



National
Defence

Défense
nationale

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Surgeon General
HEALTH RESEARCH
Strategy

*To better Shield and Sustain Canada's fighting
forces through health innovation*

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Your health – Our mission
Votre santé – Notre mission

Canada

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Message from the Surgeon General

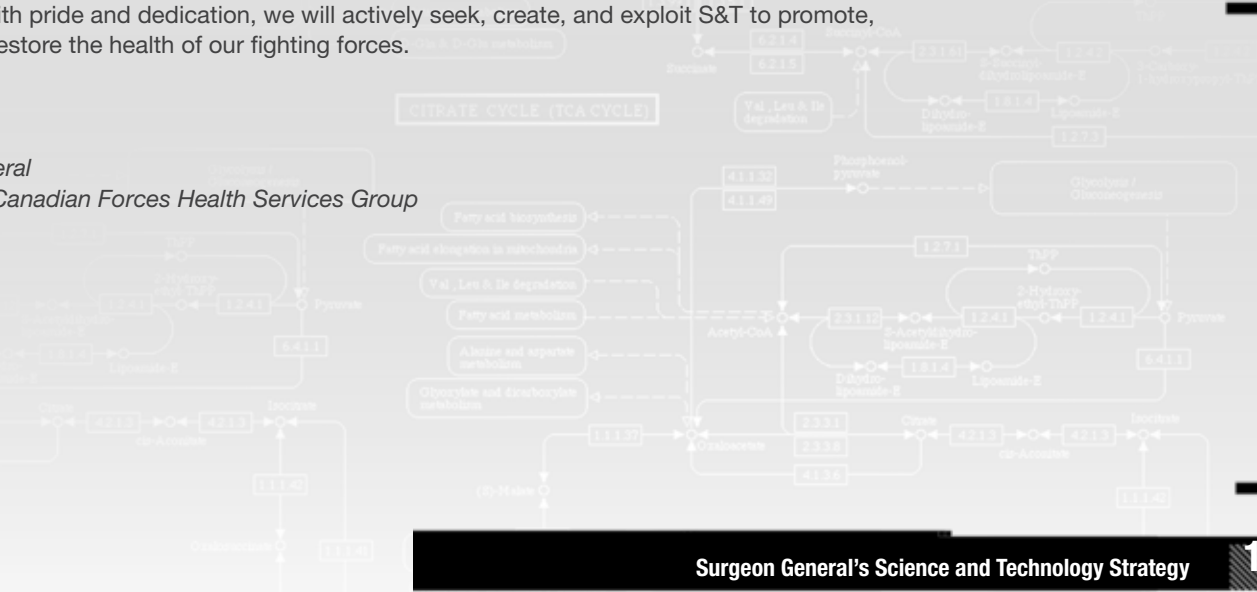


The first scientist in what is now Canada was a military medical officer. Dr. Michel Sarrazin 1659-1734 was Surgeon-Major to the colonial regular troops of New France and a corresponding member of l'Académie royale des sciences. Among other things, he systematically studied the medicinal uses of plants in the New World, and Quebec's Prix Michel-Sarrazin is today awarded to the scientist contributing the most to biomedical research. As it was then and is to this day, science and technology (S&T) remain basic daily tools of military medical personnel. Clinical research and epidemiology in particular are routine fundamental functions of CF Health Services (CFHS) directorates and clinician-scientists responsible for various aspects of individual and population health.

A strong S&T foundation is a prerequisite to the fulfilment of every Senior Medical Officer's duty as the statutory adviser to commanders on all matters related to health. Since Dr. Sarrazin's time, CFHS military and civilian personnel from many health occupations have been recognized for their contributions to this foundation with national and international research awards or otherwise. Structuring our efforts to collect and analyse health-related data is critical to building upon this foundation and optimizing our health practices and programs, yet the related necessary efforts and responsibilities are admittedly burdensome given our many other health care duties. Even Nobel Laureate Major Sir Frederick Banting MC, RCAMC, often stated that he would far rather serve as a battalion medical officer than lead research efforts in World War 2. He nevertheless faithfully assumed this responsibility and was killed on duty while travelling on a research mission.

