World Class Achievements and Major Medical Breakthroughs

FROM ONTARIO'S HOSPITALS

2003/04

ONTARIO HOSPITAL ASSOCIATION AND
THE ONTARIO COUNCIL OF TEACHING HOSPITALS

2003/04 World Class Achievements and Major Medical Breakthroughs from Ontario's Hospitals

The following list of world-class achievements has been compiled to illustrate the diverse and integral role Ontario's hospitals play in providing innovative, leading-edge breakthroughs in the provision of health care. Indeed, the vast majority of breakthroughs in health research have historically occurred in academic and research hospitals. While this innovation leadership continues at an ever-growing rate in our leading hospitals, more and more innovation is occurring throughout the health care system.

Hospitals play an essential role in the renewal and innovation in the health care system. They are dedicated to innovation and best practice in patient care, teaching, research, medical discovery, knowledge creation and sharing, and have an established record of achievement that has won international acclaim. For example, medical education worldwide has been dramatically changed by the adoption of the case-based learning approach pioneered by McMaster University's Faculty of Health Sciences; more genes for key human hereditary diseases have been discovered at the Hospital for Sick Children than any other single institution and; the Ontario Cancer Institute at Princess Margaret Hospital pioneered the cure for Hodgkin's Disease. These are only a few examples that span the province over many years.

One of the missions of Ontario's academic and teaching hospitals is to act as an engine of innovation through ongoing health research, medical discovery and knowledge creation – this mission makes them an important partner in Ontario's economy. Nearly half of Ontario's teaching hospitals have established commercialization offices and they have spun off 39 companies, creating new and higher value-added jobs. In 2003/04, the teaching hospital's total research spending exceeded $537 million (including $84 million from private sector contracts). These investments help position Ontario as a leader in developing new breakthrough treatments, foster an entrepreneurial climate, increased investment, employment growth and fundamentally improve patient care.

As the future funding of Ontario's health care system is dependent upon the province's economic prosperity, supporting research and innovation in Ontario's hospitals makes not only for healthier Ontarians, but also for a healthier Ontario and Canada. It contributes to Ontario's quality of life, our international competitiveness and longer-term economic growth.

This premier report of *World Class Achievements and Major Medical Breakthroughs* from Ontario's hospitals will help shed new light on the excellence of our health care system and further promote a invigorated entrepreneurial drive to advance wellness and health care in Ontario.

Tony Dagnone
Chair, Ontario Hospital Association

Murray T. Martin
Chair, Ontario Council of Teaching Hospitals

ACHIEVEMENT	YEAR	HOSPITAL
Pasteurization of milk begins at Sick Kids, 30 years before it becomes mandatory, due to the successful lobbying of pediatrician-in-chief Alan Brown.	1908	Hospital for Sick Children
Dr. Lawrence Bruce Robertson becomes a pioneer in blood transfusions for children.	1919	Hospital for Sick Children
Clinical use of insulin for diabetes – Dr. Frederick Banting and Dr. Charles Best.	1922	University Health Network
Dr. Frederick Banting (insulin) joined Sick Kids in 1923 and was placed "In Charge of Diabetes" and with Dr. Gladys Boyd, their program resulted in a 50 per cent decrease in the childhood mortality record from diabetes, over a 10-year period.	1923	Hospital for Sick Children
Nutritional research by Drs. Alan Brown, Fred Tisdall and Theo Drake leads to the development of a new quick-to-prepare, low cost cereal that later becomes famous the world over as Pablum.	1930	Hospital for Sick Children
Drs. Fred Tisdall and Theo Drake, work with the National Dairy Council to demonstrate the value of enriching milk with vitamin D.	1934	Hospital for Sick Children
Clinical use of Heparin as a blood thinner – Dr. Gordan Murray.	1935	University Health Network
Dr. John Ross studies lead poisoning in children, resulting in the prohibition of lead pigments in paints on children's toys and furniture.	1935	Hospital for Sick Children
Design and use of North America's first artificial kidney – Dr. Gordan Murray.	1946	University Health Network
Physicians first recognize sexual dimorphism in human cells. This discovery leads to knowledge of the relationship of sex chromosome abnormalities to disease.	1948	London Health Sciences Centre
Use of total body cooling as a method of making heart surgery safer – Dr. Bill Bigelow.	1950	University Health Network
Use of first regulated cardiac pacemaker – Dr. Bill Bigelow.	1950	University Health Network
A heart-lung machine is developed by HSC physicians Lawrence Chute, William Mustard and John Keith along with Campbell Cowan, Banting Institute.	1951	Hospital for Sick Children
Use of cobalt radiotherapy units for cancer – Dr. Harold Johns.	1951	University Health Network
Introduction of lumpectomy for breast cancer – Dr. Vera Peters.	1951	University Health Network
Use of radiation to cure Hodgkin's disease – Dr. Vera Peters.	1951	University Health Network
First "cobalt bomb" in the world is used to deliver radiation therapy to cancer patients at Victoria Hospital.	1951	London Health Sciences Centre
Human heart valve transplant – Dr. Gordan Murray.	1955	University Health Network

