



Amplifying Impact

Leveraging Cancer
Research to Enhance the
Health of Canadians



At the Canadian Institutes of Health Research (CIHR), we know that research has the power to change lives. As Canada's health research investment agency, we collaborate with partners and researchers to support the discoveries and innovations that improve our health and strengthen our health care system.

www.cihr-irsc.gc.ca

The Institute of Cancer Research (ICR) funds cancer research in Canada based on internationally accepted standards of excellence, which bear on preventing and treating cancer, and improving the health and quality of life of cancer patients. CIHR is one of the leading cancer research funders in Canada.

www.cihr-irsc.gc.ca/e/12506.html

Also available on the Web in HTML format

© His Majesty the King in Right of Canada (2024)

Cat. No. MR4-185/2024E-PDF

ISBN 978-0-660-69496-2

Land Acknowledgement

The Institute of Cancer Research is hosted at the University Health Network in Toronto. We respectfully acknowledge that the land on which we developed our strategic research priorities is the treaty territory of the Mississaugas of the Credit First Nation, and ancestral and traditional lands of the Anishinaabe, Haudenosaunee, Ojibway/Chippewa and Huron-Wendat Nations. As an institute with national reach, we acknowledge the ancestral and unceded territories of all the First Nations, Inuit, and Métis People from coast to coast to coast, and honour their diverse histories and cultures. Through our engagement, research, learning, and community activities, we strive for respectful relationships with all Indigenous Peoples as we continue on a path towards healing, reconciliation, and self-determination.

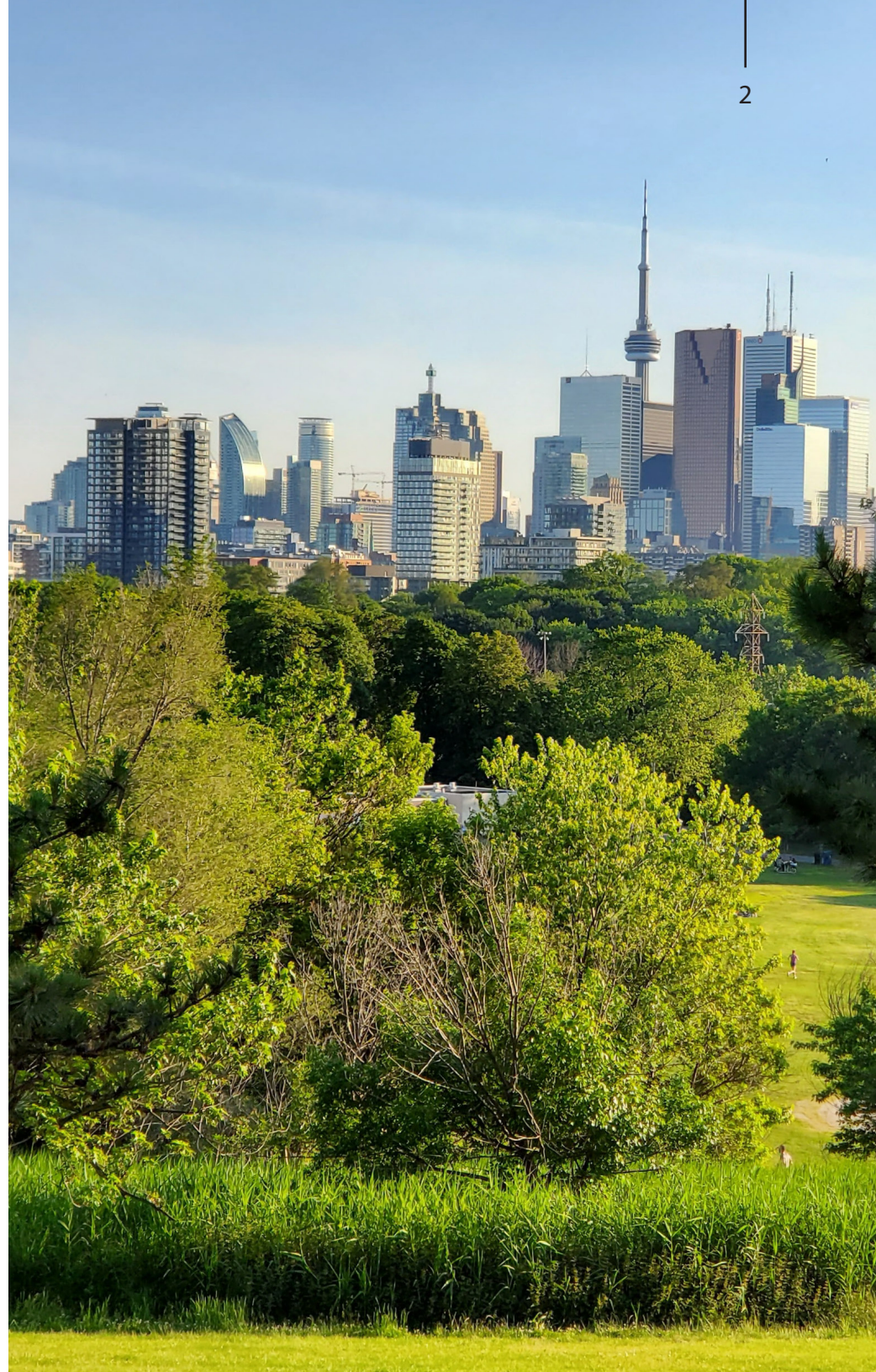


Table of Contents

Message from the Scientific Director	4
Strategy at a Glance	5
Our Strategic Framework	7
Cancer in the 21st Century	9
The Institute & Our Community	13
Our Research Priority Setting Process	15
Priority Area 1	17
Refocus on Cancer Prevention, Early Detection & Risk Reduction	
Priority Area 2	21
Mitigate Treatment Toxicities to Improve Cancer Survivorship	
Priority Area 3	25
Transform Cancer Research Through Data Strategy & Advanced Analytics	
Cross-Cutting Principles	29
Acknowledgements	31
References	34



Message from the Scientific Director

On behalf of the Institute of Cancer Research (ICR) at the Canadian Institutes of Health Research (CIHR), I am excited to share our strategic research priorities for 2024-2029.

As cancer remains the leading cause of death in Canada – touching the lives of millions of Canadians and their families each year – ICR continues its mission to support life-changing cancer research grounded in scientific excellence, innovation, inclusivity, and impact. Guiding this mission are our new strategic research priorities, which were shaped by the community, for the community.

These new priorities represent ICR's future directions for the ensuing five years, capitalizing on the deeper understanding of the important elements driving cancer development and progression acquired in the recent decades and increased recognition and focus on health inequities. As we embark on the next phase of cancer research, these priority areas will build on previous advancements, facilitate new innovations, identify cancer-related health equity gaps, and foster collaborative research through strategic investments, partnerships, and capacity building.

Canadian cancer research is world-class. The articulated strategic goals will further strengthen Canada's global footprint as a leader in cancer research, benefiting the full diversity of cancer patients and communities nationally and around the world.

Integral to our Institute's strategic goals is the CIHR Strategic Plan 2021-2031. CIHR's vision for a *healthier future* can only be achieved through our shared responsibility to support research excellence, enhance Canadian health research capacity, Indigenous self-determination, health equity, and evidence-informed decision-making.

