

Summary Report

National Workshop on **Research Leadership and Management**

October 31 - November 1, 2005
Toronto, Ontario

December 2005

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Acknowledgements

The organizers thank the following groups for their financial support of the National Workshop on Research Leadership and Management: Canadian Institutes of Health Research, Genome Canada, Alberta Heritage Foundation for Medical Research, Michael Smith Foundation for Health Research, Nova Scotia Health Research Foundation, Saskatchewan Health Research Foundation, and Manitoba Health Research Council.

Executive Summary

The tremendous expansion of research activity in health and other sectors across Canada and the increasing complexity of large, multidisciplinary research teams and newly created multi-representative, problem-based teams contribute to the need for a greater level of expertise in leading and managing research enterprises. On October 31–November 1, 2005, a **National Workshop on Research Leadership and Management** was held to explore the requirements and options related to developing **an educational and developmental program aimed at enhancing management and leadership knowledge and skills in the health research community and other research sectors.**

Forty-seven participants from across the country took part in the workshop. They represented the research community comprised of researchers, funders, government, universities and industry.

Workshop participants voiced overwhelming support for developmental strategies to enhance leadership and management knowledge and skills among research leaders. The following eight principles grew out of discussion on designing a developmental or training program:

1. Leadership and management competencies must be clearly defined (e.g., the National Research Council [NRC] has articulated competencies and behavioural elements for competencies).
2. Assessment tools are required to assess an individual's performance in relation to leadership and management competency.
3. One should be careful not to assume a "one-size-fits-all" approach.
4. Needs will vary, depending on a host of differences (e.g., field of study; stage of researcher's career; size and type of funding; project team resources; changing funding environment).
5. Leaders' and managers' needs should not be assessed in isolation; rather, the roles and responsibilities of an entire research and management team should be considered.
6. Training and other developmental approaches must be matched to the needs of individual researchers (and the scope of their roles).
7. Timing of education/training is crucial. A staged approach may be appropriate.
8. A shared commitment by all stakeholders is necessary to achieve increased leadership and management capacity.

The workshop discussions articulated the need to move forward both collectively and individually and proposed actions for national and regional/local organizations. The National Alliance of Provincial Health Research Organizations (NAPHRO) will, at its spring 2006 meeting, discuss strategies to support the further development of a leadership and management development program.

1.0 Introduction and Background

The National Workshop on Research Leadership and Management was held on October 31 and November 1, 2005.

This report summarizes the discussions and recommendations of the **National Workshop on Research Leadership and Management**, held on October 31–November 1, 2005. This workshop took place in Toronto, Ontario. It involved the participation of 47 people, representing the following constituencies:

- Research communities from small to large multi-centre research initiatives (emerging to senior researchers)
- Funding agencies, including the Canadian Institutes of Health Research (CIHR), the Social Sciences and Humanities Research Council of Canada (SSHRC), federal and provincial funding agencies, and health charities
- Senior research administration from university research offices
- Private-sector industry

In early 2005, discussions on the need for leadership and management training for researchers resulted in a collaboration of the University of Toronto's Department of Health Policy, Management and Evaluation, and colleagues in western Canada. A planning committee (see appendix I) with cross-Canada representation was established to organize a one-day workshop that would address requirements and options related to developing **an educational and developmental program designed to enhance management and leadership knowledge and skills in the health research community and other research sectors.**

The Workshop's Premise

Less-than-optimal leadership and management of research enterprises compromise the return on research investment in Canada.

Need and Context

The world in which researchers must survive (and thrive) has vastly changed.

The tremendous expansion of research activity in health and other sectors across the country and the increasing complexity of large, multidisciplinary research teams and newly created multi-representative, problem-based teams contribute to the need for a greater level of expertise in leading and managing research enterprises.

The world in which researchers must survive (and thrive) has vastly changed. The following concerns have emerged as particularly important for researchers:

- Expectations for multidisciplinary, multi-institutional teams
- Increased strategic/targeted funding
- Expectations for matching funds
- Expectations for community/industry partnerships
- Environment of heightened accountability:
 - Impact on health, health systems, and economics
 - Enhanced reporting requirements
- Expectations for knowledge transfer and commercialization

As the size and complexity of research enterprises grow, it becomes increasingly challenging to lead and manage them.

At least two recent Canadian forums have concluded that, as the size and complexity of research enterprises grow, it becomes increasingly challenging to lead and manage them.^{1,2} The following are among the key observations that emerged from those forums:

- In their programs, researchers are not specifically prepared to provide exemplary management and leadership to programs of research, nor are there any expectations or opportunities for such learning to occur as their careers progress. Current academic processes for evaluating researchers emphasize grants and publications, resulting in inadequate “career ladders” for those interested in research leadership.
- Mentoring and learning from mistakes are currently the most common ways researchers learn to be managers and leaders. These processes occur informally and are acknowledged by established researchers as important ways in which they have themselves learned. However, in a context of enhanced financial resources and no substantive increase (and probably a decrease) in the number of seasoned mentors, the system whereby one learns to manage and lead is inevitably strained. In addition, most mentors’ experience has taken place in a very different funding and policy environment.
- There are numerous offerings designed to educate research administrators. Virtually none, however, exist to prepare researchers to be better leaders and managers. At the same time, the academic milieu and culture positions researchers as “entrepreneurs” and expects them to handle many of the management and leadership tasks for their own research programs.

The consequences of not addressing required development in the area of research leadership and management include sub-optimal use of research resources, poor return on research investments, inefficient and less effective engagement of highly skilled

¹ Birdsell, J. (2003). Addressing the need for management and leadership training among research leaders in Canada. Unpublished. Prepared for the Western Collaborative (AHFMR, University of Calgary, University of Waterloo).

² Gray, J., & Armstrong, P. (2003). Academic health leadership: Looking to the future. Proceedings of a workshop held at the Canadian Institute of Academic Medicine meeting in Quebec, Que., Canada, April 25 and 26, 2003. *Clin Invest Med*, 26(6), 315–26. (In particular, Dr. John Frank gave a presentation on “Improving health research leadership in the new era of grant-making.”)

researchers, inadequate preparation of future research leaders, and ineffective knowledge translation and commercialization.

Background Paper

A Background Paper prepared for the workshop, garnered information from a survey of workshop participants and representatives from University offices of vice-presidents of research.

In preparation for the workshop, the planning committee commissioned the development of a background paper: *Management and leadership of life sciences research in Canada: A snapshot and some questions.*³ This paper provided the starting point for discussion at the workshop. It garnered information from two sources: a survey of workshop participants and representatives from the offices of vice-presidents of research at Canadian universities and from an Internet search completed in September 2005. Readers are referred to the background paper (appendix III) for a more complete overview of the context of this research.

The background paper presented the following key points that set the stage for further discussion:

- The most crucial knowledge, skills, and competencies required by researchers were also the most important in terms of needing to be developed in researchers.
 - Leading and managing for productivity in distributed teams
 - Financial planning and money management
 - External relationship management
 - Strategic research planning
 - Managing intellectual property
 - Knowledge translation
 - Negotiation and conflict management
 - Human resources and internal relationship management
 - Creating administrative structures and systems
 - Identification and understanding of funding opportunities
 - Integrity and research ethics
 - Commercialization/ industry relations
- Significant variation exists among views of the depth of knowledge, skills, and competencies researchers require. Several commentators pointed out that “researchers only need a basic understanding of these issues and project managers/administrators with management and leadership skills should ideally be assuming such roles and performing these functions.”
- Very few programs are available for management and leadership training that specifically targets researchers. The

³ On Management Health Group. (2005).

training that is offered is very “fragmented and difficult to access.” There is heavy reliance on informal resources – most notably, mentoring.

- Administrators are a key resource for the research team, although it has been noted that these individuals are often very difficult to find. Complicating the hiring process is the grant cycle – people are required over a sustained period, not the typical 2–3 years of a grant.
- Overall, the need for management and leadership skills in the research world is a high-need area.

Workshop planned to generate five main outcomes.

Based on the context the background paper provided, the workshop was planned in order to generate five main outcomes:

- 1. Establishing clarity on the scope of community** that might be initially targeted for leadership and management skill development (new or seasoned researchers; researchers working primarily in the academic community vs private sector; bench/lab vs clinical/applied; health sector vs broader research sector).
- 2. Establishing clarity on the role of respective research funding agencies and universities** in supporting the management/leadership development of the scientist/researcher community.
- 3. Establishing consensus on an educational and developmental framework** that addresses curriculum topics; format (e.g., short workshops/summer institute model to full executive education model); locations for delivery (two or more locations in Canada); frequency of offerings; and adjunct developmental approaches (e.g., mentoring).
- 4. Identifying the financial requirements and potential funding sources** required to evolve and sustain educational/developmental programs of this nature.
- 5. Building a constituency for support of a developmental program**, including commitment from key sponsors and partners, to move such a program forward.