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Drs. L. J. Harris, B. Laski, H. Pritzker, A. Eisen, J. W. Steiner, and L. Shack discovered that a few drops of the antibiotic mycostatin eliminated the incidence of thrush in newborns.	1955	Mt.Sinai Hospital
Demonstrated the world's first successful prophylactic use of factor VIII to prevent bleeding in severe hemophiliacs.	1957	The Ottawa Hospital
Innominate osteotomy, a surgical procedure to repair congenital dislocation of the hips, is first performed by Dr. Robert Salter.	1957	Hospital for Sick Children
Dr. Charles Drake pioneers a surgical procedure for aneurysms at the base of the brain, called basilar aneurysms, at Victoria Hospital.	1958	London Health Sciences Centre
First Coronary Care Unit – Dr. Robert Macmillan and Dr. Ken Brown.	1960	University Health Network
Discovery of blood forming stem cells enabling bone marrow transplants – Dr. Ernest McCulloch and Dr. James Till.	1961	University Health Network
Surgery to correct transposition of the great arteries of the heart, the birth defect of "blue babies," is pioneered by Dr. William Mustard. The procedure was called the "Mustard Procedure."	1963	Hospital for Sick Children
Developed prototype aneurysm clip – Dr. William Lougheed.	1965	University Health Network
The development of a revolutionary curriculum at McMaster University's Medical School, rooted in problem based learning and a team-centred approach. The curriculum influenced health care education worldwide. Dr. John Evans.	1965	Hamilton Health Sciences Centre
Developed the world's first child-sized electric arm with the Northern Electric Company.	1971	Bloorview MacMillan Children's Centre
Operations begin on cerebral aneurysms using a technique which establishes University Hospital's worldwide reputation.	1972	London Health Sciences Centre
Use of pulmonary testing called flow volume loop to diagnose small airway disease (e.g., asthma and COPD) – Dr. Noe Zamel.	1973	University Health Network
Development of software used worldwide for 20 years to control radiation therapy – Dr. Jack Cunningham.	1975	University Health Network
Dr. J. Hirsh establishes the first comprehensive thrombosis program in the world, integrating both research and clinical care.	1975	Hamilton Health Sciences Centre
Identification of P-glycoprotein as a major cause of cancer drug resistance – Dr. Victor Ling.	1976	University Health Network
Developed a technique for Peritoneal Dialysis that made it possible on a large scale – Dr. Dimitri Oreopoulos.	1977	University Health Network
Discovery of reversibility of brain damage from alcohol with abstinence – Dr. Peter Carlen.	1978	University Health Network

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Dr. J. Hirsh and his group of thrombosis researchers conduct the first clinical trial with aspirin as a preventative for stroke.	1978	Hamilton Health Sciences Centre
Development of "Pacestop" pacemaker with Medtronic of Canada.	1978	Ottawa Heart Institute
Glucocorticoids discovered/used as initiators of term labor.	1979	St. Joseph's Health Care, London
Team led by Dr. A.C. Bryan invented the high frequency oscillator ventilator, which is now used world wide to gently "shake" oxygen into the lungs of infants/children with severe lung disease sparing many of them from undergoing lung bypass procedures.	1979	Hospital for Sick Children
Discovery of cardionatrins by Dr. A. deBold.	1980	Ottawa Heart Institute
Nephrology research team develops the first nighttime peritoneal dialysis exchange system.	1980	The Ottawa Hospital
First liver biopsy done on an out-patient basis.	1981	The Ottawa Hospital
University Hospital performs the world's first heart operation to correct life threatening right ventricular dysplasia.	1981	London Health Sciences Centre
Extraction and purification of natural surfactant from cows' lung fluid to help the development of natural surfacants to aid babies with breathing difficulties.	1981	St. Joseph's Health Care, London
First hospital in the world to use absorbable staple for putting tissue back together following hysterectomy.	1981	The Ottawa Hospital
The first use of natural suractant drug as replacement therapy for babies with immature lungs.	1982	St. Joseph's Health Care, London
The first successful single lung transplant – Dr. Joel Cooper.	1983	University Health Network
The Department of Nuclear Medicine at Hamilton Health Sciences was the first to introduce the imagine agent (18) F6- fluorodopa PET which is used in the diagnosis of Parkinson's disease. This chemical was produced in house and is now used worldwide.	1983	Hamilton Health Sciences Centre
Discovery of neparan sulfate binding as essential for amyloid protein conmormation. Dr. Kisilevsky.	1983	Kingston General Hospital
As a result of the pioneering cardiac rehabilitation program at the Toronto Rehabilitation Institute, a heart transplant recipient made medical history when he successfully completed the 1985 Boston Marathon, fifteen months post-surgery.	1984	Toronto Rehabilitation Institute
Experimental work producing inhibition of amyloid by giving analogs of heparan sulfate.	1985	Kingston General Hospital
Discovery of the T-cell receptor, significant in the field of immunology – Dr. Tak Mak.	1985	University Health Network