These core themes are deeply embedded within our strategic research priorities, reaffirming our commitment to CIHR's vision for *the best health for all, powered by outstanding research*.

Following in the footsteps of exceptional scientific leadership at the Institute, it has been an honour and privilege to lead ICR's strategic priority setting process. I would like to thank our deeply talented cancer research community, our Institute Advisory Board, our patient and community partners, the ICR team, and the dedicated CIHR staff and management for their engagement and contributions in launching these new research priorities.

Each small, but meaningful step in cancer research makes a profound difference in the lives of individuals and their families impacted by cancer. Let us continue together towards our shared vision of a cancer-free world.

Fei-Fei Liu, MD, FRCPC, FASTRO, FCAHS
Scientific Director, CIHR Institute of Cancer Research



Strategy at a Glance

Despite major scientific advances in prevention, diagnosis, and treatment, cancer remains the leading cause of death for Canadians and a disease whose impact has touched virtually every individual across the country.

As one of the thirteen CIHR Institutes, the Institute of Cancer Research (ICR) supports a wide range of research initiatives to strengthen Canada's cancer research footprint. For more than 20 years, ICR has collaborated with its diverse cancer research community nationally and internationally and other CIHR Institutes to support world-class cancer research. In the next five years, we will build on these achievements to continue our impact on cancer control, including advancing research to gain a national understanding of cancer-related health equity gaps.

As we embark onto the next phase, ICR is excited to share its Research Priority Plan for 2024-2029, *Amplifying Impact: Leveraging*

Cancer Research to Enhance the Health of Canadians, encompassing three key research areas described on the next page.

To achieve these research priorities, ICR will play three complementary roles in the pan-Canadian cancer research ecosystem. As a **Funder**, we will invest in innovative, high impact research that addresses areas of important, unmet need. As a **Convenor**, we will connect members within and beyond our diverse cancer research community to share knowledge, technologies, and resources to identify and capitalize on new areas for collaboration. As a **Catalyst**, we will work closely with our partners across CIHR and beyond to put research into action. By focusing on these three key research priority areas, we are determined to amplify our impact on the Canadian cancer research landscape, and advance the world-class cancer research that the full diversity of people living in Canada both need and deserve.



Research Priorities



Refocus on Cancer Prevention, Early Detection & Risk Reduction

We will foster interdisciplinary research on the biological mechanisms underlying cancer etiology linked with host, lifestyle, environmental, socio-economic, and other factors that will enable improvements in prevention, early detection, and risk reduction for all people. Working closely with a wide range of partners, we will strengthen capacity, mobilize knowledge, and identify and address barriers to health equity experienced by historically excluded and underserved communities.



Mitigate Treatment Toxicities to Improve Cancer Survivorship

We will strengthen efforts to accelerate research and build capacity in cancer survivorship by better connecting interdisciplinary researchers with diverse areas of expertise and experience and patient partners reflecting the diversity of people in Canada to acquire a deeper understanding of the biological mechanisms underlying cancer treatment toxicities.

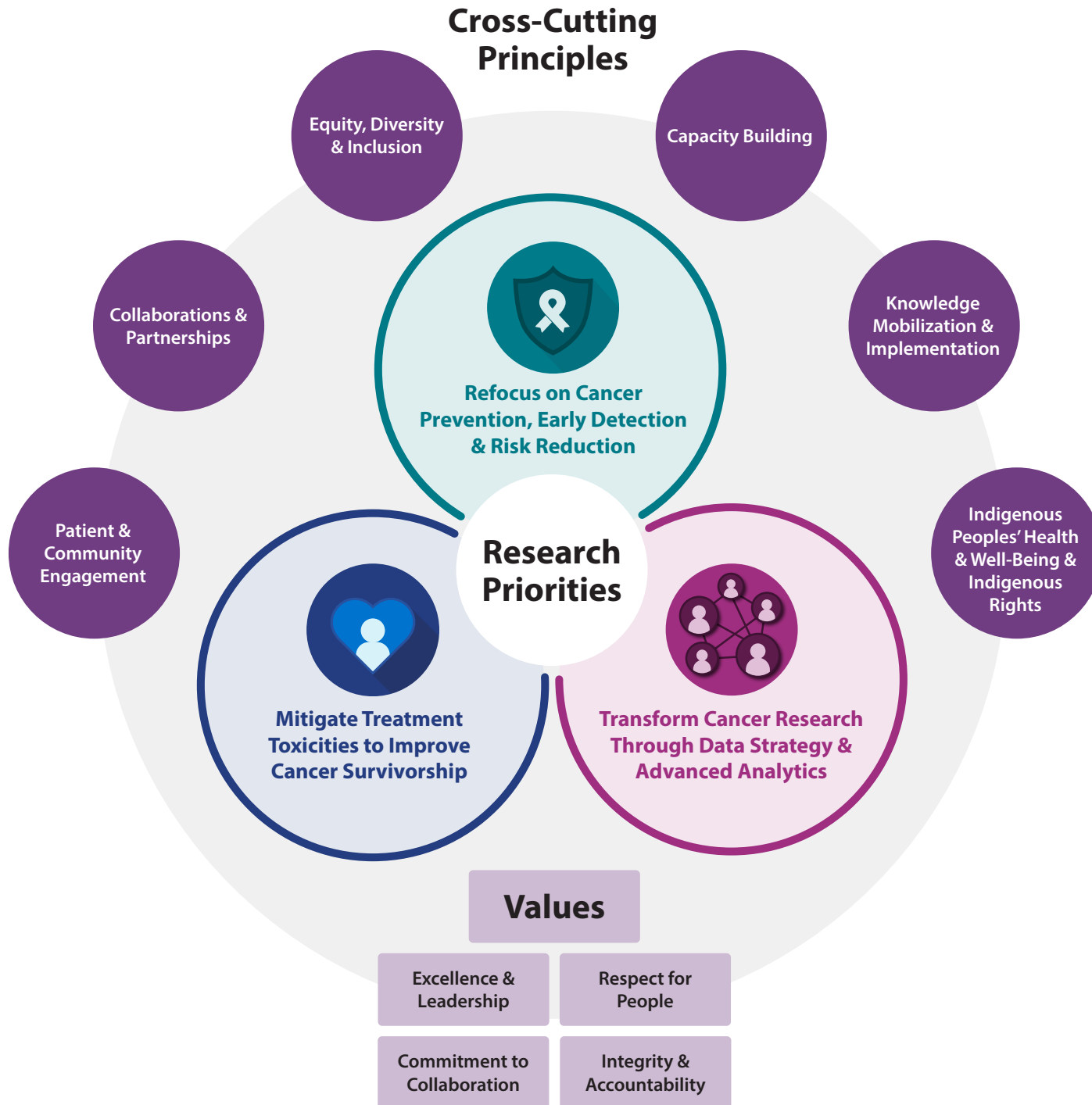


Transform Cancer Research Through Data Strategy & Advanced Analytics

We will help to promote a world-class cancer research data ecosystem by engaging and convening key stakeholders and partners to build capacity, coordinate and enhance cancer research data resources, and advance the sharing and management of research data to facilitate advanced analytics.

Our Strategic Framework





Cancer in the 21st Century

Cancer is a major health challenge both in Canada and worldwide. ICR continues to support cancer research to enhance the health of Canadians and address the burden on healthcare systems.