The past few years of intense operations have re-emphasized the operational and clinical importance of continuous military health research and scientific analysis. They have also highlighted that, given the unique nature of military medicine, many elements of its supporting S&T can best or can only be served by the military medical community. I have therefore directed that the military health research program be revitalized, firstly through the formulation of this *strategy* and secondly by injecting the necessary vigour and rigour to our program to support its successful execution. My goal is to create a culture that routinely generates and exploits the full potential of S&T in support of CF health research. This undertaking will enhance the effectiveness of military health care, foster our institutional credibility, and instil a sense of accomplishment within the CFHS. Over the next two years, my health research team will work to implement this program with internal CFHS research elements and with our external colleagues. By forging closer relationships with Defence R&D Canada, other DND partners, the Public Health Agency and Health Canada, Veterans Affairs Canada, other government departments, civilian health institutions, and our allies, we will maximize synergies and build on their strengths in supporting CF health. With pride and dedication, we will actively seek, create, and exploit S&T to promote, protect, and restore the health of our fighting forces.

HW Jung
 Commodore
 Surgeon General
 Commander Canadian Forces Health Services Group



Executive Summary

The generation of new health knowledge and capabilities is multi-dimensional. This is reflected in the multitude of tasks relating to research, technology and analysis (RTA) and development, engineering and evaluation (DEE) carried out under the Surgeon General's Health Research Program. These are pursued with the support of the "S&T Enterprise", consisting of the many CFHS individuals and organizations conducting S&T activities on behalf of the Surgeon General. The purpose of this strategy is to create a distinct CFHS research culture focused on military medicine that will assist CFHS members to direct or participate in RTA and DEE activities, mentor scientific ingenuity, and ultimately enhance health care. The Surgeon General's health research team members are expected to conduct research and report results, publish documents, attend key conferences, analyse the literature, stage presentations and meetings with experts in the field, oversee the industrial transfer of technology, and contribute to this transfer in order to ensure its applicability with respect to military operations and the promotion, protection, and restoration of CF health. Team members will also contribute to the general base of scientific knowledge relating to military medicine by participating in RTA and DEE activities, by promoting collaborative projects and by forging and maintaining strong links with relevant government entities, allies, universities, hospitals, private agencies, and external researchers.

The aim of this program is to ensure that CF health needs and practices are continually assessed and improved in order to contribute to optimal health and military operational success, which in turn will reinforce institutional CF and CFHS credibility. Within the health research team, the health research management staff is charged with coordinating, monitoring, assisting and advising, in addition to performing other general administrative and professional functions.



Introduction

The publication of the Defence S&T Strategy in December 2006 represented a milestone for DND's commitment and "highlights the importance of our departmental investment in S&T".

While our society undergoes rapid change, new challenges to defence and security are prompting the Canadian Forces to undertake a process of transformation. "*Science and Technology can provide effective support to this transformation by contributing directly to the advancement of the Canadian military capabilities*"¹. In consequence, CFHS must keep pace with CF transformation in the area of S&T in order to support medical advisers in fulfilling their statutory obligation to advise commanders "*on all matters related to health and physical efficiency*"². Future CF missions will be greatly impacted by the ability of the Surgeon General (Surg Gen) to promote, protect, and restore the health of CF personnel.

The Surg Gen Health Research Program fits within the Defence S&T Enterprise, which is "*a matrix organization that connects those within the CF and the department that direct, deliver and exploit the outputs from the investment*"¹. The Surg Gen Health Research Program will primarily focus on unique activities for which there is little or no civilian S&T investment, as well as on the routine epidemiological research functions common to all public health authorities. Given the limited resources of CFHS Gp, the key to success will be our ability to collaborate with other organizations with similar goals in order to develop a comprehensive health research program.

The continuum of care model depicted at Figure 1 highlights that the scope of the Surg Gen Health Research Program is necessarily diverse given CFHS's responsibilities not only to restore health that has been compromised, but also more fundamentally to pro-actively promote good health and protect CF members from illness and injury. In order to fulfil these responsibilities, CFHS must be involved in all departmental core processes including Strategy and Policy, Force Development, Capability Production, Force Generation, and Force Employment.