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University Hospital announces success in a trial using cyclosporine to arrest the progress of Type 1 diabetes.	1985	London Health Sciences Centre
Reconstruction of the mitral annulus (the supporting structure for cardiac valves) – Dr. Tirone David.	1985	University Health Network
Published results of first randomized, controlled trial evaluating natural surfactant replacement therapy for the prevention of respiratory distress syndrome in premature newborns.	1985	Sunnybrook and Women's College Hospital
The first successful double lung transplant – Dr. Joel Cooper.	1986	University Health Network
Use of a patch technique to repair ruptures of the heart wall following a heart attack – Dr. Tirone David.	1986	University Health Network
Developed first commercialized automatic sleep analyser.	1986	The Ottawa Hospital
Dr. Tony Pawson of The Samuel Lunenfeld Research Institute receives international recognition for discovering how cells communicate with each other.	1986	Mt.Sinai Hospital
The first study that identified risk factors in pregnant women with low blood platelet counts, allowing physicians to provide early attention and intervention resulting in the avoidance of unnecessary caesarean section deliveries. Dr. John G. Kelton.	1987	Hamilton Health Sciences Centre
World's most premature baby (128 days premature) cared for in Rich Little Special Care Nursery (in Guiness Book of Records).	1987	The Ottawa Hospital
Development of a new pig valve to replace the diseased aortic valve – Dr. Tirone David & Dr. Chris Feindel.	1987	University Health Network
World's first use of the cold-tipped excimer laser during heart surgery.	1987	Ottawa Heart Institute
The gene defect that causes Tay-Sachs disease was identified.	1988	Hospital for Sick Children
Mapping and surgical correction of cardiac rhythm disorders – Dr. Lynda Mickleborough and Dr. Eugene Downar.	1988	University Health Network
Operation to spare the aortic valve in patients with aortic aneurysm – Dr. Tirone David and Dr. Chris Feindel.	1988	University Health Network
The world's first successful liver/small bowel transplant is performed at University Hospital.	1988	London Health Sciences Centre
Contoured Anterior Spinal Fixation Plate devised in collaboration with National Research Council.	1988	The Ottawa Hospital
Dr. Lap-Chee Tsui led a team that discovered the gene which, when defective, is responsible for cystic fibrosis.	1989	Hospital for Sick Children
The world's first invasive inner ear surgery for vertigo in normal hearing ears is conducted at University Hospital.	1989	London Health Sciences Centre

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Treatment of sleep apnea in patients with heart failure by mechanical assist device (CPAP) reduces morbidity and mortality – Dr. Doug Bradley and Dr. John Floras.	1989	University Health Network
First paper describing a health practioners' clinical strategies when a patient presents with decisional conflict (uncertainty about a course of action). First definition of 'effective' decisions whose choices depend on personal values.	1989	Ottawa Health Decision
First development of Cardiac Enhancement MRI.	1989	St. Joseph's Health Care, London
Tumour suppressor genes are discovered to play a role in the cause of Wilms tumour, a kidney cancer affecting children.	1990	Hospital for Sick Children
First Measure of neurotransmitter concentration in schizophrenics by magnetic resonance spectoscopy (MRS).	1990	St. Joseph's Health Care, London
Identification of genes responsible for hereditary blindness, Alzheimer's, Lou Gehrig's and Huntington's disease – Dr. Peter St. George Hyslop.	1990	University Health Network
World's first use of Capture Z – pacemaker lead.	1991	Ottawa Heart Institute
Study begins at University Hospital on the safety and efficacy of using detachable platinum coils to treat brain aneurysms.	1991	London Health Sciences Centre
First clinical trials of potassium channel blocking drug-sampridine in spinal cord injured patients shown to restore neurological function in individuals for whom one thought impossible – Dr. Keith Hayes.	1991	St. Joseph's Health Care London
Reconstruction of the inflow and outflow tracts of the heart using two conduits – Dr. Tirone David.	1991	University Health Network
Developed the first on-screen, visual keyboard compatible with Windows applications that can be controlled with a pointing device or a switch.	1991	Bloorview MacMillan Children's Centre
Invented and licensed the world's first high frequency ultrasound microimaging scanner for preclinical imaging. This scanner is now used around the world for research applications and clinical imaging of the eye to detect glaucoma and anterior segment tumour.	1991	Sunnybrook and Women's College Hospital
Cows' milk is identified as a possible causative agent in juvenile diabetes in genetically susceptible children.	1992	Hospital for Sick Children
Dr. Donald Low, in collaboration with infection-control technologist Barbara Willey, devises first laboratory test to identify VRE, vancomycin-resistant enterococci, an airborne antibiotic resistant bacterium. This test is now used internationally.	1992	Mt.Sinai Hospital
Developed a novel experimental technique that employs chemical substances to prevent or treat brain damage from stroke or trauma by regulating cell calcium levels – Dr. Chris Wallace.	1992	University Health Network

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The Community Balance and Mobility Scale, developed at the Toronto Rehabilitation Institute in partnership with researchers at the University of Toronto, is believed to be the first high-level clinical balance scale of its kind in the world.	1992	Toronto Rehabilitation Institute
Mount Sinai's Department of Nursing is selected as a World Health Organization Collaborating Centre for Nursing, the only hospital-based nursing department in the world to earn this distinction.	1992	Mt.Sinai Hospital
First scale to measure changes in decisional needs following counseling. The Decisional Conflict Scale is used in numerous international studies and validated in several languages.	1993	Ottawa Health Decision
The world's first international Digital Mammography Development Group, led by S&W scientists, is formed.This collaboration of leaders in breast imaging has made dramatic breakthrough in developing new technology for the detection of breast cancer.	1993	Sunnybrook and Women's College Hospital
First hospital to set-up Pressure Ulcer Database – most comprehensive, systematically collected data on this problem in acute care.	1993	The Ottawa Hospital
Neurochem founded to produce anti amyloid agents for the treatment of Alzheimer's, AA amyloid.	1993	Kingston General Hospital
First diagnostic sleep lab capable of assessment of circadian rhythm disorder.	1993	The Ottawa Hospital
A drug treatment is developed for Menkes disease, a neurological disorder that kills children before age three.	1993	Hospital for Sick Children
First use of holmium laser for fragmentation of renal calculi-now used world wide as standard of care. One of the first to use the same laser for treating tumours in the urinary tract and treatment of prostate enlargement. Dr. John Denstedt.	1993	St. Joseph's Health Care London
The gene responsible for Wilson disease – an inherited disorder in which copper accumulates in the liver and is released to other parts of the body, leading to severe liver and brain damage – was discovered.	1993	Hospital for Sick Children
Dr. Katherine Siminovitch, an investigator in the molecular genetics of rheumatic and auto-immune diseases, discovers a genetic marker for a fatal condition called Wiskott-Aldrich syndrome.	1994	Mt.Sinai Hospital
Martin Yaffe of S&W and Norman Boyd of Princess Margaret Hospital (UHN) show a correlation between breast density and increased risk of breast cancer.	1994	Sunnybrook and Women's College Hospital
The first biological proof that second-hand cigarette smoke can affect a fetus is provided.	1994	Hospital for Sick Children
Urology department has led the world in developing BCG for bladder cancer and apomorphine sublingual for erectile dysfunction.	1994	Kingston General Hospital