Cancer remains one of the leading causes of death worldwide. In 2020, an estimated 19.3 million new cancer cases and nearly 10 million cancer deaths occurred across the world.¹ By 2040, 16.4 million people are expected to succumb to this disease globally.¹

In Canada, cancer is the leading cause of death. Approximately 2 in 5 Canadians will be diagnosed with cancer during their lifetime, and 1 in 4 will die of their

disease.² An estimated 239,100 Canadians were expected to be diagnosed with cancer in 2023, with 86,700 deaths² – a number that is likely to be exacerbated by disruptions to cancer care during the COVID-19 pandemic, leading to later-stage diagnoses.³ As such, cancer poses a significant burden on both the people affected and the health care system. From a societal perspective, the economic burden of cancer in Canada is substantial – cancer-related costs were estimated to be \$26.2 billion in 2021, with 30% being borne by patients and their families.⁴

In the past decades, remarkable progress has been made in reducing age-adjusted cancer incidence and mortality worldwide. Technological innovations and scientific breakthroughs in the understanding, prevention, detection, and treatment of cancer – ranging from increased accessibility to affordable genome sequencing, targeted immunotherapies, mRNA vaccines, artificial intelligence, circulating biomarkers, *in vivo* CRISPR screening, cryo-electron microscopy, and single-cell sequencing to name a few – have accelerated progress against this disease. Understanding and addressing the intersections between socio-economic, geographic, and demographic

factors across the cancer continuum have also improved cancer health equity across the globe.

Canada has a strong global footprint in cancer research, contributing to transformative, world-class research and providing scientific and strategic leadership to emerging priorities and challenges. In part, due to the advances in cancer research and care in the past decades, there are currently more than 1.5 million Canadians living with and beyond cancer.⁵ Although the age-adjusted cancer incidence is declining in Canada, the absolute number of new cancer cases and deaths continue to rise as a result of our growing and aging population.⁶ As such, continued investment in research spanning from prevention, to early detection, treatment, and survivorship is essential to accelerating progress against cancer. This includes sustained investment to build Canada's health research capacity and inclusivity by training the next generation of cancer researchers, clinicians, and technology developers, as well as supporting critical research infrastructure.

Canada's annual investment in cancer research averages \$500 million.⁷ CIHR has invested more than \$1 billion in

cancer research over the past five years, supporting research that has led to many important breakthroughs for patients. Looking ahead, ICR will execute on its new strategic research priorities, working closely with its research and patient communities, national and international funding partners, other Institutes within CIHR, government departments and agencies, such as Health Canada, the Public Health Agency of Canada, Innovation, Science and Economic Development Canada, Statistics Canada, the Canadian Institute for Health Information, the Canadian Partnership Against Cancer, the Canadian Cancer Research Alliance, the Canadian Association of Provincial Cancer Agencies, and many others, to collectively reduce the burden of cancer and maximize the benefits of cancer research for the full diversity of people living in Canada.

Statistics at a Glance



NATIONAL STATISTICS

Cancer is the leading cause of death in Canada

2/5 

Canadians will be diagnosed with cancer in their lifetime

1/4 

Canadians will die from cancer

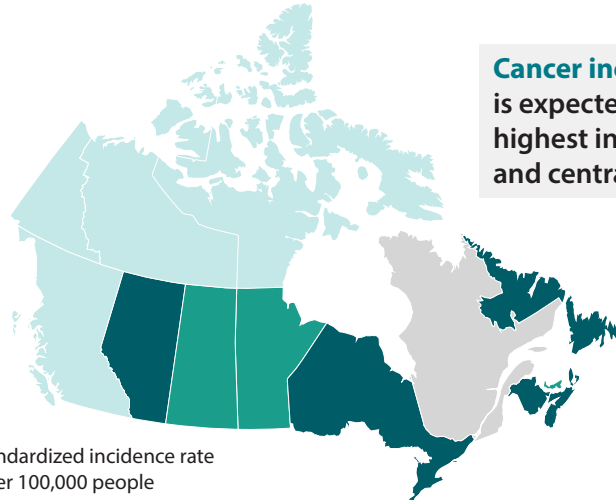


Cancer prevalence is rising

What is cancer prevalence?

Person-based cancer prevalence estimates the number of people who were diagnosed with cancer in the past and are still alive at a specific point in time.

PROVINCIAL STATISTICS

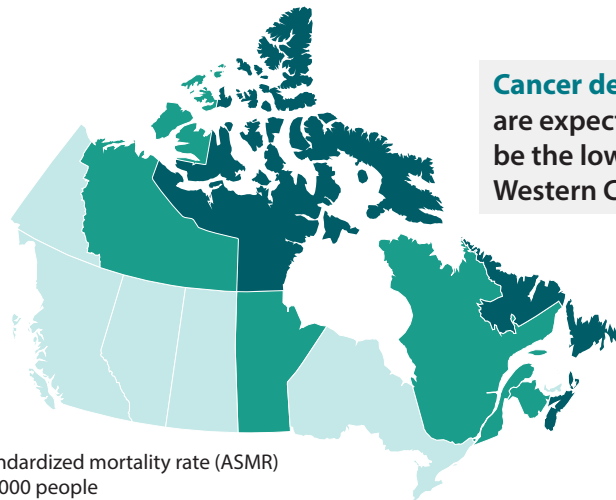


Cancer incidence is expected to be highest in eastern and central Canada

Age-standardized incidence rate (ASIR) per 100,000 people

■ ≥500
 ■ 475-499
 ■ <475
 ■ Excluded

Quebec data could not be included due to methodological differences. For more information refer to reference 2.



Cancer death rates are expected to be the lowest in Western Canada

Age-standardized mortality rate (ASMR) per 100,000 people

■ ≥210
 ■ 190-209
 ■ <190

COST

\$26.2 billion Cancer-related costs in Canada in 2021



30% was borne by patients & their families

INVESTMENT



\$500 million

Canada's average annual investment in cancer research

The Canadian Cancer Research Survey (CCRS) led by the Canadian Cancer Research Alliance (CCRA) tracks the research investment in peer-reviewed research by over 40 of Canada's cancer research funding organizations/programs and is estimated to capture between 60-80% of the existing research investment. The CCRS covers 3 broad categories of research investment:

1. Federal government organizations/programs
2. Provincial government agencies/organizations
3. Charitable organizations/associations

Information on pg. 11-12 is sourced from references [2](#), [4](#), [5](#) and [7](#)

The Institute & Our Community

ICR plays a dynamic role in the Canadian and global cancer research landscape as a funder, convenor, and catalyst.