The current Defence S&T Strategy comprises two corresponding programs for managing our efforts: the Research, Technology and Analysis (RTA) program and the Development, Engineering and Evaluation (DEE) program. The Surg Gen Health Research Program will encompass both, with the emphasis on RTA.

As in the Departmental S&T Enterprise, the Surgeon General Health Research Program will consist of four activities: Knowledge Generation, Knowledge Access, Knowledge Application and S&T Integration.

¹ Defence S&T Strategy, December 2006

² QR&O 34.011

Mission

Canadian Forces Health Services

The mission of the CFHS is to provide high quality health services to Canada's fighting forces wherever we serve.

Surgeon General Health Research Program

The mission of the Surg Gen Health Research Program is to direct, support and assist in the research, technology and analysis (RTA) and the development, engineering and evaluation (DEE) of outcome-based S&T initiatives that affect the performance, health, and welfare of Canadian fighting forces wherever we serve.

Vision

Canadian Forces Health Services

A professional military health service recognized for providing excellent care as an integral part of a world class fighting force.

Surgeon General Health Research Program

By establishing a Surg Gen health research team we are building an S&T culture within CFHS that will lead or participate in RTA and DEE activities, mentor scientific ingenuity, and enhance CF health.

Values

Our people

We support, promote and encourage the professional and personal development of our people.

Teamwork

We are a multi-disciplinary team that works together, guided by the best interests of those we serve.

Accountability

We take responsibility for our actions, decisions and conduct.

Ethics

Our health research team strictly respects the Tri-Council Policy Statement on Ethical Conduct for Research Involving Humans.

Integrity

Health research team members adhere to moral and ethical principles that act as a code of conduct for S&T.

Partnerships

As partners, we support relationships that are fair, open and based on mutual respect in achieving common goals.

Innovation

As the capstone for health research, we support creative approaches and solutions that address the unique challenges intrinsic to all aspects of military service and military medicine.

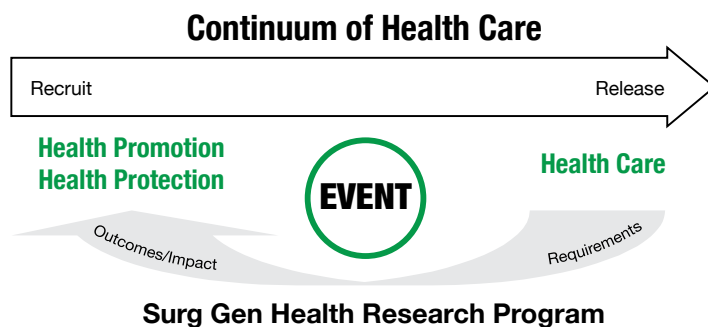


Figure 1. Continuum of Care

Goals

There are five basic principles central to all RTA and DEE activities related to military medicine within the Canadian Forces

- 1) The RTA and DEE activities of CFHS reinforce, support, and are consistent with the unique health needs and priorities of our fighting forces, wherever and in whichever capacity they may serve.
- 2) The RTA and DEE activities of CFHS are aimed at analysing and evaluating existing health issues, supporting the development and optimization of health policies and practices, increasing knowledge and formulating recommendations that will help improve the protection, performance, health and well-being of our fighting forces.
- 3) The RTA and DEE projects of CFHS, whatever their scope, incorporate ethical criteria into the design, methodology, analysis, review, recommendations and implementation of CF force health protection strategies.
- 4) CFHS personnel are given opportunities and incentives to engage in RTA and/or DEE activities to enhance CF health, thereby increasing the number of qualified, competent members of the CFHS health research team.
- 5) The aim of this program is to enhance institutional credibility and enhance CF health in order to support military operational success

The scientific accountability framework will provide coherent guidance to the leadership and subordinates and will constitute a statement of expectations and parameters for all those participating in or coordinating RTA or DEE activities on behalf of the Surg Gen. By supporting active participation in this program, the CFHS leadership is encouraging the development of an S&T culture that will have a positive impact on the health of Canadian Forces members and CF operations. The accountability framework is a key element of the program and must be respected by all the parties concerned. This will place the organization in a much better position to reap the results of a successful research program.