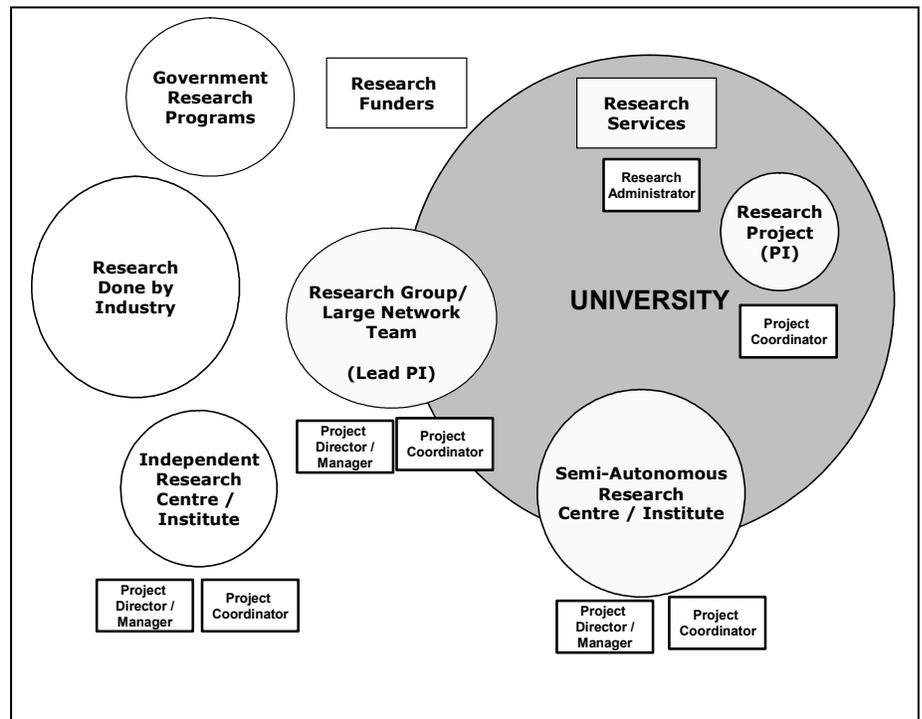
2.0 The Research Leader within the Research Team

The Research Leader

There is a broad range of research enterprises in differing organizational contexts.

A discussion of the characteristics and functions of the **research leader** is best undertaken in the context of an understanding of the broader research context. Figure 1 provides a view of a range of research enterprises in differing organizational contexts. This depiction, while not inclusive of all research entities and every research organizational arrangement, provides significant insight into the mix and type of research contexts.

Figure 1. A view of the research enterprise: Several research enterprises in differing organizational contexts.



Research project teams generally include a research leader (aka principal investigator [PI]) along with project directors or managers and a team of researchers. It was critical to the cohesiveness of the workshop to ensure a clear focus on the research leader, the investigator who is generally described as:

- having advanced preparation in research and carrying responsibility for leading research projects and programs, while still “doing” research;

- being experienced with research and its processes and having credibility among other researchers; and
- being accountable for the total research enterprise for which he/she is the PI.

The required knowledge, skills and competencies increase as the research leader advances through progressive career path levels.

The research leader was also described in the context of the scope of research endeavour. The levels outlined in the chart to the right reflect a progressive career path for a researcher from an individual research project to leading an organizational research enterprise. Clearly, the required knowledge, skills, and competencies increase as the research leader advances through the levels. The workshop focused on the leadership and management roles at higher-level research programs, networks, and enterprises.

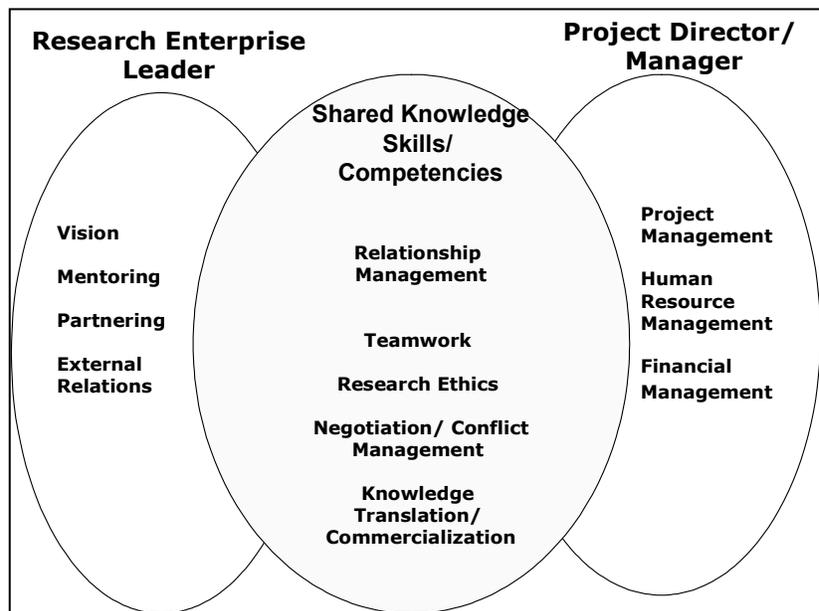
Level
Organizational research enterprise
Centres, institutes, and networks
Research program
Project

Participants frequently noted during the workshop that the success and effectiveness of a research enterprise is a function not only of a research leader’s leadership and management abilities, but also of the competencies of other key members of a research team.

Leadership and management functions need to be balanced between the research leader and project director.

The research **project director** (aka manager) role is a critical enabler to research success. In addition, the leadership and management functions need to be balanced effectively between the two roles (see figure 2).

Figure 2. Roles of research leaders and project directors.



Significant challenges exist in recruiting and retaining highly skilled research project directors/managers.

This inter-relationship of skills and attributes is well articulated in the following quotation:

“The challenge is recruiting and retaining highly skilled research project directors/managers. Research-prepared individuals often perform this role as a temporary step in a progressive career path to other roles. There are too few of these individuals and our grants ‘system’ does not allow us to retain them beyond specific projects.”

Workshop participants also expressed considerable support for a distinct career path for the research project director, along with targeted developmental and leadership/management capacity building for this role.

Beyond the research team, the **research administrator** (aka research administration office) provides a supportive role to a research enterprise. A research administrator’s functions broadly include

- assuring institutions and funders that financial, legal, ethical, and reporting requirements are met; and
- providing advice on rules and requirements as well as relevant deadlines.

The research administrator does not, however, manage project or produce project reports.

Knowledge, Skills, and Competencies a Research Leader Requires

Workshop participants identified the knowledge, skills, and competencies a research leader requires. They include those outlined in the pre-workshop survey and listed earlier in this report (see page 3).

While there was general support for the importance of a range of topics for research leaders, the following perspectives added to the discussion:

- The depth and sophistication of skills required depends on the size and scope of endeavours planned and undertaken.
- Leadership skills evolve/develop as part of an individual’s career progression.
- Many leaders emerge naturally, and it may be prudent to identify emerging leaders and provide supports that foster their development.
- Skill development should ideally begin at entry level (i.e., graduate school).

3.0 Increasing Research Leadership and Management Capacity – Stakeholder Interests and Roles

Stakeholder groups expected to vary in their views on the need for leadership and management capacity.

Accepting that leadership and management skills are necessary to the research leader role, workshop participants next explored the interplay with key stakeholders in the research enterprise.

Discussion focused on the following topics:

- Stakeholders' key interests
- The skills and resources stakeholders bring to research
- The potential roles stakeholders could play in building leadership and management capacity

It should be noted that workshop participants recognized that stakeholders' priorities differ and that stakeholder groups will vary in their views on the need for leadership and management capacity.

Researchers

Workshop participants observed that researchers generally have a career stake in the successful advancement and outcome of major research endeavours. Their interests include the following:

- Achieving success in advancing innovation and scholarship
- Acquiring grants for research pursuits
- Participating in exciting science and gaining access to a larger network of researchers, resources, and infrastructure support
- Building a track record of progressive research achievement
- Making a difference

Researchers were seen to play the following roles in fostering research leadership and management capacity:

Bringing together intellectual talent (i.e., building the “people engine” to optimize research synergies and inter-relationships)

- Designing and implementing project management structures and other requirements to ensure optimal progress through the full life of a research endeavour
- Managing the relationships, communications, and oversight of a project
- Ensuring appropriate leadership and management of an enterprise

Universities

Workshop participants saw universities – the larger organizational bodies in which many research endeavours have their home – as significant stakeholders in the success and benefits of research. Their interests include the following:

- Maintaining and growing a positive reputation (often reflected in the ability to recruit students and faculty)
- Facilitating researchers in the acquisition of grants and other resources
- Building infrastructure to support research and inquiry
- Contributing to national and provincial economies through commercialization
- Sustaining a vibrant and productive research community that is linked to research communities nationally and internationally

Universities were seen to play the following roles in fostering research leadership and management capacity:

- Offering strategic direction, priority setting, and resource allocation
- Providing and enhancing infrastructure, including space, facilities, research administration, contract management, financial support
- Aligning institutional systems related to appointments, review, recognition, and rewards to the changing contexts for research leaders
- Fostering relationships with external bodies (e.g., funders, governments) to further support the academic enterprise and research evolution
- Setting ethical standards and processes
- Nurturing developmental opportunities for researchers to support their success in leadership roles

Workshop participants noted that one of the key tensions operating in the university research setting relates to the university system of building, nurturing, and rewarding individual research creativity and productivity while offering few incentives to engage in directed research. Our research and funding system, however, is placing significantly greater emphasis on direct research, which often necessitates collaborations among research teams. This approach is more consistent with non-university research and research institutes, the mandate of which tends to be more strategic and focused.

