



2019 REPORT

CUMMING SCHOOL OF MEDICINE
Centre for Health Informatics

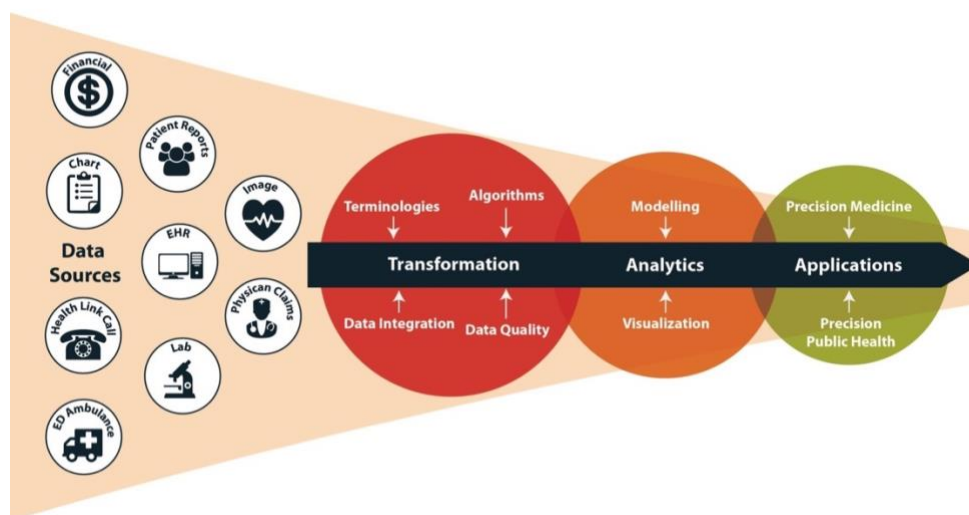


Executive Summary

In 2019, the Centre for Health Informatics (CHI) established direct AHS data access to 59 datasets including Electronic Health Records. The cross-campus collaborative project of establishing a Data Science and Analytics program at the University of Calgary was a success and had 12 graduate students accepted into the Health Data Science and Biostatistics specialization at CHI. The concept and infrastructure for creating CHI to be a “One Stop Shop” for data science was established including technology, a team with varied expertise, secure data storage and cluster computing, direct data access, and training programs to create the next generation of highly-trained data scientists. The Centre for Health Informatics looks forward to the growth that 2020 will bring.

Mission, Vision, Values

The Centre for Health Informatics (CHI) began moving into the fifth floor of the Teaching, Research, and Wellness Building at Foothills Campus in January 2019 and held our Grand Opening May 1, 2019. The newly renovated space was designed with the aim to facilitate collaboration among multi-disciplinary investigators and advance health informatics for Precision Health through timely data access and data analytics, and leading research using secondary data for research and clinical decision support.