The Surg Gen Health Research Program is a complex and demanding matrix system. The Accountability Framework is designed to manage this complexity by outlining roles and responsibilities within the matrix. It will also ensure greater visibility and transparency in decision-making throughout project life cycles. This framework will improve matrix interaction, resulting in a clearer, timelier, and more effective decision-making process.

More specifically, the accountability framework will operate at the following levels: (Note that the Surgeon General Health Research Board, or SGHRB, will replace the Health Services Research and Development Board or HSRDB).

Accountability Framework

Federal S&T operates under the accountability regime established by the Treasury Board Secretariat Management Accountability Framework (2003). Under this framework, the effective management of any activity requires information about strategic priorities, objectives, inputs, flow of resources, outputs, and outcomes. The monitoring of these factors provides the basis for the ongoing evaluation of progress, as well as input into subsequent decision-making.

The accountability framework governing the Surg Gen health research activities will provide senior managers and matrix research personnel with a list of expectations reflecting the various facets of the Surg Gen Health Research Program.





“S&T involves risk at many levels. The outcomes of research are uncertain at the onset, meaning that the investment in research carries a degree of risk. New technologies and science-based products can create unanticipated risks to individuals or to the environment. However, S&T can also be an important tool for managing risks and reducing uncertainty in decision-making. A Framework for Science and Technology Advice identifies a number of principles and guidelines that promote sound decision-making and that reduce the level of risk. The Government of Canada’s “A Framework for the Application of Precaution in Science-based Decision Making about Risk” provides further guidelines about science-based decisions in the presence of uncertainty.”³

The focus of this framework is on leadership and its relationship to positive and effective results. (See Figure 2).

In essence, an accountability framework will enable the Surgeon General to:

- demonstrate value for the dollars spent on the Surg Gen Health Research Program;
- identify requirement gaps where S&T can effect positive change;
- manage program-related risks;
- improve our ability to achieve positive outcomes; and
- ensure that our limited resources have an impact.

Accountability Framework

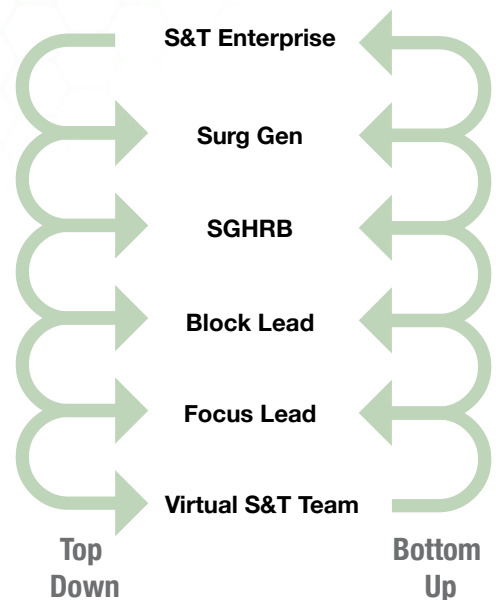


Figure 2: Accountability Matrix

Governance and Strategic Direction: The SGHRB will provide specific guidance concerning the direction of RTA/DEE activities carried out as part of this strategy and through periodic calls for proposals. The SGHRB will be directly accountable to the Surg Gen who will, in turn, provide the resources needed to implement an effective strategy through the SGHRB.

Policy and Programs: As secretariat for the SGHRB, the Health Research Coord will engage health research team members in order to develop and maintain the policies and programs essential to a productive health research program.

Risk Management: The SGHRB, with the support of the Surg Gen S&T matrix, will manage and mitigate the risks associated with individual projects. Project managers will report to the SGHRB regarding risk mitigation, and the SGHRB will provide support where necessary to reduce identified risks.