Funders

Workshop participants saw funders as having a very large stake in the success of research endeavours. Their interests include the following:

- Assuring a sound reputation
- Gaining a return on investment and contributing to innovation, the knowledge industry, and economic growth
- Achieving impact/value for the resources provided to research

Funders were seen to play the following roles in fostering research leadership and management capacity:

- Providing mechanisms to evaluate outcomes of an investment in research
- Building milestones for accountability for research productivity
- Working with universities and other partners
- Supporting the peer review process
- Ensuring research leadership and management capacity is aligned with the scope of a resource investment or research endeavour

Governments

Workshop participants concluded that governments (federal and provincial) have a prominent role in developing and sustaining research capital across the country. Governments' interests include the following:

- Sustaining and growing innovation, economic development, and productivity
- Nurturing pan-Canadian linkages and synergies
- Building long-term organizational sustainability for research
- Translating research into policy direction and political action

Governments were seen to play the following roles in fostering research leadership and management capacity:

- Promoting clustering of research capabilities to achieve synergy and greater productivity
- Shaping new approaches to innovation (e.g., national centres of excellence [NCEs], international collaborations)
- Funding new research organizational entities
- Strengthening leadership and management capacity across research communities

Industry

Workshop participants noted that private-sector industry is a major stakeholder in the research enterprise. Its interests include the following:

- Having access to and leveraging the results/outputs of research into marketable products
- Assuring accurate results and outputs
- Building the next generation of research potential for future “pipeline” yields

Industry was seen to play the following roles in fostering research leadership and management capacity:

- Providing funding resources, scientific expertise, and project management expertise
- Fostering collaborations across research communities
- Sharing expertise in leadership and management; facilitating opportunities for leadership and management development

Other Stakeholders

Workshop participants also noted the importance of community partners and the public in general. Community partners were seen to be key to identifying the importance of community issues and to disseminating new information and research findings.

Stakeholder Convergence

Workshop participants identified the following significant areas of convergence of interests among the various stakeholders:

- Achieving successful research outcomes that advance knowledge, lead to innovation, and provide broad benefits for society
- Enhancing return on research investment and ensuring accountability for ethical conduct and use of funds
- Raising the profile of the importance and distinctive nature of leadership and management roles in research
- Developing outstanding leaders of multidisciplinary research projects that bridge academia, government, and industry
- Promoting knowledge translation (broadly defined) and commercialization to ensure that research is both useful and used in a variety of ways
- Fostering training of high-quality researchers who are able to become future research leaders in universities, government, and industry

4.0 Strengthening Leadership and Management Capacity – Designing a Program

During their discussion of how to strengthen leadership and management capacity, workshop participants addressed the following elements:

- Identifying targeted group(s) for leadership/management development
- Outlining a sample curriculum
- Proposing roles and responsibilities for curriculum development and delivery

Eight principles proposed on designing a developmental or training program.

Proposed Principles for Leadership/Management Developmental Approaches

The following eight principles grew out of discussion on designing a developmental or training program for leadership and management skills:

1. Leadership and management competencies must be clearly defined (e.g., the National Research Council [NRC] has articulated competencies and behavioural elements for competencies).
2. Assessment tools are required to assess an individual's performance in relation to leadership and management competency.
3. One should be careful not to assume a "one-size-fits-all" approach.
4. Needs will vary, depending on a host of differences (e.g., field of study; stage of researcher's career; size and type of funding; project team resources; changing funding environment).
5. Leaders' and managers' needs should not be assessed in isolation; rather, the roles and responsibilities of an entire research and management team should be considered.
6. Training and other developmental approaches must be matched to the needs of individual researchers (and the scope of their roles).
7. Timing of education/training is crucial. A staged approach may be appropriate.
8. A shared commitment by all stakeholders is necessary to achieve increased leadership and management capacity.

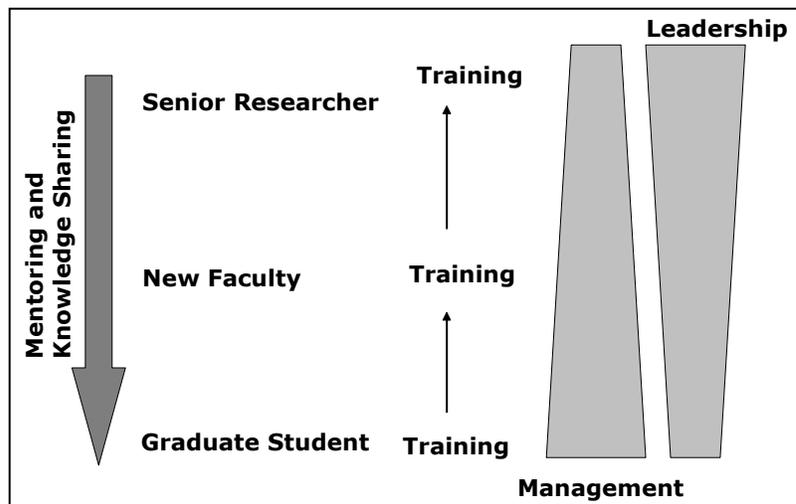
Clarifying the Target Group for Capacity Development

Researcher's career stage is a critical variable for leadership capacity development.

There was general agreement among workshop participants that a critical variable for capacity development is a researcher's career stage. Researchers in the early stages of their careers may require more management skills, while senior researchers will require more emphasis on leadership abilities.

Training is a key developmental component as a researcher progresses through various career stages (see figure 3). It is also important, however, to recognize the mentoring and knowledge sharing that occurs across the research community.

Figure 3. Type of developmental approaches through career progression.



Designing a Research Leadership and Management Development Program

With workshop discussion focusing on the senior researcher leading a large research project, the proposed leadership and management development program design included the topics outlined in the background paper and pre-workshop survey.

Workshop participants provided further advice on designing a development program:

- Senior researchers would benefit from a leadership and management program offered through a broad range of organizations (e.g., leadership institutes, business schools, university programs). Such a program would engage leaders from a broad array of organizations (including non-research), providing opportunities to benefit from the perspectives and experiences of other sectors and leaders.

- The program ought to build on already existing leadership and management programs, whenever possible customizing them in order to incorporate the research context.
- The program could be designed at different levels to match individual researchers' career stages.
- The program must be readily accessible (e.g., via regional and sectoral delivery) and purpose designed for maximum applicability to individual research leaders.
- The program could be modeled on other successful educational models (e.g., Project Management Body of Knowledge [PMBOK] module series, Swift Efficient Application of Research in Community Health [SEARCH], a program that fosters the development of an organizational culture in the service and academic sectors and that recognizes the importance of evidence-based practice and policy-responsive research. The SEARCH approaches may be most relevant to leadership and management capacity building.)

Responsibility for Building Leadership and Management Capacity

Building leadership and management capacity requires solutions around responsibility, incentives, organizational support and funding.

The biggest challenges to building leadership and management capacity entail solving the issues of responsibility, incentives, organizational support and alignment, and funding. Workshop participants proposed the following principles for addressing these concerns:

- Leadership and management training costs should be recognized in indirect research costs.
- Universities must support the drive to leadership and management development by providing the necessary infrastructure, clarifying expectations, and outlining the supports within programs necessary to meet requirements. Policies and systems for appointments, reviews, awards, and other matters set expectations and requirements; they may need to be better aligned with the evolving context for collaborative and team research.
- Funders should consider incorporating general guidelines or requirements for leadership and management as part of a grant, and include funding or other developmental support for leadership and management capacity development. Funding should also be identified for project managers (outlined earlier as an essential component of successful research projects).
- Funders and institutions should work collaboratively to set parameters and expectations for leadership and management competencies as well as developmental programs.
- Research project directors/managers also require a career path along which developmental programs are accessible and tailored to their further development.

5.0 Key Principles, Recommendations, and Next Steps

Key Principles and Recommendations

Workshop participants reached agreement on five key principles/recommendations:

1. Leadership and management competencies/abilities are critical to the success of major research endeavours.
2. Leadership and management capacity evolves over an entire career and developmental supports must be provided to match individuals' career stages.
3. Research leaders are "one leg of a many legged stool." Supports must be provided to ensure effectiveness of other team members, project management, and the research process and systems overall.
4. Organizational culture and supportive, enabling environments are critical to building leadership and management capacity.
5. Researchers have a key role in seeking and advocating for leadership development opportunities.

Agreement reached on the need to move forward both collectively and individually are national and regional levels.

Workshop participants also reached agreement on the need to move forward both collectively and individually in a number of jurisdictions:

National

- NAPHR0 is exploring return-on-investment measures and could further explore program outcomes.
- NAPHR0 could trial an educational pilot in one region.
- Engage national associations (e.g., Association of Universities and Colleges of Canada (AUCC)) in addressing this issue.
- Connect research associations in further discussions.
- Raise questions of accountability for optimal leadership and management of major research.
- The Canadian Association for Health Services and Policy Research (CAHSPR) is interested in contributing to ongoing work.
- Encourage funding bodies to take a collective position regarding facilitating the growth of leadership and management capacity.
- Funders should show leadership in ensuring that large research programs are appropriately positioned for excellent leadership and management.
- Propose that CIHR pilot a program with its next team grant.

- Explore the potential for pilots with Canadian Health Services Research Foundation (CHSRF)/Chairs.

Regional and Local

- Engage universities through the vice-presidents of research and provosts/vice-presidents academic in identifying the issue of and need for programs and systemic changes.
- Identify champions regionally and locally and support them.
- Establish partnerships among industry, funders, researchers, and universities to design and pilot educational models.

Workshop participants identified several follow-up actions for the collective group:

- Make a further inventory of the scope of developmental programs currently in place across Canada.
- Propose a continuing organizational/planning structure to maintain focus on and momentum of moving this agenda forward.