The Institute of Cancer Research (ICR) is one of thirteen Institutes of the Canadian Institutes of Health Research (CIHR), Canada's federal agency that funds all aspects of health research. ICR plays a dynamic role in strengthening Canada's cancer research footprint. We support scientific excellence across all areas of cancer research – prevention, screening, diagnosis, treatment, survivorship, and palliation – to reduce the growing incidence of cancer in Canada and improve the health, well-being, and health equity of people in Canada. As part of CIHR, our mandate spans all four pillars of health research (biomedical research, clinical research, health services research, and social, cultural, environmental, and population health research) and represents inter- and transdisciplinary approaches to cancer research that considers multiple contexts, perspectives, communities, and experiences. Through its role as a funder, convenor, and catalyst across the cancer

ecosystem, ICR has more than 20 years of history in supporting world-class cancer research through:



Catalyzing and supporting research



Building Canada's health research capacity



Scientific leadership on Government of Canada and international priorities



Fostering national and international partnerships



Knowledge mobilization activities

Cancer remains a global health challenge that requires the collective efforts of diverse stakeholders and partners. ICR brings together a community of more than 4,700 stakeholders and partners from across Canada and the world to discover, innovate, and address cancer's greatest challenges. Our diverse community represents researchers, trainees, health professionals, people with lived and living experience, families and caregivers, government departments and agencies, industry, community organizations, and funding agencies. As ICR is proudly community-oriented, the Institute offers extensive, inclusive opportunities for engagement, dialogue, and feedback to inform and support the design and delivery of all its activities. Together, ICR aims to work with its world-class community to support and magnify the impact of cancer research in Canada and around the world.

Our Mandate

To support research that reduces the burden of cancer on individuals and families through prevention strategies, screening, diagnosis, effective treatments, psychosocial support systems, and palliation.

Our Mission

To foster research based on internationally accepted standards of excellence, which bears on preventing and treating cancer, and improving the health and quality of life of cancer patients and survivors.

Our Values

We embrace the values of CIHR:

- Excellence & Leadership
- Commitment to Collaboration
- Respect for People
- Integrity & Accountability

Our Role



Funder of research



Convenor to forge connections & foster collaboration



Catalyst for action



ICR's Research Priority Plan will harken a new era of diverse and innovative cancer research initiatives and infrastructure. This plan will be integral in continuing Canada's long-standing culture of research excellence and impact while supporting future generations of cancer researchers."

Dr. Sachin Katyal

Associate Professor, University of Manitoba & Senior Scientist, CancerCare Manitoba



The strength in cancer research lies in community and collaboration. The Canadian Cancer Research Alliance is thrilled to see all of the opportunities embedded throughout ICR's Research Priority Plan to support collaborations and interdisciplinary team science, accelerating knowledge generation across the cancer continuum."

Dr. Paula Robson

Chair, Canadian Cancer Research Alliance (CCRA) Advisory Board

Dr. Sara Urowitz

Executive Director, CCRA



Our Research Priority Setting Process

ICR conducted a 14-month engagement process to ensure its strategic priorities for the next five years were informed by and co-created with our diverse communities of researchers, patient partners, funding partners, government, non-government and industry representatives, and international experts in cancer research, as well as in collaboration with CIHR to ensure alignment with the CIHR Strategic Plan 2021-2031.



Witnessing the wealth of knowledge, exchange, and collaboration that was generated during the research priority setting process was incredible. It speaks volumes to the extraordinary engagement of the cancer research community in Canada and its passion for advancing cancer research."

Dr. Christine Williams
Chair, ICR Institute Advisory Board

Dr. Hanne Ostergaard
Vice-Chair, ICR Institute Advisory Board



Pan-Canadian Active Listening Tour

Throughout November 2022 to April 2023, more than 250 members of our diverse research community, including researchers, patient partners, Indigenous communities, and funding partners across Canada provided their thoughts and perspectives on the current cancer research landscape, challenges and opportunities, and where funding and support from ICR would be most impactful. The pan-Canadian insights highlighted three potential research priority areas to be further developed and refined.



Deliberative Dialogue Workshop (DDW)

In June 2023, more than 100 attendees joined ICR in a one-and-a-half-day hybrid workshop fostering inclusive and wide-ranging discussions among diverse members of the cancer research and patient communities. The workshop focused on the three preliminary research priority areas, exploring their unique opportunities and challenges, and how they fit into the broader Canadian, and international cancer research landscape to ensure ICR continues to strategically and equitably enhance support for the cancer research community.



Community Engagement Survey

In July 2023, ICR launched a bilingual Community Engagement Survey to ensure broader community participation and the opportunity to further build upon the Pan-Canadian Active Listening Tour and DDW insights.



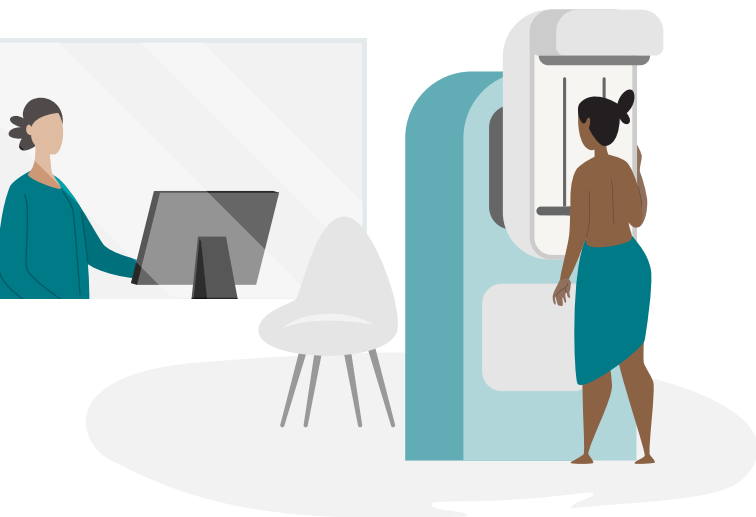
Guidance & Endorsement from ICR's Institute Advisory Board

Throughout our engagement process, we sought guidance from our Institute Advisory Board members to help inform, improve, and ultimately endorse the development and finalization of ICR's three research priority areas whilst ensuring alignment with the CIHR Strategic Plan.



Offering my perspective in the research priority setting process was a watershed moment in my advocacy journey. As a cancer survivor, seeing cancer survivorship represented in this plan makes me feel seen and validated. It will help foster meaningful partnerships between patient advocates and researchers."

Amy Clark
Patient Partner



Priority Area 1



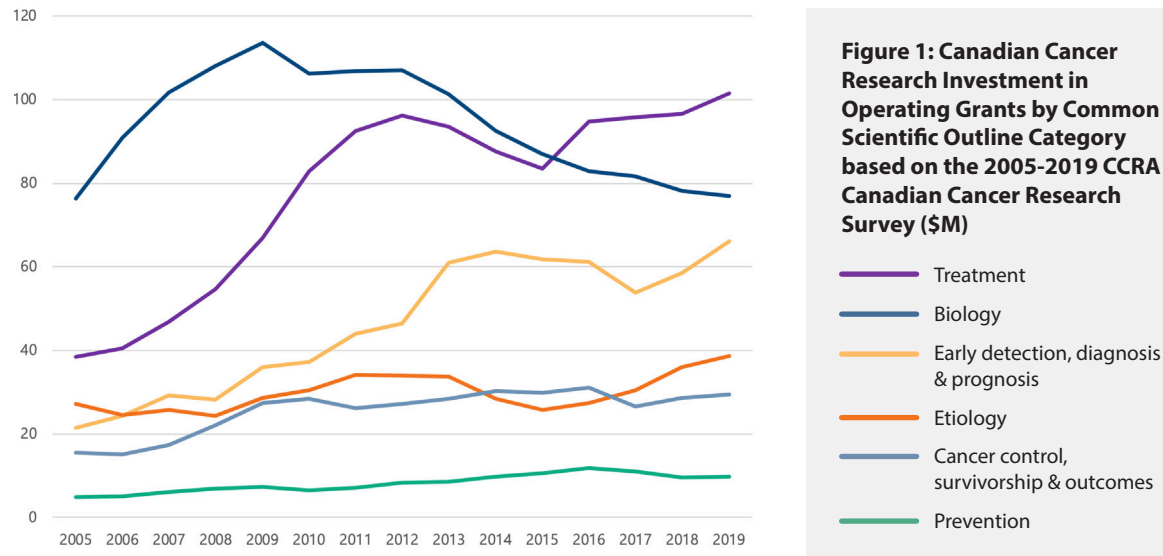
Refocus on Cancer Prevention, Early Detection & Risk Reduction