Oversight and Accountability: The SGHRB will report to the Surg Gen regarding all activities carried out as part of this program. Individual Project Managers charged with carrying out RTA/DEE activities on behalf of the Surg Gen must report to the SGHRB concerning all aspects of their projects, including expenses, risk mitigation, deliverables and outcomes. Project performance reports must be submitted semi-annually. The SGHRB will coordinate projects through periodic performance reviews detailing the health of their projects, and will intervene where necessary. Wherever possible, the SGHRB will offer support to S&T Team members responsible for activities related to the Surg Gen Health Research Program.

Resources: Resources will be allocated for all approved projects. Responsibility for their financial management will be borne by the project managers, while the Surg Gen will be responsible for projects.

Results/Outcomes: Project managers working with the SGHRB will be accountable for achieving the results/outcomes set forth in project plans. Whenever possible, the SGHRB will assist project managers engaged in project-related activities where doing so will contribute to project success.

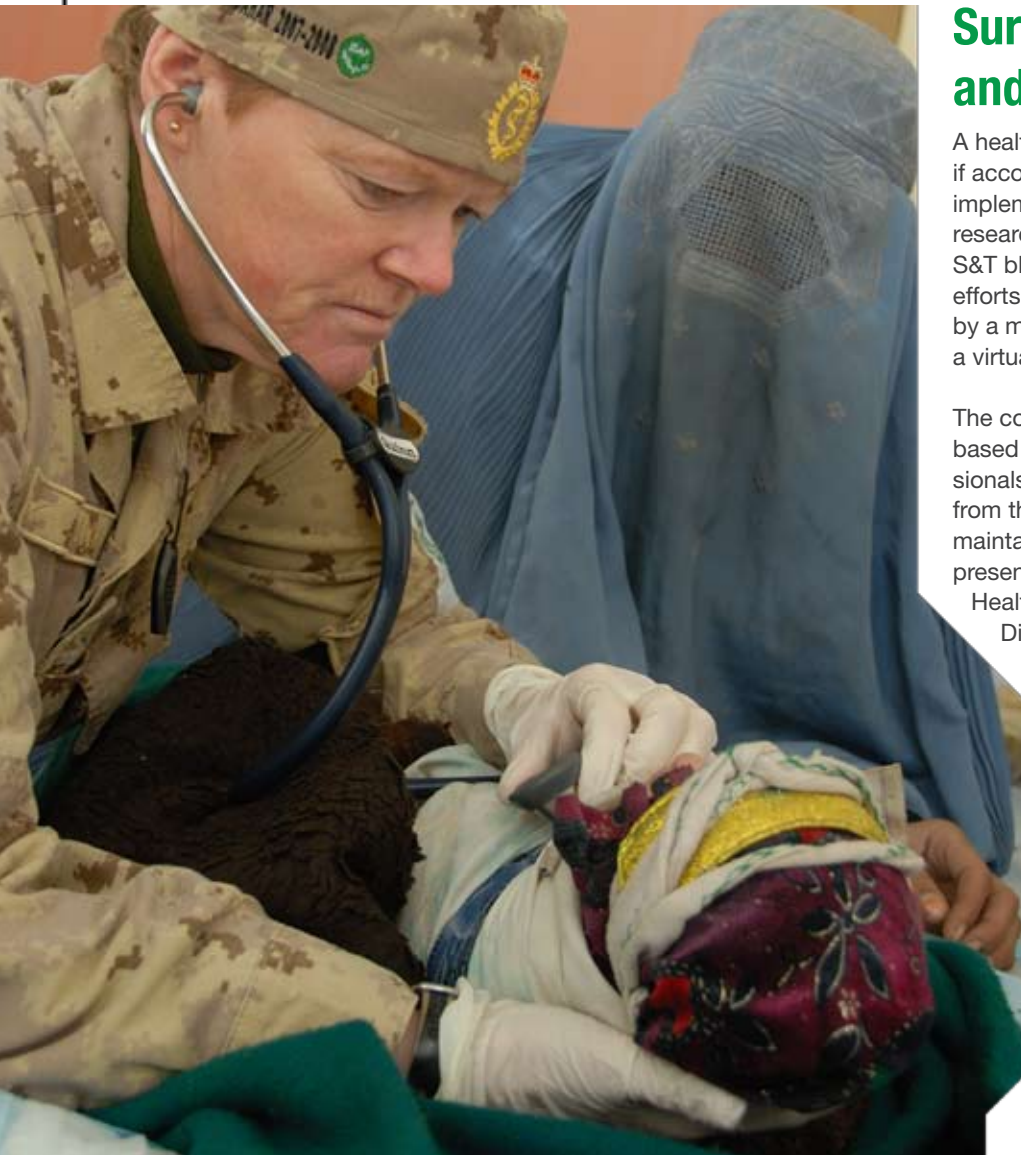


Figure 3. Leadership⁴



³ In the Service of Canadians: A Framework for Federal Science and Technology, Innovation in Canada