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Showing genetic predisposition to developing Reflex Sympathetic Dystrophy – Dr. Angela Mailis.	1994	University Health Network
The genetic defect responsible for CD8 deficiency, a rare disease which causes children to be born with faulty immune systems is identified.	1994	Hospital for Sick Children
Dr. Steven Narod is an international leader in the prevention and management of Genetic Breast & Ovarian Cancer. He led the team that discovered the BRCA1 and BRCA2 genes in 1994 and 1995, respectively.	1994	Sunnybrook & Women's College Hospital
A new therapy was developed for treating retinoblastoma, a cancer of the eye affecting infants. The treatment avoids radiation and can save the eye.	1994	Hospital for Sick Children
The world's first 3D ultrasound-guided cryosurgery is performed at University Hospital.	1994	London Health Sciences Centre
The Critical Care Program embarks on an evolutionary approach to the treatment of acute lung failure in children – partial liquid ventilation. The liquid is instilled into the damaged lungs of children with life threatening lung disease.	1995	Hospital for Sick Children
HSC virologists discovered a new virus named the Toronto virus or the torovirus, which may be the most common agent of viral gastroenteritis or diarrheal disease, a leading cause of sickness in Canadian children.	1995	Hospital for Sick Children
Treated the first patients for hyperopia with laser.	1995	The Ottawa Hospital
First 1.9T dedicated hand and wrist MRI images.	1995	St. Joseph's Health Care, London
First FDG Positron Emission Tomography (PET) scan.	1995	Ottawa Heart Institute
Discovered a family of human genes that regulate apoptosis or cell death. This permits the development of therapies designed to modulate the apoptotic process so as to reduce the death of brain cells in stroke and brain injury – Drs. R. Korneluk and A. MacKenzie.	1995	Children's Hospital of Eastern Ontario
Chemotherapy treatment for hormone-resistant prostate cancer – Dr. Ian Tannock and Dr. Malcom Moore.	1996	University Health Network
A team of researchers at London Health Sciences Centre accomplish a world-first when they develop a miniature recording device that monitors the heartbeat during fainting spells.	1996	London Health Sciences Centre
Awake craniotomy with same day discharge for brain tumour removal using image guided approach – Dr. Mark Bernstein.	1996	University Health Network
An international team of scientists, led by the director of the HSC Research Institute, discovered the gene responsible for more than 60 per cent of all cases of Fanconi anemia, a rare and serious blood disorder.	1996	Hospital for Sick Children
First decision aids to help patients consider the personal value of benefits and harms of options for preventing stroke from atrial fibrillation.	1996	Ottawa Health Decision

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Researchers develop a novel concept for anti-cancer treatment of recurrent acute lymphoblastic leukemia, the most common form of childhood cancer.	1996	Hospital for Sick Children
The effectiveness of a Menkes disease treatment was confirmed by characterizing the severe mutations on treated patients including one, who, at age 19, is the world's longest surviving Menkes patient.	1996	Hospital for Sick Children
Researchers identify a gene that causes holoprosencephaly, a disease that can lead to major structural defects of the head, called Sonic Hedgehog. This is the first time a link between a human gene and the disease has been discovered.	1996	Hospital for Sick Children
Researchers identify a major regulatory gene that is a critical control of retina and eye development in mammals. The discovery of the gene may have long-term implications for the treatment of conditions that cause destruction of the retina in humans.	1996	Hospital for Sick Children
Sick Kids researchers discovered a gene implicated in the development of colon cancer, bringing cancer researchers a step closer to understanding what causes cells to multiply uncontrollably – an activity that leads to the development of malignancies.	1996	Hospital for Sick Children
First conceptual framework course and self-analysis tool describing, developing, and evaluating the clinical skills of providing decision support for patients facing complex treatment decisions.	1996	Ottawa Health Decision
Description of a substance that causes intestines to regrow (GLP-2) – Dr. Dan Drucker.	1996	University Health Network
Treated the first hyperopic astigmatism with laser.	1996	The Ottawa Hospital
Transplantation of heart cells into damaged and scarred heart muscle to improve heart function – Dr. Ren-Ke Li and Dr. Richard Weisel.	1996	University Health Network
A new liver disease caused by excessive amounts of zinc and copper is identified. The condition was discovered when doctors found abnormally dense deposits of copper and zinc in livers removed at transplantation.	1996	Hospital for Sick Children
London Health Sciences Centre's Multi-Organ Transplant team transplants the liver, bowel, stomach, and pancreas into a five-month-old infant, the world's youngest recipients of a multi-organ transplant.	1997	London Health Sciences Centre
A London Health Sciences Centre nephrologist performs a world-first in plasma exchange treatment and is credited with saving the life of a man with a severe case of food poisoning.	1997	London Health Sciences Centre
TRIDEC educators and nurses, were the first to identify and address the needs of women with diabetes at menopause. A comprehensive written resource was developed "Diabetes, Menopause & Beyond".	1997	Sunnybrook and Women's College Hospital
First decision aids to help patients consider the personal value of the benefits and harms of options for treating stage IV lung cancer.	1997	Ottawa Health Decision

