



# The State of Health Informatics Education in Canada



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## Health Informatics Education in Canada

Canada Health Infoway, Smart Systems for Health in Ontario, and other agencies have noted the need to increase dramatically Canada's Health Informatics (HI) human resources capacity, indicating that at least 2,000 additional HI professionals are needed immediately. Over the last few years many universities and colleges have begun

to answer the call to do something about this serious human resources gap.

In Canada, formalized education in Health Informatics dates back to 1982 with the founding of the School of Health Information Science at the University of Victoria under the leadership of Denis Protti. For many years this remained students' only opportunity to obtain education in this field. Over the intervening years, however, other programs have emerged. These have included the Master's program at Dalhousie University, and a number of graduate programs with a specialization and undergrad minors/options in HI at the University of Calgary, McGill University, the University of Sherbrooke, and the University of Waterloo. In the last 2 years, the number of newly announced programs has grown amazingly and Community Colleges have begun offering first certificates (led by BCIT) and diplomas in HI, and most recently, Bachelors' of Applied Science in HI.

The result of all of this is that today's student has a variety of options, each with a somewhat different nature and emphasis, available across the entire country. With this wealth of supply come new challenges, such as learning what is available and making good choices that suit the individual.

In addition to these Health Informatics programs, a number of Health Information Management (HIM) programs have arisen. These programs are accredited by the Canadian Health Information Management Association (CHIMA) and are intended to prepare

individuals for careers in the health records field.

The purpose of this survey is primarily to raise awareness of the HI education programs that are available, to provide basic information about each while guiding the student to the programs' websites, and to provide contact information. A lot is left to the student, though. For instance, we made no attempt to classify the programs by curriculum nor did we assess the quality of programs or their teachers. This exercise is left to the student, and, like many exercises, it will present a challenge. Meanwhile we will do our best to help keep this registry of programs up-to-date.

Finally, inevitably we will have missed programs or mis-characterized them despite our best intentions and efforts. The survey was difficult to terminate, as we became aware 2 new programs even as we were trying to package this up for publication. This is a rapidly changing space, but we hope the material here provides at least a starting point for finding a program.

## Survey Process

The survey development, execution, and results verification process involved the following steps.

We developed a template for documenting programs and modified this based on feedback from members of the CIHR HI Ph.D./Postdoc Strategic Training Program (CHIPSTP).

We located an initial group of programs based on personal contacts, web searches, and reference from the initial group itself.

The 2 first authors reviewed each program's website and documented this in the template as completely as possible. The third author managed the project, found additional programs, and verified data.

Two students, Alykan Jinnah and Astha Ramaiya, performed a more comprehensive review of the websites and produced an initial description of the suitable for verification by the programs.

Each program description was sent to the program

**Table 1: Health Informatics Programs in Canada**

<b>Educational Organization</b>	<b>Program Name</b>	<b>Type of Credential</b>
<b>HEALTH INFORMATICS DEGREE PROGRAMS</b>		
Conestoga College	Health Informatics Management	B
Dalhousie University	Health Informatics	M
McGill University	Epidemiology and Biostatistics	M, PhD
McMaster University	Clinical Epidemiology and Biostatistics	M, PhD
University of Calgary	Telehealth	M, PhD
Memorial University	Health Services Research	M
University of Toronto	Graduate Programs	M, PhD
University of Waterloo	Several Programs	B, M, PhD
University of Victoria	Health Information Science	B, M, PhD
York University	Health Informatics; HI & Information Technology	B
<b>HEALTH INFORMATICS DIPLOMA PROGRAMS</b>		
Centennial College	Health Informatics Technology	D
McGill University	Epidemiology and Biostatistics	D
<b>HEALTH INFORMATICS CERTIFICATE PROGRAMS</b>		
British Columbia Institute of Technol.	Health Informatics Technology Management	ASC
George Brown College	Health Informatics Program – Post-Graduate	PC
University of Sherbrooke	Microprogram in Health Informatics	GC
Waterloo Institute for H.I. Research	Health Informatics	CA
York University	Health Informatics	PC
<b>HEALTH INFORMATION MANAGEMENT DEGREE PROGRAMS</b>		
Ryerson University	Health Information Management	B
University of Ontario Institute of Techn.	Health Information Management	M
University of Western Ontario	Health Information Management	B
<b>HEALTH INFORMATION MANAGEMENT DIPLOMA PROGRAMS</b>		
Douglas College	Health Information Services Program	D
Fleming College	Health Information Management Program	D
George Brown College	Health Information Management Program	D
New Brunswick Community College	Health Information Management Program	D
Red River College	Health Information Technologist	D
Saskatchewan Inst. of Appl. Sci. + Tech.	Health Information Management Program	D
Southern Alberta Institute of Technology	Health Information Management Program	D
St. Lawrence College	Health Information Management Program	D
<b>HEALTH INFORMATION MANAGEMENT CERTIFICATE PROGRAMS</b>		
Canadian Healthcare Association	Health Information Services Program	C
<b>HEALTH INFORMATICS PROGRAMS IN PLANNING PHASE</b>		
Dalhousie University	Informatics (major in health informatics)	B
Northern Alberta Institute of Technology		B
Red River College		B
University of Alberta		B