⁴ Ibid

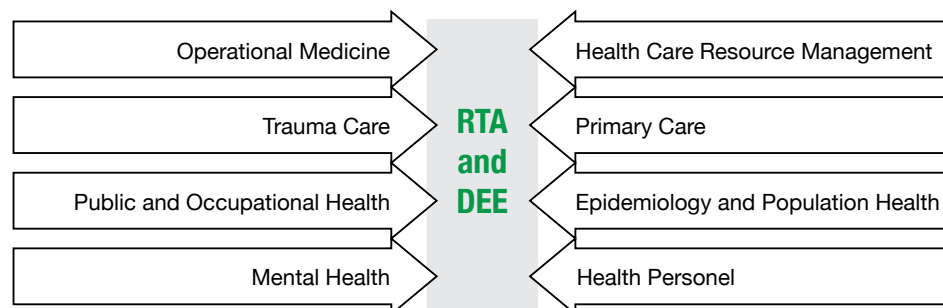


Surgeon General Science and Technology Blocks

A health research strategy can only be effective if accompanied by a pragmatic and resourced implementation plan. To empower the health research team, the SGHRB has established eight S&T blocks within which the team will focus its efforts. Each of these blocks will be overseen by a member of the SGHRB and managed by a virtual Team of Excellence.

The concept of virtual Teams of Excellence is based on having groups of like-minded professionals who meet periodically to obtain guidance from the SGHRB, to offer advice, and to create, maintain and manage one of the eight blocks presented at Figure 4. For example, the Mental Health block would be championed by the Director of Mental Health and managed by a team with a focus on mental health, but would receive inter-disciplinary support as necessary from other block teams, from across the CFHS, or from external partners. Each of the eight teams will report to the SGHRB and the Surg Gen, and will form part of a broader S&T matrix in support of the Surg Gen Health Research Program.

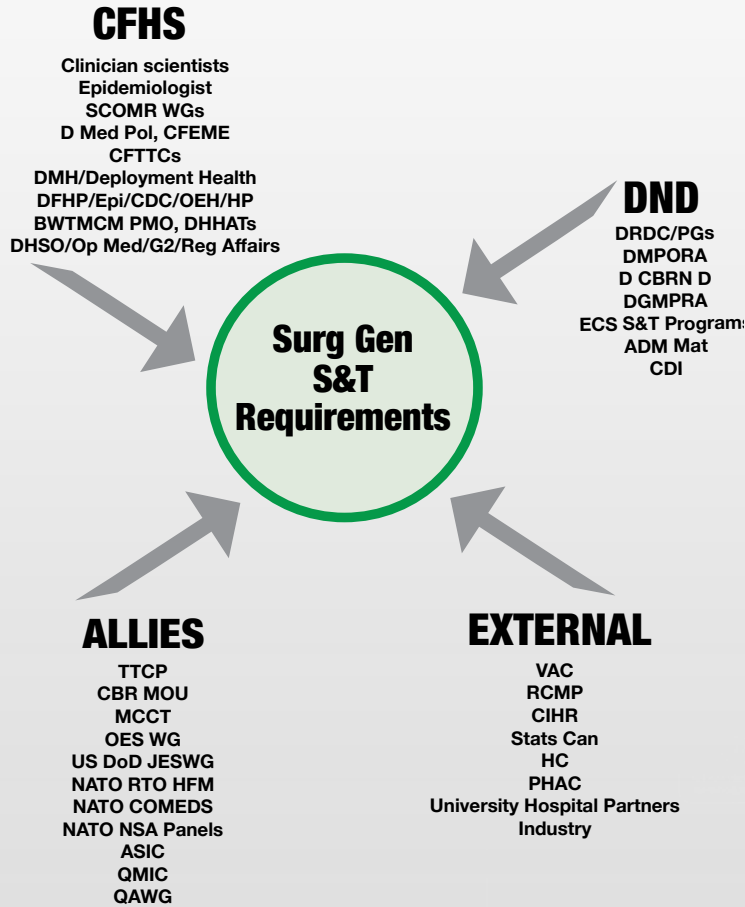
Supporting the eight Teams of Excellence will be a network of partners as identified at Figure 4.