Next stage of discussion planned for NAPPHRO spring meeting.

Next Steps

1. NAPPHRO (represented by Krista Connell, co-chair of the organization) will include the topic of building leadership and management capacity on its spring 2006 meeting agenda and invite other funders to the meeting. This meeting will address the mechanism for an ongoing steering committee
 - to continue efforts to raise awareness of the importance of leadership and management capacity and competency in the research community and
 - to plan developmental strategies.
2. A report of the workshop's proceedings will be distributed to Canadian university vice-presidents of research and provosts/vice-presidents academic, with a suggestion for further discussion and action within respective institutions.

Appendix I: Planning Committee

Louise Lemieux-Charles (Chair)	University of Toronto, Faculty of Medicine, Department of Health Policy, Management and Evaluation
Cindy Bell	Genome Canada
Judy Birdsell	On Management Health Group
Carl Breckenridge	Dalhousie University
Laura Brown	National Research Council
Sharon Campbell	University of Waterloo National Cancer Institute of Canada
Alan Conway	University of Windsor
Lori Ebbesen	Saskatchewan Health Research Foundation
Kevin Keough	Alberta Heritage Foundation for Medical Research
Bob Walker	Defence Research and Development Canada
Tina Smith	University of Toronto, Faculty of Medicine, Department of Health Policy, Management and Evaluation

Appendix II: Workshop Participants

Brenda Andrews, Chair, Banting and Best Department of Medical Research, University of Toronto

Cindy Bell, Vice-president, National Genomics Program, Genome Canada

Allan Best, Senior Scientist, Vancouver Coastal Health Research Institute

Judy Birdsell, Principal, ON-Management

Charlyn Black, Director, Centre for Health Services and Policy Research, University of British Columbia

Camille Boulet, Director, chemical, biological, radiological, and nuclear (CBRN) Research and Technology Initiative (CRTI), Defence Research and Development Canada

Cathryn Bradshaw, Research Consultant and Manager, Bradshaw Clinical Consulting Ltd.

Carl Breckenridge, Vice-president, Research, Dalhousie University

David Brindley, Professor, Biochemistry, University of Alberta

Roy Cameron, Executive Director, Centre for Behavioural Research and Program Evaluation, University of Waterloo

Sharon Campbell, Centre for Behavioural Research and Program Evaluation, National Cancer Institute of Canada, University of Waterloo

Anne Cascadden, Network Manager, AUTO21 – University of Windsor

Krista Connell, Chief Executive Officer, Nova Scotia Health Research Foundation

Allan Conway, Dean, Odette School of Business, University of Windsor

Lori Ebbesen, Program and Evaluation Officer, Saskatchewan Health Research Foundation

Carole A. Estabrooks, Professor and Canada Research Chair in Knowledge Translation, University of Alberta

Gary Fudge, Acting Director, Biotechnology Horizontal, National Research Council Canada

Jean-Claude Gavrel, Director, Networks of Centre of Excellence, Ottawa

Liz Gerrits, Director, Programs and Research, Canadian Institute for Advanced Research, Toronto

Loren Grossman, Director of Research and Development, Eli Lilly Canada

Robyn Hanson, Projects Team Leader, BC Cancer Agency, Genome Sciences Centre

Kent Harding, Senior Scientist, Defence Research and Development Canada

Paul D. Hodgson, Project Manager, Genome Prairie/VIDO

Kevin Keough, President, Alberta Heritage Foundation for Medical Research

Shelley R. King, President, NovaLipids Inc.

Andreas Laupacis, President and Chief Executive Officer, Institute for Clinical Evaluative Sciences

Louise Lemieux-Charles, Chair, Department of Health Policy, Management and Evaluation, University of Toronto

Peter Lewis, Vice Dean, Research, Faculty of Medicine, University of Toronto

John MacKay, Assistant Professor, Director, Arborea II Project, Université Laval

Jacques Magnan, Vice-president, Programs, Alberta Heritage Foundation for Medical Research

Chris McCutcheon, Senior Program Officer, Organizational Capacity, Canadian Health Services Research Foundation

Maureen O'Connor-McCourt, Group Leader, National Research Council Canada

Rosemary E. Ommer, Director, Special Projects, Centre for Studies in Religion and Society, University of Victoria

Linda Peritz, Associate Director, Vancouver Coastal Health Research Institute
Derrick Rancourt, Associate Professor, University of Calgary
Diana Royce, President, The Deerfield Group
Sandra Sinclair, Associate Scientist and Director, Operations, Institute for Work and Health
Tina Smith, Department of Health Policy, Management and Evaluation, University of Toronto
Karl Tibelius, Director, Research Capacity, Canadian Institutes for Health Research
Stephen Tomblin, Professor, Department of Political Science, Memorial University
Susan Tremblay, Department of Health Policy, Management and Evaluation, University of Toronto
Gijs Van Rooijen, Chief Scientific Officer, Genome Prairie
Robert Walker, Assistant Deputy Minister, Science and Technology, and Chief Executive Officer, Defence Research and Development Canada
Bruce Waygood, Coordinator of Health Research, University of Saskatchewan
Christina Weise, Executive Director, Manitoba Health Research Council
Greg Williams, Director of Planning and Portfolio, National Cancer Institute of Canada
Michael A. Wosnick, Executive Director, National Cancer Institute of Canada

Appendix III

Background Discussion Document –

Management and Leadership of Life Sciences Research in Canada: A snapshot and some questions.

Prepared for the National Workshop on Research Management and Leadership, Toronto October 31 & November 1, 2005.

October 2005

**Prepared by:
On Management Health Group**

Judy Birdsell, PhD Principal Consultant
Karen Omelchuk, MBA
Alina Tanasescu, MA

Working with the Planning Committee:

Louise Lemieux-Charles (Chair)	University of Toronto, Faculty of Medicine Department of Health Policy, Management and Evaluation
Cindy Bell	Genome Canada
Judy Birdsell	On Management Health Group
Carl Breckenridge	Dalhousie University
Laura Brown	National Research Council
Sharon Campbell	University of Waterloo National Cancer Institute of Canada
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Tina Smith	University of Toronto, Faculty of Medicine, Department of Health Policy, Management and Evaluation

ACKNOWLEDGEMENTS

This work was funded by the Canadian Institutes of Health Research, Genome Canada, Alberta Heritage Foundation for Medical Research, Michael Smith Health Research Foundation, Nova Scotia Health Research Foundation, Saskatchewan Health Research Foundation, and the Manitoba Health Research Council.

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A. Background and Purpose – Setting the Stage

The research enterprise in Canada has undergone tremendous change in the recent past. This paper is concerned with creating a basis for focused discussion around one dimension that has, or more importantly, still needs to, change as a result of that change in the research environment in Canada. The dimension of interest is the preparation and ability of researchers to lead and manage research projects and programs within a changed world.

The expansion of research activity across the country and the increasing complexity of expectations related to that research contribute to a need for a greater level of expertise in leading and managing research enterprises.

As the size and complexity of research enterprises increase, the challenge of their effective management and leadership increases in parallel. This observation has been made in at least two recent Canadian forums^{4,5} Observations made included:

- Researchers are not prepared specifically in their programs to provide exemplary management and leadership to programs of research, nor is there expectation or opportunities for this learning to occur as their career progresses. Current academic processes for evaluating researchers emphasize grants and publications, resulting in inadequate 'career ladders' for those interested in research leadership.
- Mentoring (and learning from mistakes) is currently the most common way that researchers learn to be managers and leaders. This occurs informally and is acknowledged by established researchers as an important way in which they have learned. However, in a system with enhanced financial resources, and no substantive increase (and probably a decrease) in the number of seasoned mentors, the system is inevitably strained. In addition, the mentors have accomplished their careers in a very different funding and policy environment.
- There are numerous offerings designed to educate research administrators within the system; virtually none to prepare researchers to be better leaders and managers. At the same time, the academic milieu and culture sets up researchers essentially as 'entrepreneurs' and expects them to handle many of the management and leadership tasks for their own research programs.

This paper has been written to provide a starting point for discussion during a national workshop planned for October 31 & November 1 involving representatives of research funding bodies, universities, research institutes and researchers and research managers. The workshop was planned to provide an opportunity for focused discussion among stakeholders on the topic of research leadership and management in Canada. The objectives of the paper are:

1. To provide a brief description of the context in Canada within which researchers function
2. To identify issues related to research management and leadership.
3. To identify possible solutions or directions through which to address the issues.

⁴ Birdsell, J (2003) Addressing the Need for Management and Leadership Training Among Research Leaders in Canada. Unpublished. Prepared for the Western Collaborative (AHFMR, University of Calgary, University of Waterloo).

⁵ Gray, Jean and Armstrong, Paul (2003) Academic health leadership; looking to the future. Proceedings of a workshop held at the Canadian Institute of Academic Medicine Meeting, Quebec, Canada, April 25 and 26, 2003. Clin Invest Med Vol 26, no 6, 315-26. (In particular, Dr. John Frank gave a presentation on 'Improving health research leadership in the new era of grant-making'.

B. The Canadian Research Context

It is necessary to describe the research context in Canada in a general way so that we can focus on those elements that are to be addressed and to discuss them as they relate to the environment in which they are embedded. This context is described according to the various levels of the system and includes consideration in terms of the goals of research, the types of research, the settings within which research is done, the funding patterns and the updated social contract between research and society generally. In a general sense, this section provides the rationale for exerting focused attention toward management and leadership skills of investigators. Although many of the individuals involved in early discussions leading to this workshop are from the health field, the scope has been broadened and there is no intent to limit discussions to this sector.