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At the Human Mobility Research Centre (a joint venture between KGH and Queen's University), the first computer-assisted knee replacement was conducted by Dr. Rudan in 1997.	1997	Kingston General Hospital
HMRC continues to be the first computer-assisted surgery centre in the world to have completed pelvic re-alignment, post-fracture total knee replacement, bone biopsy, and minimally invasive early knee replacement.	1997	Kingston General Hospital
An HSC geneticist leads an international team in identification of a human blood cell that 'regrows' the entire blood system. Enables development of new for blood diseases such as leukemia, thalassemia and sickle cell anemia.	1997	Hospital for Sick Children
Dr. R.Tyndale discovered a gene variant for an enzyme (CYP2A6) that may protect individuals from nicotine addiction. Those with defective version of the gene are less likely to continue smoking; smokers with the gene are likely to smoke less.	1998	Centre for Addiction and Mental Health
First in world to analyze the dramatic fall and rise in the rates of carotid endarterectomy, a surgical procedure designed to prevent strokes.	1998	Sunnybrook and Women's College Hospital
An international research team led by Dr. Steve Scherer, of The Hospital for Sick Children (HSC) and the University of Toronto (U of T) identify a gene responsible for one of the most severe forms of epilepsy, known as Lafora disease (LD).	1998	Hospital for Sick Children
Researchers at HSC, the Toronto Hospital and U of T have carry out studies which could lead to a new way to treat viral myocarditis, an inflammation of the heart leading to heart failure and, ultimately, the need for a transplant.	1998	Hospital for Sick Children
At the Human Mobility Research Centre (A joint venture between KGH and Queen's University), the first computer-assisted wrist replacement by Dr. Pichora in 1998.	1998	Kingston General Hospital
First workbook and measurement tools for surveying decision making needs of populations. The first survey was published in 2003, in Health Expectations.	1998	Ottawa Health Decision
First generic clinical tool (Ottawas Decision Guide) for assessing and addressing patients' decisional needs (practioner-administered and self-administered versions).	1998	Ottawa Health Decision
Researchers in Sick Kids' Motherisk program show that occupational exposure during pregnancy to organic solvents increases the chances of major birth defects. It is the first proof that humans can be affected.	1999	Hospital for Sick Children
Dr. Mark Redston and his colleagues demonstrate a link between the mutation in the APC gene, termed 'I1307K', and an elevated risk of developing colorectal cancer in the Ashkenazi Jewish population.	1999	Mt.Sinai Hospital
Vision researchers develop the "artificial cornea".	1999	The Ottawa Hospital

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Vision research team discovers that selective laser trabeculoplasty (SLT) is as effective as Argon Laser trabeculoplasty (ALT) to lower eye pressure in open-angle glaucoma.	1999	The Ottawa Hospital
First method to image blood flowing in the microscopic vessels in the muscle of the heart in real-time. An accurate view of cardiac microscopic vessels is key to improving diagnosis and treatment for heart attacks. Researcher Peter Burns.	1999	Sunnybrook and Women's College Hospital
Unique 3T MRI for imaging babies, first of its kind in the world, developed by LHRI investigators at SJHC.	1999	St. Joseph's Health Care, London
London Health Sciences Centre specialists successfully perform the world's first closed-chest, robotic-assisted beating heart coronary artery bypass graft (CABG).	1999	London Health Sciences Centre
Dr. Janet Rossant and her colleagues isolate mouse cells that represent the early cells forming the placenta in humans. These cells are a critical tool for helping understand what can go wrong during the development of a fetus.	1999	Mt.Sinai Hospital
The Heart Outcome Prevention Evaluation (HOPE) study was the first to find results indicating that if ramipril is used widely in appropriate patients, over one million premature deaths, heart attacks and stokes would be prevented each year. Dr. Yusuf.	1999	Hamilton Health Sciences
First decision aids to help patients consider the personal value of the benefits of options for end-of life management of advanced stage chronic obstructive pulmonary disease.	1999	Ottawa Health Decision
Hosted the world's first multi-disciplinary conference on caring for aging Holocaust Survivors. More than 300 delegates from around the world participated in workshops that examined the challenges of caring for genocide survivors and families.	1999	Baycrest Centre for Geriatric Care
First decision aids to help patients consider the personal value of the benefits and harms of options for cognitively impaired individuals with feeding problems; blood transfusion for heart surgery.	1999	Ottawa Health Decision
Leader of the first systematic review of randomized trials of patient decision aids published by an international Cochrane Collaboration review team in the British Medical Journal.	1999	Ottawa Health Decision
Researchers at The Hospital for Sick Children (HSC) and the University of Toronto (U of T) used a toxin produced by the same bacteria that cause hamburger disease to completely eliminate malignant human brain tumours grown in mice.	1999	Hospital for Sick Children
Identification of the individual brain cells that control pain – Dr. Karen Davis and Dr. Andre Lozano.	1999	University Health Network
Identification of novel T regulatory cells to induce tolerance in transplant patients – Dr. Li Zhang.	2000	University Health Network