Cancer is a complex and constantly evolving disease defined by a multitude of cancer types, each characterized by unique biological mechanisms linking host, lifestyle, environmental, socio-economic, and other factors that contribute to cancer development and progression. The World Health Organization reports that between 30-50% of cancer deaths are related to modifiable risk factor exposures, and implementing existing evidence-based prevention strategies could be impactful.⁸ Similarly, in Canada, it is estimated that approximately 4 in 10 cancer cases can be potentially prevented by modifying lifestyle and avoiding environmental and communicable risk factors.⁹

In the past decades, significant insights have been acquired through integrative multi-omics approaches in cancer research to identify patient subgroups and mechanisms underlying cancer development. We are now at

a watershed moment, where we can harness these insights and bring them to bear to advance cancer prevention. The development and uptake of better diagnostic tools and more effective risk reduction measures will require a deeper understanding of the biological mechanisms linked with host, lifestyle, environmental, socio-economic, and other factors that underpin cancer development and progression across the diverse population of Canada. Significantly enhanced investment in cancer prevention and early detection research in Canada (Figure 1)⁷ will be critical in generating evidence that will drive personalized approaches to cancer screening and risk reduction, and help inform public health efforts that will promote uptake of these strategies. Accelerating research in this domain with the aim of reducing the incidence of cancer will ultimately change the trajectory of this disease for many Canadians and beyond.

As cancer prevalence in Canada rises, ICR will support research initiatives that aim to understand the diverse factors that underpin cancer risk and development to inform personalized cancer prevention strategies and public health efforts.



Side note: The Common Scientific Outline is an international classification system organized into six broad areas of scientific interest in cancer research.¹⁰

ICR's Strategic Direction

Over the next five years, ICR will invest to advance research in cancer prevention, early detection, and risk reduction by better connecting researchers with diverse expertise, whose collaborative efforts are required to harness biological insights linked with host, lifestyle, environmental, socio-economic, and other factors to drive innovations in the prevention and early detection of cancer. ICR will work closely with a wide range of partners across and beyond the Canadian cancer research and

patient communities to build capacity and mobilize knowledge in the areas of cancer prevention, early detection, and risk reduction, with the aim of also improving health equity in underserved communities and historically excluded populations. From researchers to trainees, and from patients and caregivers to clinicians and policy makers, we believe that diverse voices bring valuable insights. Only by proactively, equitably, and inclusively engaging a range of partners and collaborators will we be able to amplify the impact of our work.

Alignment to CIHR's 2021-2031 Strategic Plan

Aligned with CIHR's priority to advance research excellence in all its diversity,¹¹ ICR is committed to strengthening support for inter- and transdisciplinary team science and enhancing national and international research collaborations. ICR will convene experts and knowledge users with diverse backgrounds from multiple specialties and communities to define and address research priorities within cancer prevention and early detection that would be most pertinent to Canada. ICR shares CIHR's commitment to strengthening Canada's health research capacity by supporting the current and next generation of researchers to collaborate and lead in prevention and early detection research. We also actively support CIHR's mandate to foster and enable the mobilization of new knowledge to equitably and inclusively improve the health of people in Canada and throughout the world.

*ICR's full alignment with CIHR's strategic priorities can be found on the ICR website.



“

Cancer prevention research has tremendous capacity to alter the health trajectories of millions of Canadians. Advancing our understanding of what factors impact cancer risk and how we can translate these research findings into public health and practice is a timely scientific endeavor.”

Dr. Darren Brenner
Associate Professor, University of Calgary

Goals



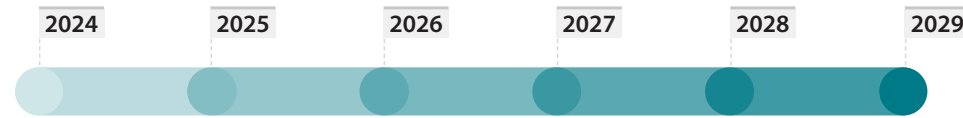
- Advance the understanding of the biological mechanisms underlying cancer development linked with host, lifestyle, environmental, socio-economic, and other factors to enable improvements in cancer prevention, early detection, and risk reduction.
- Foster and enable team science, specifically between biomedical researchers and researchers in health services and population and public health.
- Bridge the gap between research and clinical/public health practice through knowledge mobilization and implementation.

Actions



- Encourage new inter- and transdisciplinary research initiatives to bring biology to cancer prevention and early detection.
- Build relationships and platforms to better connect researchers with diverse areas of expertise and experience.
- Advance community engagement throughout the research process.
- Support capacity-building initiatives.

Measures of Success



1-3 Years

- Increased number of inter- and transdisciplinary research initiatives focused on cancer prevention, early detection, and risk reduction to foster integration across discovery, clinical, translational, health services, and population health research.
- Growth in the number of research initiatives facilitating capacity building in prevention and early detection research inclusive of the full diversity of people in Canada.

5 Years

- Increased number of research trials focused on novel cancer prevention and early detection strategies and tools involving a diversity of populations.
- Increased number of collaborations or partnerships between researchers and industry to accelerate prevention and early detection research.
- Growth in the number of accessible, inclusive knowledge mobilization activities within prevention and early detection research.

Impact



Improved public awareness of cancer prevention and early detection strategies, leading to their increased utilization, and continued reduction in age-standardized incidence of cancer amongst the diversity of people living in Canada.



Priority Area 2

Mitigate Treatment Toxicities to Improve Cancer Survivorship

ICR will support research initiatives that aim to understand the complexity of challenges associated with cancer survivorship to improve outcomes for the growing number of Canadians living with and beyond cancer.

The number of Canadians living with or beyond cancer has now climbed to more than 1.5 million,⁵ reflecting the significant advancements made in screening, early detection, therapeutics, and supportive care. There is growing recognition that the journey of cancer survivorship is complex; people living with and beyond cancer may experience symptoms and challenges in the months and years following treatment, significantly impacting their quality of life. In 2018, an estimated 8 in 10 Canadians with cancer reported physical challenges after their treatment ended, and 7 in 10 experienced emotional difficulties,

including depression.¹² Furthermore, the advent of new cancer treatments, such as immunotherapy, can also give rise to new toxicities not previously linked to cancer therapies. Health outcomes can be further influenced not only by pre-existing conditions and genetic predispositions, but also by a wide range of other social, cultural, environmental, structural, and biological determinants of health.

