDC) among others are actively engaged in establishing and strengthening healthcare systems in Africa. In some cases, access to healthcare does not meet international norms, human resources suffer chronic shortages, services can be inadequately covered, medicines may be unavailable, and health information systems may not be sufficient to meet needs or simply do not exist, thereby resulting in a lower quality of care. Doctors, nurse-led and mobile clinics are slowly replacing traditional medicine, religious organisations, and local healers. Except for doctors and nurses, the existence of other health professions, including HIM functions, remains an option depending on financial availability. HIM functions therefore exist where service providers have the means to extend health services.

Presently, countries are focusing on achieving WHO Sustainable Development Goal 3 of making mainstream medicine available to all by increasing medical and nursing staffing. The content expertise of HIM staff is not recognized because nurses and allied health workers often carry out basic medical records and data collection duties at facility levels. At the same time, a plethora of other professionals including community healthcare workers, healthcare assistants, general clerical staff, disease surveillance officers, public health staff, epidemiologists, statisticians, and other staff are involved in registration, data processing and clinical coding activities. This has led to inconsistencies in the health information collected, as well as its governance. At times, this makes it hard to use for policy formulation to improve health systems.

Countries such as Nigeria, Ghana, Kenya, Tanzania, Uganda, and Mauritius have recently started spearheading HIM activities in the region. Nigeria and Kenya have specific laws governing the medical records profession and have established their national HIM association while HIM personnel from various countries are individually registered as members of IFHIMA in different capacities.

African countries should be establishing and strengthening an HIM workforce to improve data quality for better decision-making. The HIM profession is still in its infancy in many parts of Africa. Now is the time for the IFHIMA African Regional Branch to begin discussions on data protection, governance, confidentiality, and security. Given the vital nature of HIM professionals in supporting the continuum of healthcare delivery and health maintenance, health services may be impacted without the expansion of the HIM profession in Africa.

AMERICAS

Barbados

In Barbados, under the public sector, health information professionals currently have the traditional job titles such as, Chief Medical Records Officer, Medical Records Officers, Medical Records Clerk I, II. The Barbados National Registry has additional health information professional roles. Currently the job descriptions and job titles are under review for revision.

Barbados Community College offers an Associate of Applied Science degree in HIM along with various certification programs such as medical coding. The University of The West Indies (Cave Hill Campus) offers a Bachelor's in Health Sciences with an option for a concentration in Health Informatics.

Canada

The Canadian Health Information Management Association (CHIMA) is the national professional association for the health information industry in Canada. CHIMA represents over 5,000 health information members from coast to coast. It advocates for the health information profession, monitors industry trends, creates networking opportunities, and facilitates continuing education for its members. CHIMA also connects members with employment opportunities at organizations within healthcare and beyond. CHIMA's four domains of practice are privacy, data quality, electronic health information management (HIM), and HIM standards.

The first Health Informatics and Health Information Management Sector Study in Canada confirmed a significant skills and labour shortage and increasing demand for HIM and HI professionals.[47] In 2009 about 32,500 individuals within the profession of HI and HIM were identified, with a projected need for an additional 6,320 to 12,330 workers by 2014 depending upon growth and availability of resources.[47] Within the HIM field, severe skill shortages were seen in the areas of standards, decision support, privacy, and data quality management. A 2014 update of the sector study confirms the low growth scenario with 39,900 workers now identified in the sector and a continuing risk of shortages of HIM professionals in standards, data quality management, records/information management, and information governance.[14,15]

In Canada, health information professionals transform data into valuable information thereby impacting the quality of care that Canadians receive. Their work informs national and local policy decisions made across the country and helps determine funding distribution throughout provinces and territories. Health information professionals ensure that Canadians' health information is accurate and relevant. They are responsible for the collection, protection, and accessibility of health data.[48] HIM professionals work in direct care organizations, institutional care and speciality care organizations as well as educational institutions, healthcare vendors, consulting firms, legal firms, research organizations, provincial and federal government organizations.

Jamaica

Jamaica Health Information Management Association (JaHIMA) professionals receive a high level of training with accredited degrees in ASc in Health Information Technology, BSc in Health Information Management and MSc in Health Informatics. HIM academic programs are offered at the University of Technology (UTECH), Jamaica. JaHIMA is a registered body with the Council for Professions Supplementary to Medicine (CPSM) since 2018.

There are standardized job descriptions and job classifications/titles that identify the roles and functions of these professionals in varying segments of the health sector. Job functions/ specifications includes traditional HIM functions, as well as responsibility for the medical classification of mortality and morbidity data, health data statistics, data quality assurance and overall responsibility for the integrity and protection of patient health information and health data. The JaHIMA, along with the workforce Union, advocates for and leads in the overall effective management of health data and information which enhances the quality of health care to the nation.