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Identification of the novel immune molecule CD 200 to modify host immune response in transplantation – Dr. Reg Gorczynski.	2000	University Health Network
A team of researchers have discovered that distinct types of stem cells exist within the blood system that differ in the length of time that they can sustain a stem cell transplant.	2000	Hospital for Sick Children
Using PET scanning, research showed that schizophrenia can be treated with lower dosage levels of antipsychotic medication than was commonly thought. This has led to a lowering dose in drugs resulting in fewer side effects.	2000	Centre for Addiction and Mental Health
Researchers at CAMH, HSC and U of T demonstrate how receptors on the cell surface interact with each other and modify each other's function. This opens up a new field of drug development, which focuses on receptor-receptor interactions.	2000	Centre for Addiction and Mental Health
Researchers at St. Michael's Hospital and the University of Toronto complete a study which suggests that estrogen is associated with a short-term detriment and long-term benefit following an acute heart attack.	2000	St.Michael's Hospital
The Hospital for Sick Children installed the first clinical Magneto Encephalography (MEG) site in Canada and the first in the world to be installed at a paediatric institution.	2000	Hospital for Sick Children
CAMH released the first study to show that using ecstasy can deplete the level of serotonin in humans.	2000	Centre for Addiction and Mental Health
Human trials for inhibitors of AA amyloid and Alzheimer amyloid at Phase II level.	2000	Kingston General Hospital
Findings show that stroke patients who have sleep apnea spend much longer in rehabilitation and do not recover as well physically compared to stoke patients without the sleep disorder. Dr. Douglas Bradley.	2000	Toronto Rehabilitation Institute
The first to show that much lower doses of chemotherapy in combination with anti-angiogenic drugs (drugs that stop the development of blood vessels in tumors) will significantly delay tumor progression in animal models. Dr. Bob Kerbel.	2000	Sunnybrook and Women's College Hospital
Researchers at the University of Toronto and St. Michael's Hospital (SMH) discover that glaucoma affects not only the eyes but the entire visual system, including the brain.	2000	St.Michael's Hospital
First site in the world to implant an antibiotic coated penile implant called Inhibizone – Dr. Gerald Brock.	2000	St. Joseph's Health Care London
Develop first CT Perfusion Imaging.	2000	St. Joseph's Health Care, London
YouthNet/ReseauAdo vision for community mental health program expanded to sites across Canada collecting the insights of over 10,000 young people about mental health issues and services.	2000	Children's Hospital of Eastern Ontario

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Leader of the first international clearinghouse of patient decision aids, which are evaluated using the first set of standardized criteria for evaluating them.	2000	Ottawa Health Decision
First decision aids to help patients consider the personal value of the benefits and harms of options for location of care for people with dementia and osteoporosis treatments.	2000	Ottawa Health Decision
Baycrest-Kaplan Assessment of Neuropsychological Status (B-KANS), an innovative test now used around the world to assess the nature and extent of impairment in clients with cognitive disorders such as Alzheimer's Disease and stroke.	2000	Baycrest Centre for Geriatric Care
A study led by Rotman Director Dr. Donald Stuss (published in BRAIN, February 2001), found the strongest evidence yet that what sets humans apart from other primates may be found in the brain's frontal lobes.	2001	Baycrest Centre for Geriatric Care
Michael Julius of S&W and collaborators at UHN and Osaka University in Japan are the first to discover a protein in human breast milk that stimulates the immune system of newborns. This study underlines the importance of breastfeeding.	2001	Sunnybrook and Women's College Hospital
The Maternal, Infant & Reproductive Health Research Unit (MIRU) is a leader in designing and conducting multicentre randomised clinical trials (RCTs). Looks at the risks and benefits of caesarean vs. vaginal birth for breech pregnancies. Dr. Mary Hannah.	2001	Sunnybrook and Women's College Hospital
Utility of 2 hour post dose cyclosporine levels investigated to improve clinical outcomes in transplantation – Dr. Gary Levy and Dr. Ed Cole.	2001	University Health Network
London Health Sciences Centre researchers find strong evidence to support that surgery, not medicine, for temporal lobe epilepsy is key to improved quality of life.	2001	London Health Sciences Centre
World's first simultaneous endocardial bi-atrial mapping of atrial fibrillation.	2001	Ottawa Heart Institute
Scientists at HSC and U of T discover the function of the protein for a form of Fanconi Anemia, an inherited disease characterized bone marrow failure, congenital malformations, and a high susceptibility to leukemia.	2001	Hospital for Sick Children
Discovery that a protein called Interleukin 13 fuels the growth of Hodgkin's lymphoma – Dr. Tak Mak.	2001	University Health Network
Development of the "Marshall Score" for classifying Multiple Organ Dysfunction Syndrome – Dr. John Marshall.	2001	University Health Network
Researchers at The Hospital for Sick Children discovered that infant heart transplants can be performed safely and successfully despite major blood type incompatibility between the donor and recipient.	2001	Hospital for Sick Children

