



# The HIP Competency Framework:

## Applications to Improve Health Informatics Education and Professionalism in Canada and Internationally

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With the global need for health informatics (HI) professionals, education in HI is evolving rapidly worldwide. In Canada we have seen a number of new HI and educational training and degree granting programs appear over the past decade. This trend will continue and will need to accelerate to keep up with the demand for well trained HI specialists who have the “right” set of skills, knowledge, attitudes, values and capabilities – i.e., HI competencies. COACH has been a leader in this area not only nationally, but has also influenced international thought in the area of developing, disseminating and refining a definition for HI as a field, as well as a set of core competencies that can be used to guide education, training and human resource management. This work, and in particular the competencies, have helped a number of educational programs in Canada in a variety of important ways and are also being used to guide development of new programs. In addition, the framework developed by COACH is gathering growing interest at the international level, both as a reflection of a unique Canadian perspective and experiences in HI education and professionalism, along with the advancement of the field of HI globally – as distinct from related areas such as medical informatics, nursing informatics and consumer informatics, which can be considered subfields of the more general concept of “health informatics” as described below.

### What is Health Informatics?

Internationally, COACH has been doing leading work in identifying competencies, skills and professionalism associated with the emerging field of HI, which COACH has defined in the following way: “*Health informatics (HI) is the intersection of clinical,*

*IM/IT and management practices to achieve better health*” [1]. From this perspective, HI involves the application of information technology to facilitate the creation and use of health-related data, information and knowledge, and to enable and support all aspects of safe, efficient and effective health services.

### What is the HIP\* Competency Framework (and How Was it Developed)?

“Competency” has been described by Covey and colleagues as “the state of having the appropriate knowledge, skills, experience, attitudes and values (collectively called ‘competencies’) to be a practicing professional” [2]. The development of core competencies for HI professionals was a multi-year project that has involved a wide range of stakeholders. Early work began on this in 2005 when COACH’s Health Informatics Professionalism (HIP) Steering Committee developed a series of consultation papers in the area of professionalism in HI. This was based on input from committee work, focus groups and individual contacts. The subsequent process involved a systematic search for definitions of HI from Canada and internationally, which yielded over 50 definitions, with considerable overlap. The results were analyzed thematically, leading to an initial working definition. After having arrived at a definition for

HI, an initial list of core competencies was then derived based on review of existing provincial, national and international competency frameworks pertaining to HI. Finally the initial definition of HI and the associated list of core competencies were revised and critiqued during a multi-day workshop where participants consisted of 15 representatives from different sectors of the HI profession in Canada from across the country. The resultant competency framework was then reviewed by an additional eight content experts in 2007, leading to the publication of the first version of the core competencies, which has subsequently been revised [1].

The result of this work was the HIP (Health Informatics Professionalism) Competency Framework (see Figure 1), which reflects COACH’s definition of HI as consisting of the intersection of three major areas: Health Science, Information Science, and Management Sciences.

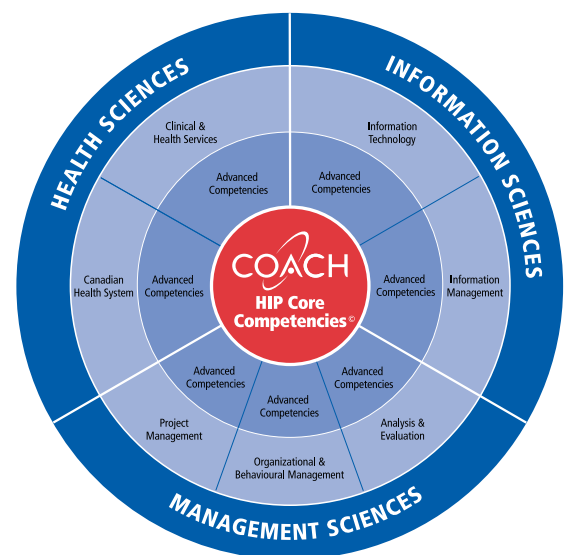


Figure 1: The HIP Competency Framework

As can be seen from the figure, each of these three major areas is subdivided into sub-areas (e.g. as can be seen, “Information Sciences” can be broken down into “Information Technology” and “Information Management”). In the framework, each of these sub-areas (e.g. Information Technology) has a number of detailed and specific competencies listed in the COACH document [1]. As an example of descriptions at this level, the following are two of a number of competencies identified that are related to Information Technology and that students should be able to demonstrate:

- Identifies all relevant stakeholders and their roles throughout the system development life cycle
- Applies knowledge of different standards and enterprise models to facilitate the interoperability and assimilation of data and information from multiple sources.

In total there are currently 46 such specific competencies listed, all grouped under the following 7 subcategories (corresponding to the subcategories shown in Figure 1):

- Information management
- Information technology
- Clinical/health services
- Canadian health system
- Organizational and behavioral management
- Project management
- Analysis and evaluation

### How Has the HIP Competency Framework Been Used So Far?

As noted above, the HIP competencies describe a common core of skills, knowledge, attitudes and capabilities that have already been used for multiple purposes to date, including the following:

- guiding the design, refinement and assessment of a number of undergraduate educational degree programs in HI in Canada;
- guiding individual tailoring of both undergraduate and graduate level educational learning experiences and goals (i.e., used in identifying areas where students may seek to “fill in the gaps” in their own learning) [3];
- structuring students’ own reflection on their experiences gained during co-operative learning experiences. For example, the University of Victoria’s School of Health Information Science has developed a workbook based on

the competencies to help students plan their learning objectives and reflect on their experiences during co-operative learning experiences outside of the classroom setting.

- guiding the continuing education of HI professionals working in the field who wish to update and round out their knowledge of HI [3]
- identifying gaps in skills at the level of healthcare organizations and departments [4]
- providing a means to communicate ideas (both within Canada and internationally) regarding what HI is and how it represents a unique integration of intersecting areas.

### Current Work and Conclusions

It should be noted that the development of HI competencies described in this article is not fixed and their refinement will continue to be an iterative process – i.e., they are not “carved in stone” but rather are and will continue to be revised, modified and updated as the rapidly evolving field of HI in Canada continues to evolve. Currently the competencies have been “mapped” to several different undergraduate curricula in HI. For example, in one such process of comparing the competencies against stated curricular objectives, the competencies were found to be closely aligned with the University of Victoria undergraduate curricula (i.e., specific courses in the curricula addressed all of the competencies listed in the framework). Further work is ongoing to compare and contrast different undergraduate programs using the competencies as a framework for such comparison.

From a more global international perspective it should be noted that the definition of HI, as well as the development of HI competencies has taken different paths in different countries. As outlined in this paper, the HIP competencies have been found to be useful in guiding and supporting a range of activities that will be essential for development of a more informed and effective HI professionals in Canada. In addition, the perspective represented by COACH regarding HI and its competencies is garnering growing interest worldwide, including increased attention from influential organizations such as the American Medical Informatics Association (AMIA) in the United States, the International Medical Informatics Association (IMIA) and other international bodies. It is expected that interest in and the use of the work described in this article

will continue as the demand for well trained HI professionals increases not only in Canada, but worldwide.

### References

- [1] *Health Informatics Professional Core Competencies, Version 2.0*, March 2009, COACH – Canada’s Health Informatics Association. [https://secure.coachorg.com/home/career\\_development/core\\_competencies.htm](https://secure.coachorg.com/home/career_development/core_competencies.htm)
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