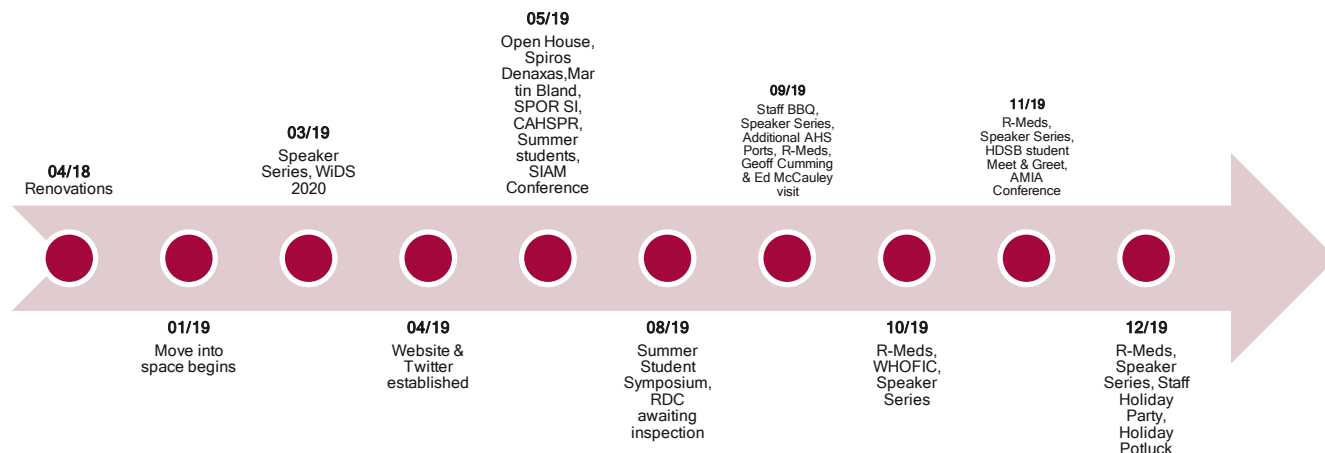


The Centre for Health Informatics has taken steps toward connecting researchers, industry leaders, analysts, and students on several projects in its first operational year. The influence of CHI goes beyond those physically located in CHI and has created impact throughout the Cumming School of Medicine (CSM) and its' institutes, the main campus of the University of Calgary, the industrial community, and the research community in Calgary, Canada, and globally. CHI looks forward to growing our connections with both academia and industry in 2020.

ACHIEVEMENTS IN 2019

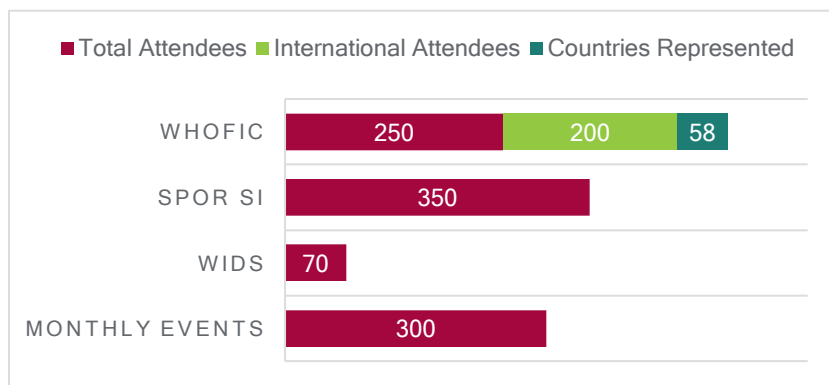
The first year of the Centre for Health Informatics focused on forming partnerships, creating infrastructure, establishing the culture of CHI, establishing what CHI wanted to work on moving forward, and what CHI might look like in the future. The Executive Team at CHI spent countless hours developing processes, protocols, initiatives, training programs like the Health Data Science and Biostatistics Program, and concepts to begin molding the Centre for Health Informatics into what it can look like in 2020 and beyond. The main advantage CHI has, besides the skilled staff, is the close partnership with AHS and other data custodians in Alberta, in-house AHS staff, and direct, timely AHS data access. Two major sustainability initiatives put forth were joining the Real-World Evidence Consortium, guided by Sabine Moritz, and setting CHI up to be a One-Stop-Shop for researchers to access data and receive analytical support for their projects.

A Snapshot of 2019



IMPACT & OUTREACH

Conference/Events Organized



CHI organized many internal events such as a monthly Speaker Series, and several workshops and seminars. We also organized our own regional Women in Data Science (WiDS) Conference in conjunction with Stanford's WiDS Conference, helped to organize and execute the AbSPORU Summer Institute, and worked closely with the World Health Organization directors to organize and host the annual meeting for the WHO Family of International Classifications (WHOFIC) in Banff. This brought health experts from 58 countries to Alberta to discuss the implementation of ICD-11 worldwide.