The Policy and Social Environment

In essence there was an implicit change in the social contract between the scientific and government communities⁶. This has been characterized by:

- The political expectation for economic and/or social policy spin-offs (such as incorporated into the knowledge translation mandate of CIHR; and the establishment of the NCE Program. This connection between society and research was exemplified recently in a statement arising from a report of the consultations SSHRC held across Canada: *'It is clear both by the consultation and the existing funding programs available for networking researchers, that SSHRC does not adequately fulfill its role in facilitating exchanges between researchers and civil society'*.⁷
- Policy and decision makers continuing to advance connections between research, excellence in the provision of services, innovation, the knowledge based economy and the creation of highly skilled, value added jobs in Canada.⁸
- The establishment of research networks requiring involvement with industry partners and or community partners.
- The establishment of large, nationally (and internationally) relevant research programs influenced as well by the state of science e.g. the international HapMap project.

The Funding Environment

Research is funded from several sources: federal, provincial, nonprofit sector, institutions (primarily universities through their support of faculty salaries and indirect support of research costs), business and foreign sources. There have been many significant changes in the research funding environment in Canada in the past several years.

- Creation of several new entities
 - the Canadian Institutes of Health Research with a significant increase in funding
 - Canada Foundation for Innovation;

⁶ De La Mothe, John (1995) Research Instrumentation and Institutional Innovation in Canada. Technology Analysis & Strategic Management, Vol. 7, No. 1, 63-75.

⁷ SSHRC (2005) Report on the consultations, Vol 3. As quoted in Very Well Connected (Prepared for SSHRC by Dr. David Graham). http://www.sshrc.ca/web/apply/background/clusters_report_e.pdf

⁸ Leaders' Forum Steering Committee. (2004) Strengthening the Foundation of Canada's Health Research Enterprise: A Backgrounder. Available at: http://chrc-csrc.ca/english/upload/1069/BackgrounderV7_ENG.pdf

- Genome Canada;
- Networks of Centres of Excellence (15 years ago now);
- Canada Research Chairs Program
- Provincial funding agencies (Nova Scotia Health Research Foundation; Michael Smith Health Research Foundation; Alberta Ingenuity)
- Establishment of Indirect Costs program by the federal government
- Establishment of strategic national research programs within the federal government e.g. CBRN Research and Technology Initiative to improve Canada's ability to respond to chemical, biological, radiological and nuclear incidents.
- Groups of funders have joined forces to address a topic of shared interest: e.g. Canadian Breast Cancer Research Alliance.
- The introduction of a myriad of funding models which focus on team grants, multi-institutional approaches, interdisciplinary perspectives, etc. Examples of such programs include NET (New Emerging Teams of CIHR; the Strategic Research Clusters of SSHRC announced in July 2005; Team Grants of CIHR which encourage active and meaningful partnerships between community organizations and research teams and a focus on problem based research.
- The expectation for matching grants and partners for many programs.

The Institutional / Organizational Environment

Research is done in many different settings in Canada. In the health sector, 85% of funds contributed by industry and foreign sources (which account for 44% of total) are spent in business settings; 91% of funds provided by other sources (56% of total) are spent on research done in institutions⁹. In a general sense, public and nonprofit funds are spent on research in institutions and private money is spent in private companies. There are a variety of settings within the 'institutional sector' where research takes place:

- University departments
- Research entities organized within the university but often involving more than one department (centres, programs, institutes)
- Independently governed institutes but with close ties to the university and often partnered with universities. Examples of this include Ottawa Health Research Institute; Institute for Health Economics.
- Independent institutes which may be governed as nonprofit organizations e.g. Canadian Institute of Advanced Research.
- Teaching hospitals and health organizations

The Operational Level of Research Projects or Programs

Twenty years ago, the primary mode of doing research was within a single investigator, single institution framework. Although that type of research exists, there are many more combinations and permutations of accomplishing research which are increased in complexity due to one or more of the following dimensions:

- Several investigators from different disciplines and departments
- Several institutions involved
- Partnerships with community agencies or individuals encouraged or mandated

⁹ Leaders' Forum steering Committee, *ibid*.

- Investigators connected through some sort of 'virtual' organizing structure; a network, a team grant, a partnership with industry or a community agency
- Requirement for researcher to bring 'matching funds' to the enterprise or to co-fund their projects
- Enhanced expectations for accountability to funding agencies (through regular statistical reporting; reporting against 'project milestones')
- Enhanced expectations with respect to knowledge transfer and for turning intellectual property into commercial products.

These changes are not limited to Canada. A recent article from Australia describes virtually the same set of changed circumstances as these¹⁰

The People Involved

The traditional career path many years ago may have been envisioned to be completion of a doctoral program; a post-doctoral program in fields where that was the norm; and then an assistant professorship with expectation of moving at a steady pace towards full professorship. In the United States a recent survey showed that the typical new Assistant Professor is 34 years old¹¹ indicating that those individuals have done something other than advance steadily through their academic career in the years since high school. Of course, research is not done in a vacuum, and there are many other individuals and organizational processes and structures involved in the accomplishment of research. There are research assistants, research colleagues, administrative staff of the home institution, and with increasingly frequency, staff hired specifically to assist with the management of research programs. These staff may or may not have research or administrative training.

The people who are directly involved with research projects are only one dimension that in the ultimate sense, needs to be part of a general discussion about how to increase our return on research investments. They are the particular focus of the discussions anticipated at the workshop.

¹⁰ Houghton, John W (2005) *Changing Research Practices and Research Infrastructure Development. Higher Education Management & Policy, Vol. 17 Issue 1, p1-19,*

¹¹ McGovern, Victoria. Burroughs-Wellcome Fund. Personal communication June 2005.

C. Our Focus - Investigators

The focus of attention in this report is on those individuals who have advanced preparation in research and who lead research projects and programs. That is, they are still actively engaged in 'doing' research. Generally speaking, there are three groups of individuals who could be considered in a discussion of research management and leadership.

Dimension of Interest	Type of Individual		
	Research Prepared	Research Prepared with Management Training	Management Training with no or minimal Research Training
Typical Education	PhD	PhD with additional formal or informal training in management	MBA or Specific Type of Management Credentials (e.g. Project Management)
Role in Research Program	Accountable for total research enterprise for which he/she is Principal Investigator	Responsible (often at higher organizational level) for oversight of multiple projects and/or shaping organizational policy	Responsible for ensuring project is implemented as planned.
Typical Responsibilities in early career	All aspects of project management and leadership: selection and supervision of personnel; financial oversight, oversight of data collection; relationship management with institutional departments, etc.	Directly involved in doing research projects.	Oversight of a large project.
Typical responsibilities in mid / later career	Ultimate oversight of research program, often working with a professional research manager. Pre-occupied with locating and aligning research with broader environment.	Often has given up direct involvement in research, and focus is on helping to create a supportive and enabling environment for those still directly involved.	Oversight of multiple projects or a project involving millions of dollars and/or operating across widely geographically dispersed locations.

Discussions in this area often coalesce around a discussion about the differences between management and leadership, and what the significance of these differences is when discussing the research enterprise. People refer to the differences in various ways: '*Managers have subordinates, leaders have followers*'; '*leaders direct, managers execute*'; '*managers focus on doing things right, leaders focus on doing the right things*', etc. While there is no definitive list of distinguishing characteristics, and the two are rarely, if ever, mutually exclusive, this is a distinction that is often raised in discussions and debates around how best to manage research projects and programs for maximum effectiveness.

D. Environmental Scan

The Approach Taken

Information was gleaned from two sources: a survey of workshop participants and representatives from the Offices of Vice-Presidents of Research at Canadian universities; and also from an internet search done in September 2005. A detailed report from the survey is included in Appendix 1. Twenty three respondents (14 participants and 9 Vice – Presidents (Research) provided information on activities or programs to assist researchers develop management and leadership skills and provided an assessment of importance and degree of need for skill development in several specific skills or topics (e.g. financial planning; strategic planning).

Areas Where Need is Greatest

Respondents were asked to complete a table that identified management and leadership skills that were important for researchers to have, as well as those most in need of development.

Table 1 summarizes the most highly ranked in each of these categories.

Table 1: Top Ranked Skills and Skills with the Highest Need for Development

Top Ranked Skills ¹²	Highest Need for Development
<ul style="list-style-type: none"> • Team leadership • External relationship management • Strategic planning • Financial planning and money management • Integrity and research ethics • Managing for productivity in distributed teams • Managing personnel 	<ul style="list-style-type: none"> • Managing for productivity in distributed teams • Financial planning and money management • External relationship management • Strategic research planning • Managing intellectual property • Team leadership • Knowledge translation

As shown in Table 1, there was strong congruence between the top skills required by researchers, and those with the highest need for development. Respondents tended to agree more on the skills researchers require than on their priorities for development. The lowest rated skills required were commercialization and environmental scanning, and while it was one of the top six required skills, the skill with the lowest priority for development was integrity and research ethics. A few people did not know what environmental scanning meant or did not answer for that skill. One respondent noted the skills required and those with high developmental priorities depend on who is leading the research project. Several comments were made re: researchers only need a basic understanding of these issues and that project managers/administrators with management and leadership skills should ideally be assuming

¹² Other skills on the list were: Environmental scanning, Identification and understanding of funding opportunities, Internal relationship management, managing intellectual property, managing personnel, managing difficult situations, negotiation and conflict resolution, create administrative structures and systems to incorporate varied individuals and resources, and knowledge translation.

management roles and performing these functions. Finally, other skills added to the list included: networking, career management, industry relations (which one respondent felt strongly was different and much more important than commercialization), and incorporate students/build community partnerships.