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A team of researchers led by The Hospital for Sick Children has determined that multiple sclerosis and type I (Juvenile) diabetes mellitus are far more closely linked than previously thought.	2001	Hospital for Sick Children
Researchers link known cancer-causing genes to normal developmental processes, as well as wound healing using a fruit fly model. Understanding the morphogenesis process is key to discovering what happens when development goes wrong.	2001	Hospital for Sick Children
First decision aids to help patients consider the personal value of the benefits and harms of options for life changes for lowering your risk of heart disease and stroke.	2001	Ottawa Health Decision
Linked exposure to organic solvents during pregnancy to an increased risk of visual defects in exposed offspring.	2001	Hospital for Sick Children
A research study showed that hospitalizations for asthmatic children occurred when they returned to school; the particular phenomenon is happening all over the Northern Hemisphere.	2001	St. Joseph's Healthcare Hamilton
First description of the role of cell cycle genes in stroke damage.	2001	The Ottawa Hospital
One of five sites in the world piloting the Diabetes Electronic Management Systems (DEMS).	2001	St. Joseph's Health Care London
Discovery that the Mgat5 gene and a family of sugar-binding proteins called galectins act as a key regulator of T cells in the immune system. This could lead to new drugs/treatments for patients with autoimmune diseases, as well as cancer and HIV.	2001	Mt.Sinai Hospital
LHSC conducts the world's first robotic-assisted surgery using videoconferencing technology. One surgeon assists and mentors another surgeon from a remote site, both able to manipulate the robotic technology in the operating room.	2001	London Health Sciences Centre
Dr. Steven Ruben and Wojtek Michealowki, determined that it is possible to develop a clinical algorithm for triage of abdominal pain that can be used by non-medical professionals, this can be further extended into other pediatric emergencies.	2001	Children's Hospital of Eastern Ontario
Thomas Schmitt and Juan Carlos Zúñiga-Pflücker are first to create a simple system to generate T-cells, a vital component of the immune system that orchestrates, regulates and coordinates the overall immune response, in a petri dish.	2002	Sunnybrook and Women's College Hospital
Philippe Poussier and Michael Julius are the first in the world to demonstrate that a cell population of unknown function but present in the gut of normal individuals played a central role in preventing the development of ulcerative colitis.	2002	Sunnybrook and Women's College Hospital
Vision research team discovers gene for Wagners syndrome.	2002	The Ottawa Hospital

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CHEO scientist David Moher heads an international group of researchers that developed a process that revolutionizes the reporting of clinical trials. The Consolidated Standards of Reporting Trials (CONSORT) statement is endorsed by several medical journals.	2002	Children's Hospital of Eastern Ontario
Treated first high myopic, first hypermopic and first Presbyopia patients using Wavefront technology.	2002	The Ottawa Hospital
Early development of "morphing" technology was developed by Dr. Rudan in 2002 to eliminate the need for disruptive x-ray based imaging during some procedures.	2002	Kingston General Hospital
Description of the role of IRAK-4, an immune molecule, critical for first-line defense against infections – Dr. Wen-Chen Yeh, Dr. Tak Mak and Dr. Pam Ohashi.	2002	University Health Network
Study finds that screening and treating new immigrants for the latent stage of tuberculosis infection will result in substantial public health and economic benefits.	2002	St.Michael's Hospital
St. Michael's Hospital hosted the First International Conference on Inner City Health Research. Outlined priorities for inner city health research that will lead to improvements in the health of the urban disadvantaged.	2002	St.Michael's Hospital
Discovery that fragile X syndrome (most common inherited cause of mental retardation) is related to glutamate in the brain – Dr. Peter Carlen.	2002	University Health Network
Developing the world's first synthetic jaw for crash-testing new types of mouth protection, in partnership with the Hospital for Sick Children and Ryerson University.	2002	Bloorview MacMillan Children's Centre
Identification of protein that triggers autoimmune response in Sjögren's syndrome, as well as a vaccine to treat the condition – Dr. Arthur Bookman.	2002	University Health Network
Identification of gene clusters using microarray technology that are involved in lung cancer – Drs. Denis Wigle, Igor Jurisica, Jim Woodgett, Shaf Keshavjee, Gail Darling, Frances Shepherd and Ming Tsao.	2002	University Health Network
London Health Sciences Centre study determines that patients with congestive heart failure have an improved quality of life with a new pacemaker that works on both sides of the heart.	2002	London Health Sciences Centre
Demonstrated that dense breast tissue is a major inherited risk factor for breast cancer – Dr. Norman Boyd.	2002	University Health Network
Conducted the world's first study to show the effectiveness of Botox in improving hand and arm functions in children with spasticity.	2002	Bloorview MacMillan Children's Centre
Developed the world's first long-term tracking study of children with a brain injury, the information from which shows that the Mayo Portland Adaptive Inventory (MPAI) is an effective tool to measure outcomes in children following a brain injury.	2002	Bloorview MacMillan Children's Centre