Conferences Attended

The team at CHI attended several conferences over the year locally, nationally, and internationally. Most notably, Dr. Cathy Eastwood presented at the Canadian Association for Health Services and Policy Research in Halifax, Nova Scotia on CHI. Team members participated in over 15 and spoke at 7 different conferences focused on various subjects from Data Mining, WHO Morbidity Reference Group, and Artificial Intelligence for Quality Improvement.

Visitors

The Grand Opening of the Centre for Health Informatics on May 1, 2019 was a huge success. Our team was able to meet with others in the field from CSM, AHS, and related industries to show the new space, talk about the work ahead, potential partnerships, and display the current work of CHI. The Open House saw over 150 attendees come through CHI, network, and sign up for CHI's mailing list. We were honoured to have many CSM and AHS executives in attendance such as Dr. Jon Meddings and Dr. Marcello Tonelli.



Over the year, CHI saw many tours of the space for fundraising purposes, and partnership and capacity building purposes. We had over 40 local visitors, 20 national visitors, and 15 international visitors with some from as far as Mongolia. A major highlight for CHI was the visit from Geoffrey Cumming and UC President, Dr. Ed McCauley. CHI's Executive Team had a chance to seek the advice of Mr. Cumming and Dr. McCauley and the general consensus was "dream big" which is exactly what CHI intends to do.

Interest Groups

In 2019, the creation of CHI allowed for interest groups to be formed. These interest groups meet on a regular basis to discuss theory and techniques in their respective interests and gives the opportunity for investigators with different expertise to collaborate and share knowledge. 3 Interest Groups were formed in 2019: R-Meds, Python, and the Visualization Interest Group.

Communications

Development of Centre for Health Informatics website from April 2019 to present. The website features contact information, resources, current news about CHI, event information, and highlights:

- 29 staff and faculty
- 6 in-house affiliated groups
- 8 other affiliated groups

HUMAN RESOURCES

Team Events

CHI has created a culture of transparency, collaboration, and friendship for our team. Staff often cite this as their favorite part about their work and has increased team collaborations on projects, sharing of expertise given the variety of team members' skill sets, and staff wellness. CHI held several team meetings, celebrations for grants received or projects completed, a family BBQ for staff and various outside collaborators, a Ping Pong tournament, and many more activities. These events helped to bring the staff closer on a personal level and cement professional relationships.

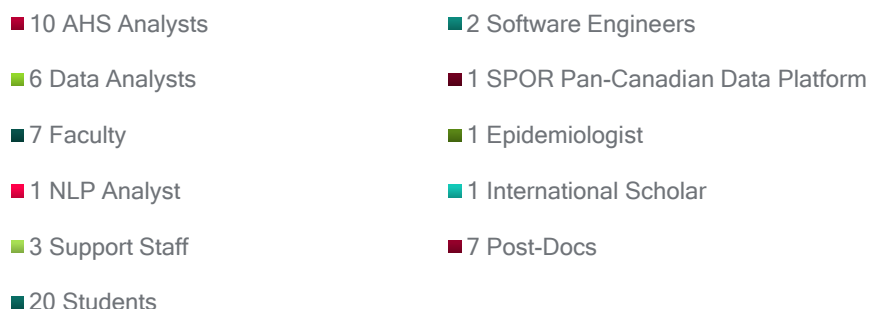
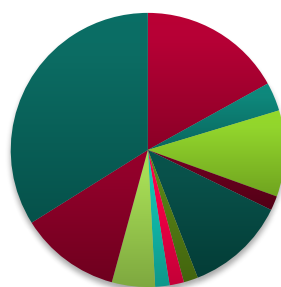


Teams Within CHI

Executive Team: Hude Quan, Catherine Eastwood, Tyler Williamson

CHI has 15 faculty members representing 5 different CSM institutes and several various departments from Foothills campus and Main campus residing either full-time or with drop-in space. CHI also hosts visiting scholars from all over the world.