A key difference noted between groups of respondents was that workshop participants felt that creating administrative structures was a very important skill with a higher need for development than did university Vice Presidents.

Existing Opportunities and Approaches

These were identified from a combination of sources – the survey and the internet search.

These offerings can be identified for the most part as one of:

- Formal management or leadership educational opportunities that target researchers
- Formal management or leadership educational opportunities that do not specifically target researchers but seem to be relevant
- Formal ‘other’ resources that target researchers
- Various university services
- Informal activities

Appendix 2 gives brief descriptions of several offerings or situations in each of the categories above. Table 2 provides brief description of ‘typical’ offerings in each of the categories as reported in the survey. This table is intended to provide an overview of the range and type of offering. Due to the limitations of the methods, it is not possible to make any statement about the completeness of our information. Rather, it provides a framework through which to think about these types of offerings.

The internet search identified some international activity in this area as well. For example the International Service for National Agricultural Research based in Addis Ababa began operations in 2004 and focuses on three strategic themes: Institutional Change, Organization and Management and Science Policy. They offer training materials and run workshops including Training Modules specifically aimed at researchers.

Table 2. Examples of Canadian events or offerings related to enhancing leadership skills of investigators mentioned during survey

	Target Researchers	Relevant to Researcher	Target Research Administrators / Dept Heads
Type of Entity	Student		
Formal educational	<p>University of Calgary offered 'Sink or Swim' full day workshop in June 2005 for 2nd time. Topics include human resources, management, legal issues and project management. Target was post-docs and junior faculty.</p> <p>Project Management workshops targeting researchers are offered at some universities. .</p> <p>NSERC offers workshop on media and policy presentations.</p>	<p>General management courses offered at several institutions. Project management, ethics and crisis management courses mentioned.</p> <p>Executive Education Program 'Leadership for Managers'. The course targets those making transition into management in rapidly changing technical and professional environments.</p>	<p>CHERD (University of Manitoba) offers courses once per year targeting Senior university administrators. Intensive 3-7 day courses. General management skills.</p> <p>Courses for Academic administrators offered by Management Development organizations</p>
Informal	Mentoring activities – meet with investigators periodically; one on one sessions to address a specific aspect i.e. financial modeling; ad hoc meetings of chairs and faculty		
'Other'	<p>CIHR hosts new investigator meetings which are seen to be helpful, although not designed specifically for this purpose. Allow opportunities for mentoring.</p> <p>Appoint thematic coordinators to promote research and research leadership</p> <p>Larger universities provide assistance through centralized services e.g. Human Resources or Finance.</p> <p>Numerous pre-award resources through various institutions. Includes workshops that facilitate applying for grants and proposal development.</p> <p>Senior executive (e.g. Associate VP Research) with primary objective to facilitate research.</p>	Orientation for new faculty at universities.	
Planned	NCE is compiling a best practices manual in various areas e.g.network management, research management, training and knowledge and technology transfer		

In general, it seems That there may be more educational offerings and tools available to help build capacity in investigators to lead and manage their programs than were identified two years ago using similar methods¹³.

From the information available, it was not always possible to determine exactly who the offering was targeting, but it is clear there are numerous educational and capacity building opportunities for related groups i.e. administrators who are not researchers; and also individuals who are engaged in technology transfer. As an example of the latter, the federal government announced in September 2005 that 16 network awards had been made through the Intellectual Property Mobilization Program. These awards are described as 'providing the essential resources for research-intensive institutions to develop the critical mass of expertise, tools and resources to manage and protect intellectual property, to encourage entrepreneurship and to make industry more aware of the knowledge and technology resources at their disposal'. This program is also investing \$2.87 million in six internship programs to address the short supply of technology transfer practitioners in Canada¹⁴.

E. Looking Forward – Potential Directions

1. Introduce management and leadership training into graduate and post graduate education. Leadership skills should be introduced as an important topic to think about at an early stage of one's career.

2. Provide focused leadership training at key points in research career trajectory. Focused learning opportunities of varying levels of sophistication could be offered at successively senior levels of engagement in the research enterprise.

3. Introduce funding and acknowledgement of the essential nature of trained managers in all but the smallest projects. Funding agencies could ensure that budgets are adequate to support skilled managers on more complex projects, and encourage (or insist) that this be part of the plan.

4. Institutional level interventions that could enable leadership and management of research projects. Some universities have introduced personnel either at the university level or at departmental/faculty level to specifically nurture or enable advanced research. This might take the form of help with financial management; writing grants, arranging team meetings, etc.

5. Funding agencies link large awards to demonstrated accomplishment of management and leadership training and/or competence. It could be mandatory for principal investigators receiving grants over some set amount (\$500,000?) to have demonstrated competence (perhaps by taking an executive leadership workshop) prior or shortly after receipt of the award.

6. Funding agencies encourage and reward time spent on learning leadership skills. Perhaps funding awards could be offered at key points in one's career to enable participation in appropriate leadership training events.

¹³ Birdsell (2003) Ibid.

¹⁴ <http://www.nserc.gc.ca/news/2005/p050920.htm>

F. Challenges to the Workshop Participants

1. Get the focus right. Is a focus on the leadership skills of investigators warranted? Does the differentiation between management and leadership make sense? If so, what are the core competencies for research leaders in 2006? Are there other lenses or perspectives that must ALSO be part of the focus (albeit perhaps not at this workshop?).

2. Understand stakeholders and their interests. Who are all the parties that have a stake in this issue? Why are they interested? How might they be able to contribute to solutions?

3. Determine ways to meet the need. What are the various mechanisms through which excellence in research leadership and management could be accomplished?

4. Articulate concrete steps to move forward. This workshop will provide an opportunity for focused discussion on a topic that all participants feel is important. If this really is an issue of national scope, how might we collectively (or separately but acting in a complementary fashion) take action to address this issue?

The workshop planning group asserts that the consequences of not addressing the needed development in this area include sub-optimal use of research resources, poor return on research investments, inefficient and less effective engagement of highly skilled researchers, and inadequate preparation of future research leaders.

Addendum – Results of Survey on Research Management and Leadership

Prepared by On Management Health Group
October 12, 2005

Introduction

The tremendous expansion of research activity in health and other sectors across Canada and the increasing complexity of research teams and projects and expectations from funders newly contribute to the need for a greater level of expertise in leading and managing research enterprises. Preliminary discussions with senior research directors and principal investigators in large multi-disciplinary studies support the need for education and training in research management and leadership.

A partnership between the University of Toronto, Department of Health Policy, Management and Evaluation and the Western Collaborative have formed a Planning Committee¹⁵ to plan and organize a workshop scheduled for the fall of 2005 to address the next steps in the development of these skills.

To inform workshop preparations, a survey was sent to all workshop participants and to Vice-President's of research at Canadian academic institutions to gather information on the environment within which researchers function and to identify issues related to research management and leadership by those researchers. **The purpose of this paper is to summarize and discuss the results of that survey.**

Methods

Two groups were surveyed: workshop participants and Vice President's (VP's) of Research at Canadian academic institutions.

Participants were sent a blanket email with the survey attached. The email requested that individuals complete the form and electronically submit their responses. It was sent to all individuals that were registered, which at that time totaled 26 people. After 2 weeks, a follow up reminder requesting participant responses was sent out. The final number that replied was 14 (54%) as shown in Table 1 on the following page.

The survey strategy for the VP's was somewhat different. Universities were categorized into two groups. Those that were research intensive (RI) and those that were non-research intensive (NRI). In all cases individualized emails with the attached survey were sent out,

¹⁵ Planning Committee Members: Louise Lemieux-Charles, Chair (University of Toronto), Cindy Bell (Genome Canada), Carl Breckenridge (Dalhousie), Laura Brown (NRC), Sharon Campbell (Waterloo, NCIC), Allan Conway (Windsor), Lori Ebbesen (Saskatchewan Health Research Foundation), Kevin Keough (Alberta Heritage Foundation for Medical Research), Bob Walker (Defense Research and Development Canada), Tina Smith (University of Toronto), Susan Tremblay, Dr. Judy Birdsell (On Management Ltd.)

however RI universities were offered the chance to respond electronically or to be interviewed over the phone. NRI universities were asked to respond electronically with one exception who was contacted by phone because he did not have an email. Again, after 2 weeks a follow up remind requesting responses was sent out. Of the RI universities, a total of 4 responses (18%) were received. Of the NRI universities, a total of 5 responses (28%) were received (Table 1).

There were several reasons why university VPs (both RI and NRI) did not reply. 3 people unequivocally said they had no time. 4 people were either away on holidays, traveling with work, or medical leave. 3 individuals said they would reply and didn't. 1 person was scheduled to provide input over the telephone and had to cancel at the last minute, and 17 simply did not respond.

When analyzing the total number of responses for both participants and VP's, 66 people were contacted requesting input and of this 23 (35%) replied as shown below.