Over the past decade, significant inroads have been made in understanding the basic mechanisms of disease states, ranging from immunologic to metabolic

dysregulations that may underpin the development of toxicities and adverse effects from cancer treatments. We are on the cusp of understanding how and why side effects occur in certain patients and developing personalized strategies to mitigate and even prevent them. As such, focused efforts to invest in cancer survivorship research in Canada will generate the evidence needed to improve the quality of survival for many people in Canada. As the cancer survivor population grows, health system leaders will face multiple interconnected challenges, from long-term patient monitoring and caregiver support to health care planning and the provision of support services. A better understanding of the impact of cancer and its treatment on peoples' lives taking into account determinants of health and health inequities will be imperative to inform policy and practice, and ultimately bring about the desired improvements in survivorship care and outcomes.

ICR's Strategic Direction

Over the next five years, ICR will strengthen efforts to accelerate research and build capacity in cancer survivorship by better connecting researchers with diverse areas of expertise and

experience with knowledge users, whose collaboration is required to integrate biology and determinants of health with survivorship. ICR will proactively engage patients as partners in research, whose input will be pivotal in helping researchers embed patient perspectives in prioritizing areas of focus, designing studies, and measuring progress and impact. This collaborative approach ensures that research and care align with the needs of Canada's growing and diverse cancer survivor population.

Alignment to CIHR's 2021-2031 Strategic Plan

ICR shares CIHR's commitment to support a more inclusive, comprehensive concept of research excellence that embeds the principles of equity, diversity, inclusion, and Indigenous rights.¹¹ ICR will engage patients, caregivers, health care providers, researchers, policy makers, and the public as active and ongoing collaborators across our activities as we aim to accelerate survivorship research that considers the determinants of health across the life course and addresses health equity gaps that exist in Canada, with the ultimate goal of informing health practice and policy. Aligned with CIHR's priority to



strengthen Canada's health research capacity, ICR will also enhance its efforts to support the current and next generation of researchers reflective of the diversity of people in Canada to collaborate and lead in cancer survivorship research.

*ICR's full alignment with CIHR's strategic priorities can be found on the ICR website.



As a young mother living with metastatic breast cancer, it brings our family hope for the future knowing that ICR is committed to world-class cancer research with a specific focus on mitigating toxicities and improving survivorship, including a 5-year strategic plan rooted in collaboration and partnerships.”

Michelle Audoin
Patient Partner

Goals



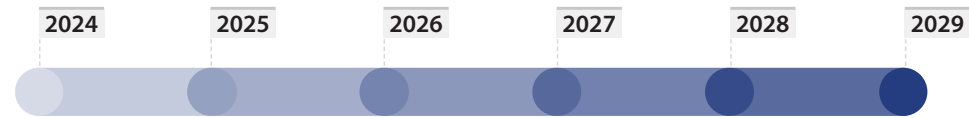
- Advance the understanding of the biological mechanisms underlying cancer treatment toxicities linked with host, lifestyle, environmental, socio-economic, and other factors to enable improvements in cancer survivorship.
- Identify biomarkers for personalized care and treatment decision-making to improve outcomes.
- Prioritize the early engagement of a diversity of people with lived and living experience throughout the research process to enhance cancer-related health equity.

Actions



- Encourage inter- and transdisciplinary research initiatives to bring biology to cancer survivorship, and to define optimal models of care.
- Create opportunities to achieve enhanced participation of a diversity of historically excluded and underserved patient partners and groups in survivorship research.
- Foster meaningful connections between ICR, its researchers, and patient partners.
- Leverage existing resources and build capacity to strengthen survivorship research.

Measures of Success



1-3 Years

- Increased number of inter- and transdisciplinary research initiatives focused on cancer survivorship to foster integration across discovery, clinical, translational, health services, and population health research.
- Increased number of targeted research initiatives facilitating enhanced participation of diverse patient partner groups.
- Growth in the number of research initiatives facilitating capacity building in survivorship research.

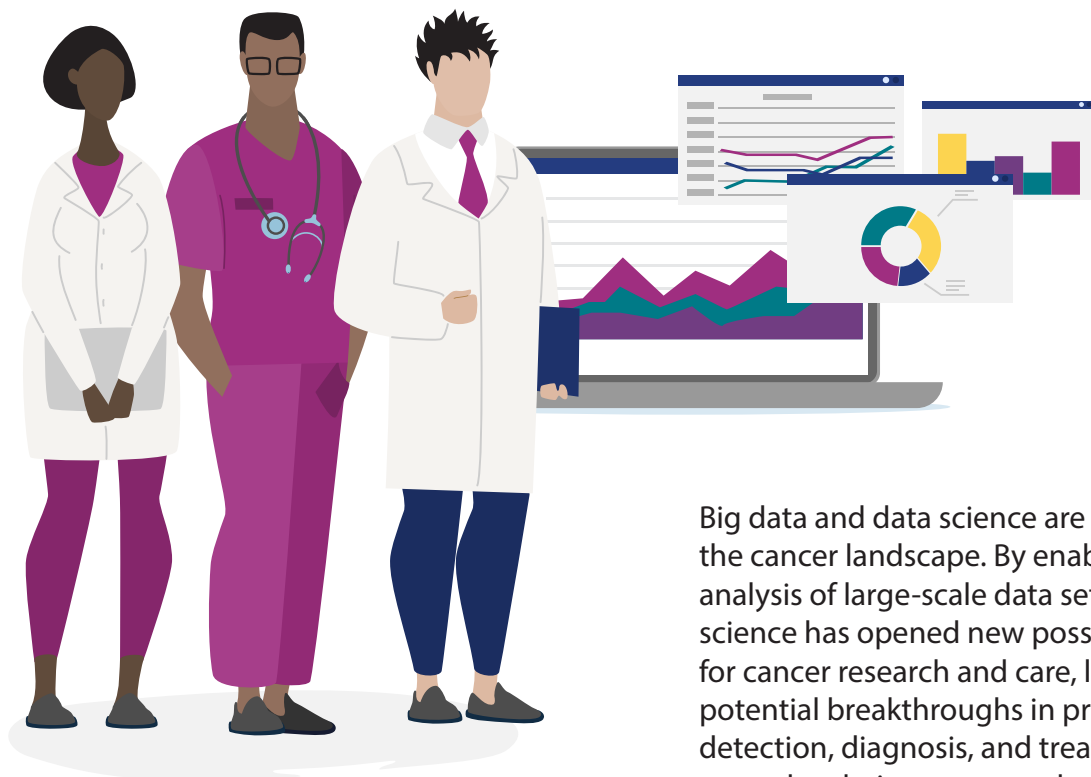
5 Years

- Increased number of research trials focused on novel cancer survivorship strategies and tools.
- Growth in the number of collaborations established between ICR, its researchers, and patient partners, with both groups reflective of the diversity of people in Canada.
- Increased number of care and support models for improved cancer survivorship across the country.

Impact



Enhanced quality of life of Canadians living with and beyond cancer through the development and utilization of tools that leverage personalized medicine to better predict, prevent, and manage treatment toxicities and adverse effects.



Priority Area 3

Transform Cancer Research Through Data Strategy & Advanced Analytics

To strengthen and accelerate cancer research in Canada, ICR will champion a cancer data ecosystem by leveraging existing data resources, supporting data literacy, and facilitating the use of advanced analytics.