CHI Team



INFRASTRUCTURE

Statistics Canada Satellite Research Data Centre

The Centre for Health Informatics will be the site of the only Statistics Canada Research Data Centre (RDC) at Foothills Campus. Approximately 50% of the researchers accessing the Main Campus site are from the CSM so, CHI expects high demand for the RDC where researchers can access StatsCan data in a highly secure environment. In 2019, preparations for the RDC have been made; including installing data ports, motion sensors, cameras, card readers, deadbolts, IT encryptions, workstations and hiring staff, and is awaiting inspection from Statistics Canada.

AHS Data Ports

The Centre for Health Informatics installed additional AHS ports in 2019 beyond the original 8 ports CHI initially had installed during renovations. This allowed for all workspaces in CHI to have an AHS data port and allow the partnership with AHS to grow by placing more analysts with direct AHS data access within CHI. These additional ports gave CHI 52 direct access data ports. This allowed for the potential for many more AHS staff to reside within CHI and have ongoing impact on the health system. The partnership CHI has with AHS has given CHI a clear advantage for data access and analytical work, research support, industry projects, and community projects that require up-to-date data.

Secure Data Storage and Cluster Computing

An Information Management Agreement with AHS and the University of Calgary is to build a secure high-performance computing (HPC) GPU/CPU infrastructure environment. This is to make large data analysis be feasible using advance analytical technology such as deep learning. For example, linkage of clinical registry, EMR and administrative data to generate a large database. The current AHS IT system does not have sufficient speed to analyze such large and complex data efficiently. The CREATE database will be housed in the joint AHS and UC environment. The CREATE database is part of an initial effort to link EMR data to clinical registries and the administrative data for precision health research innovations. We anticipate similar projects will be undertaken within the Centre for Health Informatics within the next few years.

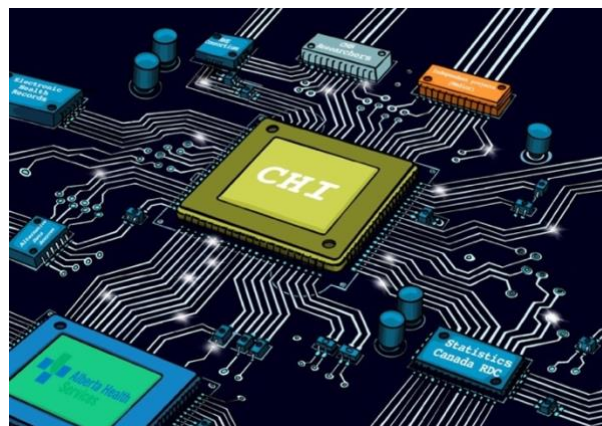
SUPPORTING RESEARCH PROGRAM




CHI has designed the vision of being a “One-Stop-Shop” for researchers at the Cumming School of Medicine. CHI is turning this concept into reality through hosting highly skilled analysts, having data access and the ability to link data sets, and the analytical tools and computing power to facilitate CSM researchers completing their research projects.

AHS Data Access

The Centre for Health Informatics hosts members of the Alberta Strategy for Patient Oriented Research (SPOR) Data and Methods platforms. Requests for data access at CHI have gone through the AHS portal. Since moving into CHI and adding in additional AHS data access ports, more AHS staff were added to CHI for directly accessing Alberta Health Services data. CHI now has 59 datasets accessed within CHI and the potential to store and link many more in the future.





A major objective of the Centre for Health Informatics is facilitating and furthering data science research in the Cumming School of Medicine. CHI aims to facilitate data access for researchers and collaborate on projects with multidisciplinary teams across the institutes of CSM. Through collaboration, data access, advanced analytics, and available tools for clinical and governmental decision support.