Table 1: Survey Sample Sizes and Response Rates

Survey Sample	Sample Size	Number of Responses Received	Response Rate
Workshop participants	26	14	54 %
VPs – Research intensive	21	6	29 %
VPs – Non-research intensive	18	5	28 %
Totals	65	25	38 %

Results

Survey results for the two groups sampled (participants and VPs) were consolidated for analysis. This was done primarily as most respondents assume greater than one role within the research environment. A participant could also be a senior director at a research-based organization. Results are broken down into three sections. The first addresses what resources are currently available for researchers to assist them with managing and leading their research project. The second presents resources that people mentioned might be in the planning stages. The third and final section of the results presents skills respondents thought were the most important for researchers to have, as well as those most in need of development.

Currently Available Resources

Resources currently available to assist researchers in managing and leading their projects fell into one of the following five categories.

1. Formal management or leadership resources that target researchers.
2. Formal management or leadership resources not specifically targeting researchers.
3. Formal "other" resources that target researchers.
4. Various university services.
5. Informal activities.

The following specifics regarding resources in each of these categories are provided below in as much details as was provided.

Formal Management or Leadership Resources that Target Researchers

This category includes formal course offerings or other resources specifically targeting researchers.

1. University of Calgary's Sink or Swim workshop. This full day course held in conjunction with the University's Faculty of Medicine covered topics such as human resources, management, legal issues, and project management. 200 faculty subscribed for the session and the feedback was very positive but it was determined that more in-depth information was needed.
2. The Centre for Higher Education Research and Development (CHERD) at the University of Manitoba. CHERD offers a course called University Management Course (UMC) for university managers and department heads, as well as a course called Senior University Administrators Course (SUAC) for university Deans and VPs. Each of these courses is offered once per year and instructs participants on general management skills. They are intensive, ranging from 3-7 days, and costly with enrolment fees ranging from \$4000-5000 dollars.
3. The University of British Columbia hosts a project management course directly targeting researchers. A brochure for this course is included in Exhibit I.
4. Other formal offerings were identified, however specifics weren't provided. For example, Carleton University offers workshops and training sessions in this area. Similarly, the University of Ottawa has online tools and information for investigators, and provides workshops delivered in cooperating with granting agencies.
5. Internationally, it was reported that the Howard Hughes/Burroughs Wellcome Fund host new investigator workshops in this area.

Formal Management or Leadership Resources not Targeting Researchers

This category includes courses or other resources that are more general in nature that researchers might access. They typically offer training in one or two aspects of management or leadership that could be applied across a variety of disciplines.

1. General management courses offered at various academic institutions. These are typically project management courses often offered through the Faculty of Management or Continuing Education. Courses on crisis management, and ethics were also mentioned as resources. Simon Fraser University, the University of Toronto, the University of British Columbia, the University of Calgary and Harvard were all specifically cited.
2. The Genome Sciences Centre offers a 4.5-hour training course to researchers and staff at all levels on the fundamentals of project management. Based on the response however, it was inferred this doesn't specifically target researchers.

3. Courses for academic administrators. A management course for this target is held in Banff. Additionally, administrators are often offered internal financial workshops through their academic institution.

Formal “other” Resources that Target Researchers

This category includes resources that might include aspects of management or leadership, but aren't specifically framed in this regard. Additionally, it includes any pre-award resources.

1. The University of Alberta's Office of Research Services has some activities with regards to financial or tri-council reporting issues. Further information is available at www.ualberta.ca. Some of the activities available through this site include online links to finding funding, accessing grant reports, the online subscription ResearchFUNDamentals (a bulletin that provides updates on administration issues) and an orientation handbook for new researchers (heavily focused on financial management).
2. The Canadian Institutes of Health Research (CIHR) host new investigator workshops and meetings.
3. The Networks of Centres of Excellence (NCE) provides a standard document for researchers to help set up initial management frameworks and structures as well as a handbook, which is available for members only.
4. The NCE also develops special material or sets up workshops aimed at helping research collaborations and knowledge and technology transfer.
5. The Natural Sciences and Engineering Research Council (NSERC) offers a workshop on media and policy presentations.
6. Numerous pre-award resources through academic institutions, granting agencies and the federal and provincial governments. These were often cited and include workshops or research offices that facilitate applying for grants and preparing proposals. One respondent noted the availability of facilitators by faculty to assist in project and proposal development.
7. Various websites including CHSRF, KUUC (Rejean Landry) and John Lavis provide researchers with information on knowledge transfer plans, execution, and evaluation.

Various University Services

Beyond more formal resources, this category includes more of a general “mixed bag” of university services.

1. Orientations and presentations for new faculty provided by the university. These are typically held at the start of the academic year. Of note however is the University of Prince Edward Island. It holds a twice monthly workshop series called Orientation to Research and Research Skill Development. Some of the sessions focus on team building, budgeting, certificates, working with the media, and so forth.
2. Assigned research thematic coordinators to promote research leadership (University of Regina).
3. Assistance through centralized services including Human Resource and Finance departments. At larger centers this might include individuals actually assigned to a certain department to assist with these functions and interact with the central departments on behalf of the researchers.
4. Local faculty and departmental administrators.

Informal Activities

Responses in this category were frequently cited and include networking, mentoring, and learning by doing.

1. Mentoring
 - Meet with researcher leaders/scholars/investigators periodically to ask them what is needed and reinforce their leadership roles
 - One on one sessions for larger projects to assist with business planning, financial modeling, etc.
 - Most lab based programs operate on a mentorship model down through the chain of command
 - Ad hoc meetings that chairs have with incoming researchers
 - Ad hoc training to specific groups on specific topics as needed
2. Networking
 - University of Ottawa has an email listserv
 - Informal networks – personal exchange of best practices and “war stories”
 - Multi-university research teams
3. Learning by doing including the ongoing research activities of research coordination, communications to team members, strategic planning, peer review, formative assessments of research, and reporting.

Planned Resources

Resources that are in the planning stages are few and far between. Primarily they included the addition of new staff, or course offerings.

Staff

The University of Regina has received the authority to appoint an Associate Vice President Research who will be a successful research leader with the primary objective of facilitating research leadership. The hiring of additional research facilitation staff for research support was mentioned, as was additional finance staff and a new financial system.

Courses

1. An expansion of the University Calgary's Sink or Swim workshop.
2. The launching of the Centre for Enterprise and Entrepreneurship through the School of Business at the University of Prince Edward Island. The Centre will be focused on skill development for researchers in the university and in other institutions and organizations.
3. The development and delivery of grant and contract management workshops targeted to faculty and departmental administrators (who in turn support their researchers) at the University of Ottawa.
4. Collaboration between the respondent and Royal Roads University to add a research dimension to their leadership training.
5. The development of an IHR/Michael Smith Foundation for Health Research strategic training program of which some of the core competencies (included in Exhibit I) touch and management and leadership.
6. The NCE is currently compiling a best practices manual in the various areas of network management, research management training of highly qualified personnel (HQP) and knowledge and technology transfer.

Researcher Skills

Respondents were asked to complete a table that identified management and leadership skills that were important for researchers to have, as well as those most in need of development. Table 2 presents these results in rank order.

Table 2: Top Skills and Skills with the Highest Need for Development

Skills in Rank Order	Highest Need for Development in Rank Order
1. Team leadership	1. Managing for productivity in distributed teams (tie)
2. External relationship management	1. Financial planning and money management (tie)
3. Strategic planning (tie)	1. External relationship management (tie)
3. Financial planning and money management (tie)	1. Strategic research planning (tie)
4. Integrity and research ethics	2. Managing intellectual property
5. Managing for productivity in distributed teams (tie)	3. Team leadership
6. Managing personnel (tie)	4. Knowledge translation
7. Identification and understanding of funding opportunities	5. Managing difficult situations
8. Internal relationship management	6. Managing personnel (tie)
9. Managing intellectual property	6. Creating administrative structures and systems (tie)
10. Negotiation/conflict resolution (tie)	7. Negotiation/conflict resolution
9. Managing difficult situations (tie)	8. Identification and understanding of funding opportunities (tie)
9. Knowledge translation (tie)	8. Internal relationship management (tie)
10. Creating administrative structures and systems (tie)	9. Integrity and research ethics (tie)
10. Commercialization/Industry relations (tie)	9. Commercialization/industry relations (tie)
11. Environmental scanning	10. Environmental scanning
12. Others – networking, career management, incorporating students and building community partnerships, industry relations (viewed unto itself)	11. Others – networking, career management, incorporating students and building community partnerships, industry relations (viewed unto itself)

As shown in Table 2, there was strong agreement between the top skills required by researchers, and those with the highest need for development. Respondents tended to agree more on the skills researchers require, than on their priorities for development. The lowest rated skills required were commercialization and environmental scanning, and while it was a top required skill, the skill with the lowest priority for development was integrity and research ethics. A few people did not know what environmental scanning meant or did not answer for that skill.

One respondent noted the skills required and those with high developmental priorities depend on who is leading the research project. Several comments were made re: researchers only need a basic understanding of these issues and that project managers/administrators with management and leadership skills should ideally be assuming management roles and performing these functions. Finally, other skills added to the list included: networking, career management, industry relations (which one respondent strongly felt was different and much more important than commercialization), and incorporate students/build community partnerships.

A key difference noted between participant and VP responses was that participants felt that creating administrative structures was a very important skill with a higher need for development than did university VPs.