Big data and data science are transforming the cancer landscape. By enabling the analysis of large-scale data sets, data science has opened new possibilities for cancer research and care, leading to potential breakthroughs in prevention, detection, diagnosis, and treatment. With more data being generated now than ever, it is imperative that Canada has a clear roadmap to guide efforts to enhance the collection, integration, sharing, and use of cancer data, with the ultimate aim of achieving equitable, and improved health outcomes for the full diversity of people in Canada. The Pan-Canadian Health Data Charter highlights a national path forward for strengthening the health data foundations in the country.¹³ The Pan-Canadian Cancer Data Strategy – led

by the Canadian Partnership Against Cancer and the Canadian Cancer Society – lays strong foundations for a cancer-specific data strategy focusing primarily on administrative data, and highlights First Nations, Inuit, and Métis-led efforts to advance data and data governance in Canada.¹⁴ With Canada's rich reservoir of cancer research data and an evolving data science community, continued efforts to improve timely access and effective linkages and interoperability of data and data systems, as well as building data science and analytics capacity within the cancer research community, will be essential to capitalize on the full value of cancer data and maximize the benefits of cancer research for all Canadians.

ICR's Strategic Direction

Over the next five years, ICR will invest in efforts to foster a world-class cancer research data ecosystem in Canada. Building on existing resources and frameworks set by the Pan-Canadian Health Data Charter and the Pan-Canadian Cancer Data Strategy, we will engage and convene key stakeholders and partners to better understand the breadth of all cancer research data resources across the country, as well as advance the sharing and management of research data within our research ecosystem. We will bring together Canada's research data centres, networks, alliances, and initiatives to identify opportunities for collaboration and innovation, as well as recognize data gaps that need to be addressed. Examples include but are not limited to the CIHR-funded Pan-Canadian Genome Library, the Digital Health and Discovery Platform, the Marathon of Hope Cancer Centres Network, Genome Canada, the Global Alliance for Genomics and Health, the Canadian Institute for Advanced Research, and the Digital Research Alliance of Canada. ICR will support capacity building initiatives to enhance data literacy within its community, as well as support the current and next generation of researchers to acquire the

expertise and skillsets needed to integrate data science and advanced analytics into their research and deploy them into the clinical realm.

Alignment to CIHR's 2021-2031 Strategic Plan

Aligned with CIHR's priority to strengthen Canada's health research capacity,¹¹ ICR is committed to establishing training and career supports that enable the current and next generation of researchers to collaborate and lead in leveraging data science and advanced analytics for cancer research. ICR also shares CIHR's commitment to promoting the accessibility of research data through open science and helping its diverse research community make more effective use of existing cancer data and expertise through national and international collaborations and partnerships. As we engage diverse stakeholders and partners across Canada's robust cancer research data ecosystem, ICR will promote First Nations, Inuit, and Métis data governance and self-determination in health research and foster the sharing of expertise and resources, including data analyses addressing intersectionality, to improve the health of people in Canada and beyond.



*ICR's full alignment with CIHR's strategic priorities can be found on the ICR website.



“

A priority grounded in cancer data will catalyze discovery and innovation in the Canadian cancer research landscape. This priority reinforces the importance of our collective action to uncover how advanced analytics and cancer data come together to accelerate cancer research, transforming the cancer experience for everyone in Canada.”

Dr. Craig Earle

Chief Executive Officer, Canadian Partnership
Against Cancer

Dr. Stuart Edmonds

Executive Vice President, Mission, Research &
Advocacy, Canadian Cancer Society

Goals



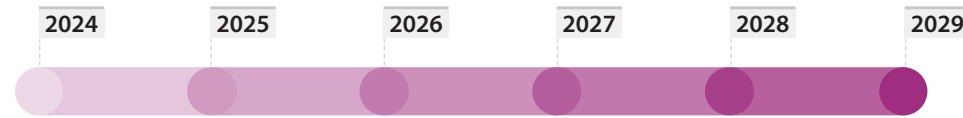
- Foster open science by supporting and extending national efforts to ensure the appropriate management and sharing of data.
- Enhance data literacy and resource utilization across the cancer research community.
- Promote the responsible use of advanced analytics across the entire spectrum of cancer research.

Actions



- Engage and collaborate with key stakeholders and partners to establish a comprehensive understanding of data assets across Canada through the creation of a pan-Canadian cancer data asset map.
- Bring the cancer research perspective and key stakeholders and partners to national efforts to foster open science and data sharing, as well as to advance the role of artificial intelligence in health care in Canada.
- Support researchers interested in integrating inclusive, intersectional, and innovative skillsets, technologies, and methods in data science and advanced analytics into their research.

Measures of Success



1-3 Years

- Growth in the awareness of available data assets across Canada with more researchers leveraging existing resources and infrastructure.
- Increased number of studies reporting on shared health research data.
- Enhanced awareness and implementation of best practices for data management and sharing in cancer research.

5 Years

- Growth in the integration of skillsets, technologies, and methods utilizing data science and advanced analytics in cancer research and their application in health care.
- Progress towards development of a national research data infrastructure through collaborations within and beyond CIHR to harmonize data standards and execute on a united Pan-Canadian Cancer Research Data Strategy.
- Demonstrated value and impact of responsible advanced analytics in cancer research and care delivery.

Impact



A better coordinated and more effective approach to streamlining the collection, integration, and use of cancer data across Canada to build a cohesive cancer research data ecosystem that includes access to disaggregated data and can provide equity-driven insights to optimize cancer care and inform policies that will improve the health of the full diversity of people living in Canada.

Cross-Cutting Principles

Our cross-cutting principles shape all aspects of ICR's activities and engagement with our cancer research and patient communities, and will drive each of our Research Priority Areas.



Collaborations & Partnerships

Identifying, building, and strengthening collaborations and partnerships lie at the heart of all our activities. From researchers, people with lived and living experience, government and community organizations, industry, funding agencies, to other CIHR Institutes, ICR is committed to meaningfully consulting and engaging its diverse communities to collectively explore opportunities for collaboration and innovation, enhance and mobilize knowledge and resources, build capacity, and promote evidence-informed practices and policies that equitably and inclusively address the needs of all people impacted by cancer.



Capacity Building

Working in an ever-evolving cancer landscape, equipping the current and next generation of researchers with the skills and expertise to lead cancer research in the 21st century is a priority for ICR. We are committed to strengthening Canada's cancer research capacity by enhancing training and delivering career support to researchers at every stage of their careers, with a focus on under-represented groups, trainees, and early career researchers.



Patient & Community Engagement

ICR prioritizes and values collaboration with our patient partners and broader communities. Actively engaging patients and community stakeholders and partners early and often in the research process will ensure that our activities are informed, relevant, impactful, and ultimately focused on meeting the needs and preferences of those impacted by cancer.



Knowledge Mobilization & Implementation

ICR is committed to pairing research with active knowledge mobilization to close the gap between discovery and impact. We will strive to facilitate the mobilization of new knowledge into Canada's health systems so that timely and accurate information reaches diverse communities, permitting individuals to make informed decisions about their health, and assisting policy makers and health care providers to translate research-generated insights into new policies and equitable and inclusive clinical care delivery.