Mexico

For the specific case of Mexico, management of medical records is still being done using physical files whether the patient attends a public or private physician or hospital. This poses a potential problem for the health structure and the patient because physical files tend to deteriorate, can be damaged, could be stolen or mishandled. One possibility is to evolve from the use of physical files and create electronic medical records. In Mexico there is an official standard related to the medical record (NOM-168-SSA1-1998), which was issued in 1998 and subsequently amended in 2003 to include and validate the potential for an electronic medical record. The medical record workforce is clerical in nature, where filing and retrieving medical records, as well as limited release of information functions are performed.[30]

United States

For nearly a century, AHIMA has helped improve health data and information quality by taking a leadership role in the effective management of health data and information and delivering quality healthcare to the public. AHIMA is a non-profit association of health information management (HIM) professionals, that reported more than 100,000 members and credential holders in 2017. AHIMA represents professionals who work with health data for more than one billion patient visits each year. AHIMA's mission of empowering people to influence health drives its members and credential HI professionals to ensure that health information is accurate, complete, and available to patients and providers. AHIMA leaders work at the intersection of healthcare, technology, and business, and are found in data integrity and information privacy job functions worldwide.[49]

American HIM professionals are highly trained in the latest information management technology applications and understand the workflow in any healthcare provider organization from large hospital systems to the private physician

practice. They are vital to the daily operations management of health information electronic health records (EHRs). They ensure a patient's health information and records are complete, accurate, and protected.

HIM professionals work in a variety of different settings and job titles. They often serve in bridge roles, connecting clinical, operational, and administrative functions. These professionals affect the quality of patient information and patient care at every touch point in the healthcare delivery cycle. HIM professionals work on the classification of diseases and treatments to ensure they are standardized for clinical, financial, and legal uses of healthcare. HIM professionals care for patients by caring for the medical data. HIM professionals are responsible for the quality, integrity, and protection of patient's health information.[50]

EUROPE

Spain

In Spain the Sociedad Española de Documentación Médica (SEDOM) is an association that encompasses the HIM occupation since its founding in 1985. With an orientation aimed at medical graduates, it has been organizing annual scientific congresses as one more of the medical specialties. The public health system is dominant in Spain and HIM professionals are part of the health centres with responsibility for medical record filing (physical and digital), registration and coding of health activity, patient classification systems, developing electronic health records, and for the definition and management of patient flows within the health system. Specifically, they also manage the waiting lists and the entire process of admission and discharge from hospital centers.

The teams of HIM professionals (doctors, documentation technicians and administrative support staff) are basically located in the public hospitals of the National Health System and are independent organic units that depend on the Chief Medical Officer on most occasions. They work in coordination with the information technology department and also with the economic management control units, in addition to supporting the clinical departments. They often perform a "bridge" function for the development of common projects, especially the electronic medical record. In private hospitals the structure is usually reproduced.

Outside the hospitals, HIM professionals can be found at the level of government organizations, both at the level of the Ministry of Health and in the territorial structures of the regional autonomous governments. In these cases, they fulfill functions of control, monitoring of healthcare data, auditing and planning. This is a peculiarity of the Spanish system of HIM professionals that in many cases leads them to develop management responsibilities at the highest level within healthcare organizations.

EASTERN MEDITERRANEAN

EHR implementation and the move towards e-health is resulting in a behavioral and structural transformation of HIMs across this region. Governments and universities recognize HIM as one of the allied health sciences. The considerable influence of national and international accreditation organizations for hospitals contribute to the growth of HIMs in the region.

Kingdom of Saudi Arabia

The Healthcare Transformation Strategy in Saudi Arabia[51], which is the main methodology for healthcare transformation programs managed by the Ministry of Health's Vision Realization Office (VRO), draws a roadmap towards providing value-based healthcare services; in acknowledgement of the economic and institutional requirements for strict control of health service expenditures. This strategy also achieves one of the strategic goals of the Saudi Vision 2030. VRO programs include the following:

- Corporatization of Healthcare Facilities
- Private Sector Participation
- Health Insurance & Purchasing of Healthcare Services
- Health Sector Governance
- Workforce
- E-Health

Workforce is a key enabler for healthcare reform and transformation in Vision 2030, and as an important enabler of the National Transformation Program, Workforce challenges are under focus in the VRO of the Ministry of Health to build strategic solution for every challenge in order to fill in the gaps in the health sector market to improve the quality of care as well as the overall cost of healthcare services. The strategic planning for the Workforce theme in the healthcare sector focuses on building the capacity and capability of the healthcare manpower and service providers in the Kingdom of Saudi Arabia, to ensure the services are provided in an efficient and reliable manner.

WESTERN PACIFIC AND SOUTHEAST ASIA

The HIM workforce across the Western Pacific and Southeast Asian regions vary greatly from country to country. These two regions of the world contain the countries with the two largest populations, China and India; both have HIM as a recognised but small profession. In some countries, such as New Zealand and many of the Pacific Islands, there is no recognised profession. There is a strong professional culture in other countries, such as Australia, Japan, Republic of South Korea, Malaysia, and the Philippines. HIM is classified as a technical role in Japan and Malaysia, and a profession in Australia, Indonesia, and the Republic of Korea. Irrespective of the title, all such organization's standards require healthcare institutions to maintain accurate and quality health data, along with protection for the privacy and security of patient data, resulting in an expansion of the responsibilities and job positions in HIM. Job roles of contemporary HIM professionals in these regions consist of three groups: (1) traditional roles, (2) transitional roles, and (3) emerging roles.

A variety of different pathways exist to become an HIM professional in the Western Pacific and Southeast Asia regions. In countries such as Australia, Indonesia, India, Republic of Korea and Japan, universities provide undergraduate program. In the smaller Pacific Island nations there is no formal HIM training available, and some countries have only commenced training clinical coders for morbidity and mortality classification, such as Tonga, Fiji and Samoa. Some countries provide technical or diploma level training, such as India, Indonesia and the Philippines.

Additionally, in many countries in this region, as well as other regions discussed earlier, the clinical coders may be physicians who have additional training in medical coding.