



- ABOUT CANADA'S AHSCs -

“THREE MISSIONS, ONE FUTURE...OPTIMIZING THE PERFORMANCE OF CANADA'S ACADEMIC HEALTH SCIENCES CENTRES”

1. WHY ARE AHSCs “NATIONAL RESOURCES”?

Canadian AHSCs are often recognized as world-class facilities that serve patients, families and communities. However AHSCs also treat other patients that may require rare, complex, costly, or specialized services. They train a range of future healthcare professionals who are skilled to provide safe, cost-effective and humane care and who can practice anywhere in Canada. They also generate research and innovations that can have a significant impact not only on the patients they serve and other populations, but contribute to sustained economic prosperity through the commercialization of new products and services.

In short, it is the *integration* of patient care, education and research that uniquely defines the AHSC from other organizations in the system. Their impact is not only at the local, regional and provincial and territorial level; but it is national and global.

2. HOW AND WHY ARE AHSCs AN EMERGING INDUSTRY?

Canada's AHSCs provide employment to over 350,000 people. Their operating budgets are conservatively estimated to be a minimum of \$24.0 Billion per year, and they receive \$2.0 Billion each year for research purposes. In 2007-08, AHSCs received approximately \$330 million in clinical trial revenue, filed for 312 new patents, created 65 new spin-off companies, and issued 217 new licenses.

AHSCs have the potential to attract world-class researchers; help solve the health and health system problems of the future; generate products, services and spin-off companies that benefit the economy, and serve as source of local, regional, provincial & territorial and national pride. Countries like the United States, the United Kingdom, Norway, Sweden, Singapore, Germany are also building their own "national resources" in this regard.

3. WHAT IS THE SIZE AND SCOPE OF CANADA'S AHSCs?

Based on the survey information that is contained in the report, below are a series of select indicators that provide the reader with the size and scope of AHSCs in the following areas: (a) funding, training & health system capacity; (b) percentage of complex & rare procedures performed by AHSCs; and (c) AHSCs as engines of research & innovation.

a. Funding, Training & Health System Capacity

Category	Total
Estimated total operating budgets of AHSC group (2008/09) ⁱ	\$24,000,000,000
Number of outpatient visits per year (2010) ⁱⁱ	14,800,000
Number of emergency department visits per year (2010) ⁱⁱⁱ	5,400,000
Number of hospital admissions (2010) ^{iv}	1,400,000
Number of hospital beds (2008/09) ^v	48,000
Number of employees (2008/09) ^{vi}	355,000
Number of volunteers (2008/09) ^{vii}	53,000
Number of clinical trainees/placements – multiple health professions (2008/09) ^{viii}	55,000
Number of annual graduates from health professions (2007) ^{ix}	18,500
Students enrolled in a First Year University health profession programme (2007) ^x	85,000

b. Percentage of Rare & Complex Case Mix Groups Treated at AHSCs, 2006/07 ^{xi}

Case Mix Groups	% of Cases by AHSCs
Fetal surgery	100%
Heart or lung transplant	100%
Liver transplant	97%
Treatment of concurrent hip fracture and head injury	94%
Treatment of concurrent spinal cord injury and chest and/or abdominal procedure	93%
Neonatal infant (birthweight 1500-1999 grams) catastrophic diagnosis	92%
Neonatal infant (birthweight 1000-1499 grams) catastrophic diagnosis	90%
Neonatal infant (birthweight 2000-2499 grams) catastrophic diagnosis	85%
Treatment of concurrent spinal cord and head injury	83%
Other musculoskeletal infections	66%
Non-extensive burn with wound procedures	62%
Neonatal infant (less than 6 days) with catastrophic diagnosis	60%

c. AHSCs as Engines of Research & Innovation

Category	Total ^{xii}
Total research budgets of AHSC group (2009)	\$ 1,800,000,000
Minimum dollar value of new clinical trials (2007/08)	\$ 338,000,000
Total technology transfer income (2003/06) ^{xiii}	\$ 27,000,000
Total license income (2003/06) ^{xiv}	\$5,000,000
Minimum number of employees paid from research budgets (2007/08) ^{xv}	55,000
Minimum number of peer reviewed publications (2007/08)	11,000
Minimum number of new research ethics submissions (2007/08)	8,900
Minimum total number of new clinical trials (2007/08)	1,600
Minimum number of researchers for whom AHSC is primary affiliation (2007/08)	2,791
Minimum number of post doc researchers (2007/08)	1,644
Minimum number of PhD & MSc candidates supervised by AHSC researcher (2007/08)	2,570
Minimum number of disclosures (2007/08)	415
Minimum number of patents issued (2007/08)	312
Minimum number of new spin-off companies (2007/08)	65
Minimum number of licenses (2007/08)	217



4. WHAT ARE SOME OF THE “BIG HITS” FROM CANADA’S AHSCs?

Between 2000 - 2006 AHSCs accounted for at least 50 world first and other major medical breakthroughs medical discoveries (see Appendix B in the report). Furthermore, since 1996, AHSCs in Canada have accounted for close to 90 spin-off companies (see Appendix C in the report). www.ahsc-ntf.org

5. WHAT ARE SOME EXAMPLES OF AHSC SUCCESS STORIES?

Taken from the report, we list examples that underscore the role that AHSCs can play in accelerating the creation of new knowledge to the benefit of patients across the continuum of care.