Equity, Diversity & Inclusion

ICR underscores that the principles of equity, diversity, and inclusion are central to all of our activities and goals, ranging from identifying and designing research initiatives and teams, to peer-review panels, knowledge mobilization, partnerships, and community engagement. We will foster a research culture that is inclusive and equitable and capitalizes on the full breadth of Canada's diverse scientific talent and communities.



Indigenous Peoples' Health & Well-Being & Indigenous Rights

Guided by a commitment to reconciliation and allyship, ICR will respectfully engage Indigenous communities as active partners for collaboration in distinction-based research activities, ensuring our approach and actions are inclusive and respectful of Indigenous cultures, beliefs, values, and knowledge systems.



Acknowledgements

ICR would like to extend our sincere gratitude to members of the cancer research community who shared their expertise and insights with us during our strategic priority setting process, and will continue to support the delivery of our activities. These members include researchers, health professionals, people with lived and living experience, caregivers, national and international partners, trainees, Indigenous communities, industry, governmental policy makers, members of the public, as well as our CIHR Integrated Institute Team and other CIHR Institutes and staff. We also give special thanks to the ICR Institute Advisory Board for their ongoing support and guidance. All of your collective wisdom and contributions have been critical in defining and shaping our strategic goals and research priorities for 2024-2029.

Participants of the Engagement Process

*The full list of DDW participants can be found on the ICR website.

National Partners Engagements

October 2, 2022, April 26 & July 25, 2023

Nova Scotia Engagement Workshop

November 2, 2022

British Columbia Engagement Workshop

November 7, 2022

Quebec Engagement Workshop

November 14-15, 2022

Ottawa Engagement Workshop

December 13, 2022

Indigenous Community Engagements

January 9, February 3 & March 10, 2023

Ontario Engagement Workshops

January 11 & March 9, 2023

Patient Partners Focus Groups

February 3 & 10, 2023

Alberta Engagement Workshop

February 8-9, 2023

Manitoba Engagement Workshop

February 28-March 1, 2023

International Partners Engagements

March 2 & April 15-17, 2023

Saskatchewan Engagement Workshop

March 29, 2023

Deliberative Dialogue Workshop (DDW)*

June 20-21, 2023

Community Engagement Survey

July 2023

Institute Advisory Board

Christine Williams (Chair)

Ontario Institute for Cancer Research

Hanne Ostergaard (Vice-Chair)

University of Alberta

Nathalie Baudais

City of Saskatoon

Jason Berman

CHEO Research Institute

Parveen Bhatti

BC Cancer

Kimberley Brewer

IWK Health Science Centre

Juliet Daniel

McMaster University

Martin Hirst

BC Cancer Genome Sciences Centre

Bertrand Jean-Claude

McGill University Health Centre

Erika Penz

University of Saskatchewan

Trevor Pugh

Ontario Institute for Cancer Research

Lee-Hwa Tai

University of Sherbrooke

Robin Urquhart

Beatrice Hunter Cancer Research Institute

Institute Staff

Fei-Fei Liu
Scientific Director

Emma Ito
Assistant Director

Kelly Hancock
Business Officer

Brooke Low
Communications Specialist & Project
Coordinator

Shirley Chung
Research Associate

Naseem Shaikh
Event & Project Coordinator

Special Thanks

Canadian Cancer Society

Cancer Research Society

CIHR Integrated Institute
Team

Fuselight Creative

Santis Health

Taylor MacLean

Terry Fox Research Institute



References

- 1 Ferlay et al. Global Cancer Observatory: Cancer Today. Lyon: International Agency for Research on Cancer; 2020. Accessed from: <https://gco.iarc.fr/today/home>.
- 2 Canadian Cancer Statistics Advisory Committee in collaboration with the Canadian Cancer Society, Statistics Canada, and the Public Health Agency of Canada. Canadian Cancer Statistics 2023. Toronto, ON: Canadian Cancer Society; 2023. Accessed from: https://cdn.cancer.ca/-/media/files/research/cancer-statistics/2023-statistics/2023_pdf_en.pdf.
- 3 Malagón et al. Predicted Long-Term Impact of COVID-19 Pandemic-Related Care Delays on Cancer Mortality in Canada. *Int. J. Cancer*. 2022; 150(8): 1244-1254. doi: 10.1002/ijc.33884.
- 4 Garaszczuk et al. The Economic Burden of Cancer in Canada from a Societal Perspective. *Curr. Oncol*. 2022; 29(4): 2735-2748. doi: 10.3390/currenconcol29040223.
- 5 Canadian Cancer Statistics Advisory in collaboration with the Canadian Cancer Society, Statistics Canada, and the Public Health Agency of Canada. Canadian Cancer Statistics: A 2022 Special Report on Cancer Prevalence. Toronto, ON: Canadian Cancer Society; 2022. Accessed from: https://cdn.cancer.ca/-/media/files/research/cancer-statistics/2022-statistics/2022-special-report/2022_prevalence_report_final_en.pdf.
- 6 Brenner et al. Projected Estimates of Cancer in Canada in 2022. *CMAJ*. 2022; 194(17): E601-E607. doi: 10.1503/cmaj.212097.
- 7 Canadian Cancer Research Alliance. Fifteen Years of Investment in Cancer Research in Canada, 2005-2019. Toronto, ON: CCRA; 2022. Accessed from: https://www.ccra-acrc.ca/wp-content/uploads/2022/06/Fifteen_year_EN_reduced_size.pdf.
- 8 World Health Organization. Cancer. Accessed from: https://www.who.int/health-topics/cancer#tab=tab_2.
- 9 Canadian Cancer Society. Prevention Statistics. Accessed from: <https://cancer.ca/en/research/cancer-statistics/prevention-statistics>.
- 10 International Cancer Research Partnership. Common Scientific Outline. Accessed from: <https://www.icrpartnership.org/cso>.
- 11 CIHR IRSC. The Strategic Plan 2021-2031: The Best Health for All, Powered by Outstanding Research. Accessed from: <https://cihr-irsc.gc.ca/e/52331.html>.
- 12 Canadian Partnership Against Cancer. Living with Cancer: A Report on the Patient Experience. Toronto, ON: Canadian Partnership Against Cancer; 2018. Accessed from: <https://s22457.pcdn.co/wp-content/uploads/2019/01/Living-with-cancer-report-patient-experience-EN.pdf>.
- 13 Government of Canada. Pan-Canadian Health Data Charter. Accessed from: <https://www.canada.ca/en/health-canada/corporate/transparency/health-agreements/shared-health-priorities/working-together-bilateral-agreements/pan-canadian-data-charter.html>.
- 14 Canadian Partnership Against Cancer and Canadian Cancer Society. Pan-Canadian Cancer Data Strategy. Toronto, ON: Canadian Partnership Against Cancer and Canadian Cancer Society; 2023. Accessed from: https://s22457.pcdn.co/wp-content/uploads/2023/07/Pan-Canadian-Cancer-Data-Strategy_En_Final.pdf.

Image Credits


Canadian Cancer Society (pg. 16)

Contact

CIHR Institute of Cancer Research

University Health Network
700 University Avenue, 4th Floor, Room 4-095
Toronto, ON M5G 1Z5

 cihr.icr@uhn.ca

 1-888-603-4178

 @CIHR_ICR

www.cihr-irsc.gc.ca