**B: Bachelor's M: Master's**    **PhD: Doctorate of Philosophy D: Diploma**    **C: Certificate PC: Professional Certificate**    **GC: Graduate Certificate CA: Certification of Attendance**    **ASC: Advanced Specialty Certificate**

**Table 2: Program Websites - Educational Organization**

<b>Program</b>	<b>Website</b>
<b>HEALTH INFORMATICS DEGREE PROGRAMS</b>	
Conestoga College	<a href="http://www.conestogac.on.ca/jsp/programs/schoolhealth/degree/healthinfomanag.jsp">http://www.conestogac.on.ca/jsp/programs/schoolhealth/degree/healthinfomanag.jsp</a>
Dalhousie University	<a href="http://www.healthinformatics.dal.ca/">http://www.healthinformatics.dal.ca/</a>
McGill University	<a href="http://www.mcgill.ca/epi-biostat/">http://www.mcgill.ca/epi-biostat/</a>
McMaster University	<a href="http://www.fhs.mcmaster.ca/grad/hrm/index.htm">http://www.fhs.mcmaster.ca/grad/hrm/index.htm</a>
University of Calgary	<a href="http://www.fp.ucalgary.ca/telehealth/Training_Program.htm">http://www.fp.ucalgary.ca/telehealth/Training_Program.htm</a>
Memorial University	<a href="http://www.artc-hsr.ca/index.html">http://www.artc-hsr.ca/index.html</a>
University of Toronto	<a href="http://www.hpme.utoronto.ca/English/About-HPME.html">http://www.hpme.utoronto.ca/English/About-HPME.html</a>
University of Waterloo	<a href="http://www.ahs.uwaterloo.ca/current/hlth/option.html#informatics#informatics">http://www.ahs.uwaterloo.ca/current/hlth/option.html#informatics#informatics</a>
University of Victoria	<a href="http://hinf.uvic.ca">http://hinf.uvic.ca</a>
York University	<a href="http://www.yorku.ca/web/futurestudents/programs/template.asp?id=420">http://www.yorku.ca/web/futurestudents/programs/template.asp?id=420</a>
<b>HEALTH INFORMATICS DIPLOMA PROGRAMS</b>	
Centennial College	<a href="http://www.centennialcollege.ca/setas/programs.html">http://www.centennialcollege.ca/setas/programs.html</a>
McGill University	<a href="http://www.mcgill.ca/epi-biostat/">http://www.mcgill.ca/epi-biostat/</a>
<b>HEALTH INFORMATICS CERTIFICATE PROGRAMS</b>	
BCIT	<a href="http://www.bcit.ca/study/programs/7620ascert">http://www.bcit.ca/study/programs/7620ascert</a>
George Brown College	<a href="http://www.gbrownc.on.ca/Marketing/FTCal/caet/T402.html">http://www.gbrownc.on.ca/Marketing/FTCal/caet/T402.html</a>
University of Sherbrooke	<a href="http://www.usherbrooke.ca/isa_eng/microprogramme.htm">http://www.usherbrooke.ca/isa_eng/microprogramme.htm</a>
Wtl. Inst. for H.I. Research	<a href="http://hi.uwaterloo.ca/hi/bootcamp.htm">http://hi.uwaterloo.ca/hi/bootcamp.htm</a>
York University	<a href="http://www.yorku.ca/web/futurestudents/programs/template.asp?id=420">http://www.yorku.ca/web/futurestudents/programs/template.asp?id=420</a>
<b>HEALTH INFORMATION MANAGEMENT DEGREE PROGRAMS</b>	
Ryerson University	<a href="http://www.ryerson.ca/~hsm/requirements.html">http://www.ryerson.ca/~hsm/requirements.html</a>
Univ. of Ont. Inst. Tech	<a href="http://www.healthsciences.uoit.ca">www.healthsciences.uoit.ca</a>
Univ. of Western Ontario	<a href="http://www.uwo.ca/fhs/">http://www.uwo.ca/fhs/</a>
<b>HEALTH INFORMATION MANAGEMENT DIPLOMA PROGRAMS</b>	
Douglas College	<a href="http://www.douglas.bc.ca/calhtm/programs/phisp.htm">http://www.douglas.bc.ca/calhtm/programs/phisp.htm</a>
Fleming College	<a href="http://www.flemingc.on.ca/Full-time/ProgramDisplay.cfm?ProgramCode=HIM">http://www.flemingc.on.ca/Full-time/ProgramDisplay.cfm?ProgramCode=HIM</a>
George Brown College	<a href="http://www.georgebrown.ca/Marketing/FTCal/hsci/C139.aspx#maincontent">http://www.georgebrown.ca/Marketing/FTCal/hsci/C139.aspx#maincontent</a>
NBrunswick Comm. Coll.	<a href="http://www.nbcc.ca/content.asp?id=111&amp;searchAid=health%20information%20management">http://www.nbcc.ca/content.asp?id=111&amp;searchAid=health%20information%20management</a>
Red River College	<a href="http://me.rrc.mb.ca/Catalogue/Default.aspx?Link=Programs.asp?DeliveryCode=F">http://me.rrc.mb.ca/Catalogue/Default.aspx?Link=Programs.asp?DeliveryCode=F</a>
Sask. Inst. Appl. Sci.+Tech.	<a href="http://www.sait.ca/calendars/daycalendar/programs.htm">http://www.sait.ca/calendars/daycalendar/programs.htm</a>
S. Alberta Inst. of Tech.	<a href="http://citd.sait.ca/distance/programs_hps.htm#NHIMDIP">http://citd.sait.ca/distance/programs_hps.htm#NHIMDIP</a>
St. Lawrence College	<a href="http://www.sl.on.ca/fulltime/F1008.htm">http://www.sl.on.ca/fulltime/F1008.htm</a>
<b>HEALTH INFORMATION MANAGEMENT CERTIFICATE PROGRAMS</b>	
Canadian Hlthcare Assoc.	<a href="http://www.cha.ca/educ/health_info_services/health_info_services.aspx">http://www.cha.ca/educ/health_info_services/health_info_services.aspx</a>
<b>HEALTH INFORMATICS PROGRAMS IN PLANNING PHASE</b>	
Dalhousie University	<a href="http://www.dal.ca">http://www.dal.ca</a>
Nrthn. Alta. Inst. of Tech.	<a href="http://www.nait.ca/">http://www.nait.ca/</a>
Red River College	<a href="http://www.rrc.mb.ca/">http://www.rrc.mb.ca/</a>
University of Alberta	<a href="http://www.ualberta.ca">http://www.ualberta.ca</a>