Beyond the Raw Results: Issues Raised by Respondents

A key survey finding was that there is **very little available** with regards to management and leadership training **that specifically targets researchers**. It was both explicitly and implicitly noted that what is offered is very **fragmented and difficult to access**. Often, courses are presented “piece-meal”. For example, a course on project management through the Faculty of Management, or a budgeting workshop through financial services. As many of these resources are offered through various departments, faculties, or even organizations it can be difficult for researchers to know exactly where to turn to access the information. Further complicating the situation, and especially for newer investigators, there is a **very heavy reliance on informal resources**, most notably mentoring. A particular telling quote “*Researchers learn by doing, and sometimes failing*”.

Administrators as a resource were also frequently mentioned, however it was noted that these individuals are often very difficult to find. Complicating the hiring process is the grant cycle – people are required over a sustained period, not the 2-3 years of a grant.

Generally speaking the need for management and leadership skills in the research world was identified, as a **high needs area**, however several people expressed the opinion that this was not something researchers needed training in beyond having a general understanding of the issues and skills required. It was expressed that administrators have this skill set and should be hired to perform these functions, leaving researchers to do what they do best – research. It was also expressed that skills required, and developmental priorities depend on the individual leading the project, as well as the area under study. For example, a project in engineering requires more attention to commercialization than one in the arts.

Beyond what was reported as being currently available or in the planning stages, another key finding was the **lack of knowledge regarding what was out there**. There was a very high frequency of responses to the effect “*I don’t know*”, “*We don’t have the resources*”, or even more striking, “*I am embarrassed to say we offer nothing*”. The people surveyed were all positions in the research environment such that if these resources were available, it is likely they would know about them. Their lack of knowledge suggests they don’t exist.

Future planning efforts must take into account that change takes time and consider how the culture will change. Impact will be with the next generation of researcher that has been trained from the early days in a new environment. Additionally, it was noted that these efforts must be targeted towards assistant professors and new scholars if they are to really make a difference. Trends such as a large number of upcoming retirements in academe and increased competitiveness of the granting process will require that Canadian researchers need better preparation to be effective.

Conclusion

A survey was conducted on research management and leadership. It identified management and leadership resources that currently exist, those that are in the planning stages, skills researchers require, and skill highest in need for development. It also raised additional issues related to this topic. Results can now be used to plan a national workshop scheduled for the fall of 2005.

Exhibit I: Core Competencies for Community Partnership Health Research (CPHR)

This document was provided by the Michael Smith Foundation for Health Research. It includes core competencies for a strategic training program, some of which touch on management and leadership.

Based on a review of academic literature, program documents, and deliberations among PCHR Cross-Cluster Work Group mentors, the following taxonomy of core competencies was developed to guide learning plans and program review. Aiming for consistency in the degree of specificity of competencies, we have created three hierarchical levels (see table below). The effective practice of CPR draws simultaneously on competencies learned at each of the levels and which are difficult to disentangle. We stress that competencies do not always neatly fit within a single category. The organizing system is primarily intended for conceptual purposes in thinking through how best to plan learning experiences. The bulleted items are selected examples taken from the expanded version of this document (in progress).

While there is a set of competencies relevant to all community partnership research, certain researcher competencies may receive more or less emphasis depending on a number of factors (e.g., the type of researcher-community relationship, the organizational sectors partnered, and the orientation to community partnering). Individual researchers can select and prioritize specific domains for concentration, such that a diversity of researcher ability is created through the differences in individualized learning plans.

Competency Areas	Competency Domains	Specific Skill Examples
Population Health	1. Context of the Field	<ul style="list-style-type: none"> ◆ Understanding of the principles and mission of community partnership research ◆ Appreciation for multiple methods and analytical traditions in population/public health and health services and policy research
	2. Knowledge Foundation	<ul style="list-style-type: none"> ◆ Critical understanding of current health promotion issues and theories on the determinants of health ◆ Ability to apply social science concepts in analysis of health promotion problems
	3. Traditional Research Skills	<ul style="list-style-type: none"> ◆ Understanding of research design, data collection, and analysis ◆ Ability to implement a research study, identify its strengths and limitations, and draw valid conclusions
	4. Evidence Appraisal	<ul style="list-style-type: none"> ◆ Skill in literature searching ◆ Proficiency in critical appraisal of the literature
	5. Ethical Issues in Community Partnership Research	<ul style="list-style-type: none"> ◆ Skills to deal with the political ramifications of sharing control and ownership of findings and products ◆ Awareness of the effects of data and actions on the system in which research is involved
	6. Project-Specific Technical Methodological Skills	<ul style="list-style-type: none"> ◆ Skills related to particular aspects of a project, such as evaluation research, computer software programs, and multiple languages
Technical and Methodological		

Competency Areas	Competency Domains	Specific Skill Examples	
Organizational	7. Governance	<ul style="list-style-type: none"> ◆ Competency in goal setting, choosing membership composition, and obtaining resources ◆ Ability to provide mechanisms of accountability through measurable results 	
	8. Management	<ul style="list-style-type: none"> ◆ Skill in engaging members and providing appropriate coordination mechanisms ◆ Commitment to jointly develop guiding norms for a steering committee's operating procedures 	
	9. Conflict Management	<ul style="list-style-type: none"> ◆ Ability to select and develop methods to manage and channel conflict ◆ Skills for critical awareness, confronting others, and apologizing ◆ Ability to identify and deal with member dissatisfaction, anticipate conflict and identify political issues that may hinder social change 	
	10. Group Process	<ul style="list-style-type: none"> ◆ Skill in group facilitation, consultation, and technical assistance ◆ Capability in collective and consensus decision-making 	
	11. Negotiation	<ul style="list-style-type: none"> ◆ Understanding of established negotiation processes 	
	12. Knowledge Exchange	<ul style="list-style-type: none"> ◆ Ability to create joint interpretive fora for accessing and sharing research knowledge through key knowledge sharing practices 	
	13. Change Agency	<ul style="list-style-type: none"> ◆ Understanding of the change process and awareness of the effects of the political dimension on what they can accomplish and how ◆ Ability to maintain credibility as an effective driver of change and as an astute political player 	
	14. Sharing of Power	<ul style="list-style-type: none"> ◆ Commitment to creating non-hierarchical structures within the research team ◆ Ability to encourage involvement of partners and engage in education and training with participants regarding the research process and community context 	
	15. Mutual Respect	<ul style="list-style-type: none"> ◆ Ability to adopt a relational stance of mutual respect ◆ Respect for (and ability to draw on) different forms of knowledge, capability, and resources ◆ Commitment to understanding the realities facing communities respect 	
	16. Context Diversity	<ul style="list-style-type: none"> ◆ Ability to work within a variety of settings with a diverse group of individuals ◆ Cultural sensitivity and affirmation of the culture of the community 	
	17. Self-Reflection	<ul style="list-style-type: none"> ◆ Ability to reflect critically on the research experience ◆ Capacity to contribute to group reflection 	
	18. Communication	<ul style="list-style-type: none"> ◆ Ability to engage in frequent, honest, and productive dialogue ◆ Skills in writing, speaking, and listening ◆ Commitment to frequent communication and to a network of relationships 	
	19. Interpersonal and Intrapersonal Intelligence	<ul style="list-style-type: none"> ◆ Commitment to building interpersonal relationships involving face-to-face contact in informal ways ◆ Ability to use interpersonal and communication skills for the benefit of others ◆ Demonstration of integrity/trustworthiness, emotional intelligence, and a posture of humility 	
	Interpersonal		

Exhibit II: University of British Columbia - Project Management Workshop

When you graduate, whether you are in an academic, scientific, public or private sector position, you will have to plan, lead, manage, and evaluate projects. Whether you are directing a research project, a business venture, a department or a group of scholars, your career will benefit from the mastery of project management skills.

The Faculty of Graduate Studies is pleased to offer a workshop that will present executive level management skills. The workshop will involve a planned and integrated approach to:

- Setting goals and targets
- Designing strategy
- Identifying and developing resources
- Managing people and resources
- Monitoring progress and outcomes
- Delivering the project on target, on time, and on budget

The Project Management Workshop will be your hands-on guide to creating the processes for fast and effective team formulation and goal achievement. Come and experience the obvious how to's and skills of the "projectized" approach in the workplace, whether public, private, or voluntary sector.

Join Vijay Verma, internationally known author, speaker, and trainer. With 25 years of Vijay has provided project management assistance for a large number of private and public sector organizations. Learn how to approach the range of multifaceted projects you will manage in the workplace to ensure intended outcomes, satisfied colleagues, and good relations with affected stakeholders.

DATE: The workshop is scheduled for October 14th and 15th from 9 a.m. to 5 p.m.

Registration:

Fees: \$40 Refreshments and lunch are provided

Contact: rosamma.varghese@ubc.ca

with your First and Last names, Department, Program and the Telephone Number

Payments can be made at:

Faculty of Graduate Studies, 180-6371 Crescent Road

Attn: Rosamma Varghese

Make cheques payable to UBC and cash payments must be made in exact amount.

ALL PAYMENTS MUST BE RECEIVED BY *MONDAY, OCTOBER 8, 2004*

This is an excellent opportunity to develop executive level project management skills that are necessary to thrive in your post-graduate career for a fraction of the cost professional workshops typically charge.

Enrollment is limited to the first 25 people, so act quickly.

For additional copies of this report,

please contact: Michelle L. Vincent
Assistant to the Chair

Department of Health Policy, Management & Evaluation
Faculty of Medicine
University of Toronto
155 College Street
Suite 425
Toronto, ON M5T 3M6

hpme.chair@utoronto.ca