Hosting Research Staff

In 2019, as awareness of CHI grew, so did demand for space in CHI from faculty in CSM and other faculties at the University of Calgary. Many faculty members saw the benefit of the space we created and inquired about placing their own analytical staff in CHI. The Community Tenancy Agreement was developed to highlight the benefits of residing in CHI. The culture created in CHI encourages team members to share their skills and support each other in their work.

RWE Consortium

In 2019, the Centre for Health Informatics joined the Real-World Evidence (RWE) Consortium to be able to take on industry-related projects. In order to join the RWE Consortium, most of 2019 was dedicated to building the administrative infrastructure needed to be able to take on RWE projects, set up contracts with industry partners, delegate appropriate staff to the projects, hire a staff scientist dedicated to RWE projects, and setting up accounting infrastructure.

ConnectCare EMR Data Access

ConnectCare is being rolled out in Alberta and will be rolled out in Calgary in 2020. CHI is working with AHS, University of Alberta, and University of Calgary to facilitate the ConnectCare database to be used. AHS staff will undergo ConnectCare training in 2020. ConnectCare will enhance secondary data use, be used for pragmatic clinical trials, and influence clinical decision support.

TRAINING

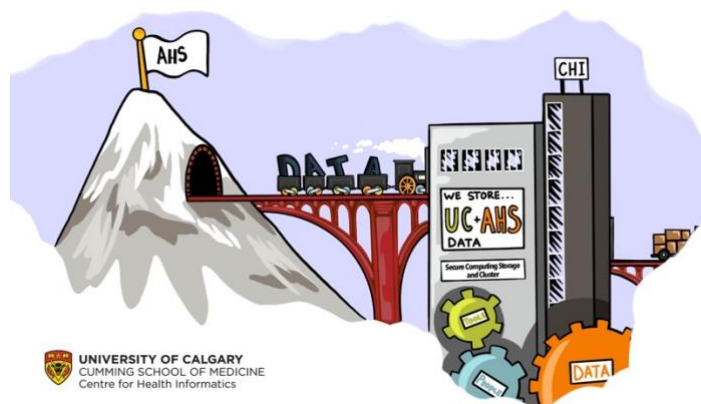
Health Data Science and Biostatistics Diploma

Dr. Tyler Williamson and Dr. Joon Lee of the Centre for Health Informatics serve as the Director and Associate Director, respectively, of the Health Data Science and Biostatistics Diploma Program in conjunction with the Faculty of Science. This is the first Health Data Science focused program in Alberta. The development of education programs such as this will help to create a pipeline of well-trained students into research at the Cumming School of Medicine or into industry careers.

SPOR Data Analytics Certificate

Supported by AbSPORU and Alberta Innovates, this certificate in Data Analytics was designed to enable current professionals in health data analytics to use administrative data effectively and to build the capacity in the Alberta workforce and research environment for the use of big data. The Calgary course was held within CHI over 2 months with 6 students.

2020 and Beyond



Training & Capacity Building

CHI will be facilitating the Health Data Science and Biostatistics Diploma Program, the only program of its kind in Alberta, with its classes in CHI to integrate the students with experts in the field of data science. Training will be facilitated in many other ways such as supervising trainees, workshops, SPOR courses on using data, conferences like Women in Data Science, and the CHI Speaker Series which CHI collaborates with CSM institutes to host.

RWE Consortium and Research Support Services

The concept of a “One Stop Shop” for CSM and UC researchers encourages multi-disciplinary collaboration, helps investigators access a wide range of datasets and receive analytical support. Investigators can come to CHI, or industry partners through the RWE Consortium, to request data and receive analytical support for their research. CHI has a dedicated team to further develop these initiatives.

Community and Government Support

With the COVID-19 Pandemic, CHI's diverse team of experts used its unique infrastructure, close partnerships with AH and AHS, and direct AHS access to create a COVID-19 Tracker to inform evidence-based policy decisions. CHI plans to continue this support in other forms in the future to help inform the public, policy decisions, and support clinical decisions with expertise and timely data access to drive forward PM and PH.