contact who returned it to us with corrections.

An overview page categorizing the programs and summarizing the survey was created.

As this was being done, we learned about additional programs, and each was followed up as above. We also elected to include initial data on Health Information Management (HIM) programs (CHIMA-accredited) and Nursing Informatics programs. We simply included the latter under the appropriate heading as HI programs.

We elected to include the HIM programs because of the similarity of their curricula to HI programs and the fact that HIM professionals are gradually becoming more and more involved in HI-related work, with a number of leaders and staff in Information Services departments coming from this discipline.

## Results

For the purposes of this article we have provided summary data only. The full survey is available on the Waterloo Institute for Health Informatics Research website: <http://hi.uwaterloo.ca> and will soon be available on the COACH website: <http://coachorg.com> and other websites.

It is important to note that many degree programs provide their credentials in “base disciplines”, like Clinical Epidemiology and Biostatistics, rather than Health Informatics directly. Nonetheless, these programs are sources of many of our HI academics and professionals. We have not distinguished among degree variants such as Bachelor’s of Science and Applied Science. Note also that some schools have multiple programs.

Table 1 lists the programs by type.

## Some Considerations for Potential Students

Given the variety of types of programs and credentials they award, students will find that they will need to consider many issues before jumping in. Some we would suggest include the following:

- What role do you want to prepare for and does the program prepare you for that role?
- What are the program’s prerequisites; can you satisfy them?
- What is the credential awarded; will it be viewed as adequate by potential employers?
- How long (on average) does it take students to get credential?
- How long has the program been in existence; what is the quality of its teaching staff?
- What is its track record; how many students in total have received their credentials from it (by type of credential)?
- How satisfied have the program’s graduates been with the program?

- What does the program cost?

- What is the failure rate?

With a wealth of options comes a choosing challenge, and remember that programs compete to some degree with each other for students. Even in the area of education being a well-informed consumer is essential.

## Reflections and Conclusions

From our perspective, it is a whole new world out there compared to just a few years ago. Now it is possible to start a life-long learning process in HI without much pressure and hassle by engaging in a certificate program. For those who want an industrial-strength education (including co-ops and practica), there are the multi-year diplomas and undergraduate degree programs. If someone really wants to get in there and mix it up, there are graduate programs that prepare one for leadership of research and teaching positions. Finally, if someone wanted to top off previous training in another discipline, there are graduate certificate programs.

It has been a long haul from the start until now, but HI has entered the mainstream and billions of investment dollars give evidence of this. HI education has, on the other hand, just started to find its stride, and the number and variety of programs is evidence of this. We wonder though how many of these programs are internal initiatives by brave folks who are shouldering risks for the sake of education...without new investment from outside their walls.

Even with this vastly improved response to our HI HR gap, we still have a long way to go. Most programs take 2-5 years to fully prepare their issue for the HI challenge, and most have relatively few students, at least to start. It will take many years to produce the thousands needed and being sought by our health system, companies, universities, and agencies...and we expect the need will grow, not remain static.

What Sir Winston Churchill exclaimed in 1942 seems apropos: “Now this is not the end. It is not even the beginning of the end. But it is, perhaps, the end of the beginning.” For all of you who have built programs and stuck it out from the beginning, and all who have entered the fray since the beginning, we owe you a debt of gratitude and the hope that you will thrive.

## Acknowledgements

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