Heart Attacks – At the University Hospital in Edmonton, Dr. Paul Armstrong began an experiment to train paramedics to do an ECG of the heart. The paramedics would use a cell phone to report the results to the cardiologist at the hospital’s Emergency Department who could confirm the diagnosis at which point either a drug could be administered or the ED could prepare for the patient’s arrival. The protocol has improved access across Edmonton, saved lives, reduced the long term impact of heart attacks and prevented the serious social and economic consequences. In this case, the AHSC provided the empirical setting and support for the initiative. Dr. Paul Armstrong received a CIHR-CMA award for this initiative. More information can be found at: <http://www.cihr-irsc.gc.ca/e/40289.html>

Pain Management – Moving research to practice requires a sophisticated leadership to change practices, structures, resources, and sometimes deep rooted beliefs. Dr. Judith Ritchie helped to furnish these critical success factors for the implementation of guidelines such as those for pain, falls and pressure ulcers at the McGill University Health Centre. Implementation of these guidelines included a 50% reduction in severe falls, a 35% reduction in falls, and 40% reduction in pressure ulcers. Dr. Ritchie received the Evidence through Excellence Award in 2010. More information can be found at: http://www.chsrf.ca/RecognitionAwards/ExcellenceThroughEvidenceRitchie_e.php.

Hip and Knee Replacements – Using both research evidence and structured change management practices, the discharge destination for thousands of joint replacement patients in the GTA was moved from hospital to home. To do this, Dr. Nizar Mahomed and his team, led 25 organizations in the application of research that improved health outcomes, shortened hospital stays were shorter, increased the number of surgeries possible, and saved taxpayers millions” Dr. Mahomed was awarded a CIHR-CMA knowledge translation award. The initiative originated through the work at the University Health Network, Toronto Rehab, and the University of Toronto. More information can be found at: <http://www.cihr.ca/e/40295.html>

HIV/AIDS – As a post doctoral fellow at the St. Paul’s Hospital in Vancouver in 1981, Dr. Julio Montaner observed that many young people coming to the clinic were presenting with a rare form of pneumonia. It was soon learned that these patients were suffering of AIDS. Using inspiration from his father’s treatment of Tuberculosis patients in Argentina, Dr. Montaner attempted retroviral therapy to attack the AIDS virus directly. In 2006, he and colleagues published groundbreaking data showing that the antiretroviral cocktail of drugs helped those infected and slowed the spread of the virus. He is also a recipient of a CIHR-CMA award and Director of the British Columbia Centre for Excellence in HIV/AIDS (BC-CfE) and President of the International HIV/AIDS Society. More information can be found at: <http://www.cihr-irsc.gc.ca/e/40676.html>

Epilepsy and Alzheimers – Dr. Donald Weaver is a neurologist with a PhD in computational science. He is the Director of Medical Research at Dalhousie and has appointments at the Capital Health District Health Authority and at the IWK Health Centre. Dr. Weaver won the highest international distinction for biopharmaceutical research world-wide for his work on novel drug therapies that help to treat chronic neurological diseases like Alzheimer’s and epilepsy. His colleagues acknowledge him as a person who combines ‘multidisciplinary team work in a collaborative manner and a role model for clinician scientists’. More information can be found at: <http://www.novascotialife.com/featurednovascotian/dr-donald-weaver>.



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ⁱ Based on the academic healthcare organizations listed in Table 5, this figure is a calculation based on the sum of: (1) the total operating budgets of Research Hospitals for 2008-2009 as described on each organization's website; and (2) 30% of each regional health authority's operating budget (which is the proportion of RHA budget attributed by CIHI to hospital care) plus the mid-point of an additional 15% to 30% of the budget for hospital care to represent the added costs of teaching and research activity.

ⁱⁱ Based on the academic healthcare organizations listed in Table 5, this figure is a sum of the number of outpatient visits reported in various documents (i.e. websites, annual reports, and fast fact sheets). The outpatient visits may include day treatment, clinics, day hospital etc.

ⁱⁱⁱ Based on the academic healthcare organizations listed in Table 5, this figure is a sum of the reported emergency department visits from websites, annual reports, and fast fact sheets for 2008-2009.

^{iv} Based on the academic healthcare organizations listed in Table 5, this figure is a sum of the reported admissions from websites, annual reports, and fast fact sheets for 2008-2009.

^v Based on the academic healthcare organizations listed in Table 5, this figure is a sum of the number of hospital beds as reported from websites, annual reports, and fast fact sheets for 2008-2009.

^{vi} Based on the academic healthcare organizations listed in Table 5, this figure is a sum of the number of employees as reported from websites, annual reports, and fast fact sheets for 2008-2009.

^{vii} Based on the academic healthcare organizations listed in Table 5, this figure is a sum of the number of volunteers as reported from websites, annual reports, and fast fact sheets for 2008-2009.

^{viii} Data collected from ACAHO member websites.

^{ix} Canadian Institute of Health Information. Healthcare Providers in Canada, 2007.

^x Canadian Institute of Health Information. Healthcare Providers in Canada, 2007.

^{xi} Information from the Canadian Institute for Health Information and Hay Group, 2008.

^{xii} ACAHO, 2010 unpublished. This data is a sum of research revenues for 2008-2009 from ACAHO member websites, fact sheets, or annual reports.

^{xiii} ACAHO, 2007. *Moving at the Speed of Discovery, From Bench to Bedside to Business*. Available www.acaho.org

^{xiv} ACAHO, 2007. *Moving at the Speed of Discovery, From Bench to Bedside to Business*. Available www.acaho.org

^{xv} ACAHO, 2010 forthcoming. *ACAHO Funding Flow Survey*. This is a survey of the research enterprises of ACAHO member organizations. The data is still in preliminary phases and reflects only 60% of members.