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Proof of efficacy of new treatment for HIV infection – Dr. Sharon Walmsley.	2002	University Health Network
Deduction of the structure of a molecular complex in the brain involved in many functions including memory and learning – Dr. Mitsu Ikura.	2002	University Health Network
Developing method for detecting gene mutations that enhance care for families with retinoblastoma – Dr. Brenda Gallie.	2003	University Health Network
St. Joseph's Centre for Minimal Access Surgery completed the world's first hospital-to-hospital telerobotic assisted surgery on a patient 400 kilometres away in North Bay.	2003	St. Joseph's Healthcare Hamilton
First treatment of pain with extremely low frequency magnetic field using specific pulsed magnetic fields.	2003	St. Joseph's Health Care, London
Developing the world's first sensor to enable prostheses to be powered by muscle sounds.	2003	Bloorview MacMillan Children's Centre
Martin Yaffe of S&W is appointed to lead the committee to establish standards for digital mammography that will be used through the U.S. health care system.	2003	Sunnybrook and Women's College Hospital
Discovered a biochemical mechanism involved in the attachment of diseased cells to healthy ones. This process facilitates abnormal cell migration into healthy tissues, allowing disease to progress further. Dr. Ashok Kumar.	2003	Children's Hospital of Eastern Ontario
Working with manufacturers, CAMH has acquired the most advanced brain PET scanner (HRRT) in the world. The new high resolution, high sensitivity camera allows researchers to image brain chemistry with unparalleled resolution.	2003	Centre for Addiction and Mental Health
First worldwide application of large database time series analysis to examine causes of emergency department overcrowding in Canada.	2003	Sunnybrook and Women's College Hospital
Conducted the first research study in the world that shows the steroid deflazacort cuts the risk of heart disease in teens with Duchenne muscular dystrophy by at least 75 per cent.	2003	Bloorview MacMillan Children's Centre
A study examined how patients with antiphospholipid antibodies, a common cause of heart attack and stroke when they occur in young patients should be treated.	2003	St. Joseph's Healthcare Hamilton
The first to study the role of sleep and hormonal changes in the etiology and treatment of postpartum psychosis, which is the most serious psychiatric disorder to follow childbirth. Dr. Sharm.	2003	St. Joseph's Health Care London
The Centre for Global Health Research is conducting a prospective study of six million people in India of mortality from various causes in relation to smoking, alcohol use, indoor air pollution, water and sanitation and fertility.	2003	St.Michael's Hospital
Leader of the first international consensus group on standards for development and evaluation of patient decision aids.	2003	Ottawa Health Decision

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First e-tools to capture and monitor changes in decisional needs and provide tailored feedback on decision supporting strategies. First online auto-tutorial training in the skill of decision support for complex health decisions.	2003	Ottawa Health Decision
The antibody coated stent, developed by Dr. Michael Kutryk, a cardiologist and clinician scientist with St. Michael's Hospital, was implanted into the first human patient at Thoraxcenter, University Hospital Rotterdam in Holland.	2003	St.Michael's Hospital
First decision aids to help patients consider the personal value of the benefits and harms of options for treating rheumatoid arthritis, lupus, vasculitis, scleroderma and associated raynauds, gout, rotator cuff, tennis elbow, ankylosing spondylitis.	2003	Ottawa Health Decision
The Krembil Family Epigenetics Research Laboratory is dedicated to understanding the role of epigenetics in psychiatric illness is established. Epigenetic mechanisms, may be the key to solving several puzzles re: schizophrenia and depression.	2003	Centre for Addiction and Mental Health
S&W scientists publish the first results in the world that use digital mammography with a contrast agent (dye) to show tumors that cannot be viewed with current clinical mammography.	2003	Sunnybrook and Women's College Hospital
The Heart and Stroke Foundation Centre for Stroke Recovery: Under the auspices of the Heart & Stroke Foundation and in partnership with The Ottawa Hospital and Baycrest Centre for Geriatric Care, S&W is part of this leading-edge centre of excellence.	2003	Sunnybrook and Women's College Hospital
A team from St. Joseph's Hamilton and McMaster U. cloned the gene that marks an important nuclear protein of the SARS virus. Gene will be inserted into an engineered virus for testing will begin soon.	2003	St. Joseph's Healthcare Hamilton
The gene family mediating programmed cell death or apoptsis, a breakthrough made in CHEO's labs, has laid the foundation for the development of a new biologic approach in cancer treatment poised for clinical testing in Canada and the U.K.	2003	Children's Hospital of Eastern Ontario
First to discover a molecular marker to diagnose hepatocelular carcinoma (HCC), the most common type of liver cancer. HCC is usually asymptomatic at early stages, and has great propensity for invasion. Dr. Jorge Filmus.	2003	Sunnybrook and Women's College Hospital
Neil Cashman and Caprion Pharmaceuticals are first to discover a way to make the immune system specifically recognize infectious prions, proteins that cause brain-wasting diseases like mad cow disease and Creutzfeldt-Jakob Disease, its human equivalent.	2003	Sunnybrook and Women's College Hospital
Researchers with the Queens University Anesthesiology Informatics Laboratory at KGH were the first to develop electronic SARS screening procedures.	2003	Kingston General Hospital

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St. Joseph's Healthcare unveils the world's largest PET scanner for research purposes at the Brain-Body Institute providing unprecedented views of the human body (50 centimetres verses 15 centimetres of the conventional PET scanners.	2003	St. Joseph's Healthcare Hamilton
Discover that TRP-2, a gene involved in melanin synthesis, is responsible for drug and irradiation resistance in human melanoma. Dr. Bob Kerbel and Dr. Yaacov Ben-David.	2003	Sunnybrook and Women's College Hospital
The amutee team at Bloorview has developed a computer-based software solution to track how kids use their prosthetic arms at different stages in their lives.the PUFI software addresses the functional benefits of children's prosthetic devices over time.	2004	Bloorview Macmillan