Surg Gen Health Research Strategy

Figure 4 Health Research Building Blocks

Surgeon General Health Research Program Sources



Summary

Over the years, internal and external S&T have helped support health research, and thus improve the promotion, protection, and restoration of the health of our fighting forces. Despite these successes, the cost and complexity of health research has made it necessary to create a focused Strategy to maximize limited time and resources. This Strategy provides an accountability framework to assist those engaged in S&T on behalf of the Surgeon General to understand the processes and expectations governing leadership, production and delivery. Finally, this Strategy will focus the efforts of our health research teams so that S&T can further enhance health research in support of Canadian Forces into the next decade.



Figure 5. Network of Partners

Appendix 1 – Governance

The S&T authority for CFHS Gp is the Surgeon General, who is represented by the D Surg Gen as the SGHRB Chair. The SGHRB comprises but is not limited to the following:

CMS, CLS, and CAS Surgeons

CO CFEME

Director Mental Health, (DMH)

Clinical Specialist Advisor

Pharmacy Advisor

Director Force Health Protection (DFHP)

Director Health Services Operations (DHSO)

Director Medical Policy (D Med Pol)

Director Health Services Delivery (D HS Del)

Director Health Services Personnel (D HS Pers)

Clinical Practice Leaders as required

DRDC Representative

The VAC R&D Director is invited as an ex officio member.

The Health Research Coord will act as secretary.

The board will meet at least twice a year in keeping with the S&T decision cycle of DND. Other meetings may be convened as required. (See Figure 5 for the DND S&T program cycle).

The mandate of the SGHRB is as follows:

- a) Define and align priorities for the S&T blocks;
- b) Optimize, build upon and create a synergy with partners in respect to R&D;
- c) Prioritize and approve project applications and provide feedback to applicants;
- d) Review ongoing projects with respect to milestone achievement, exploitation plan, and accountability requirements; and
- e) Influence the content of research theses of CFHS ATL personnel in support of CF health research interests



The SGHRB will approve all initial Surg Gen health research proposals, detailed project plans, and final reports. Every six months, a project performance report must be submitted for every approved project followed by a final report on project close-out in the format provided by the Health Research Coord. The SGHRB will also review and make recommendations regarding proposals submitted by organizations conducting S&T in support of the Surg Gen .

Each of the S&T blocks at Figure 4 will have a program of activities coordinated and represented by a Block Leader (BL), who will be a member of the SGHRB. The BL may designate Focus Leads (FL) for sub-elements within their blocks. For example, the Operational Medicine Block can be subdivided into a Medical Counter-Measures focus and an Environmental Medicine focus, while the Trauma Care Block may include a casualty care focus and a protective equipment focus, each with a separate FL. Each Block's virtual Team of Excellence may consist of professionals supporting more than one Block and serving on more than one Team of Excellence. The model is illustrated at Figure 6.

The alignment of Block Leaders to Teams of Excellence is as follows, with some potential FLs included for illustrative purposes:

Operational Medicine – D HS Ops
 Med CM
 Environmental Med
 Performance decrement countermeasures

Occupational Health – DFHP
 TIMs/TICS

Mental Health – Director Mental Health

Trauma Care – Specialist/Surgical Advisor
 CCC
 Protective Equipment

Primary Care – D Med Pol

Health Care Resource Management – D HS Del

Epidemiology – DFHP

Health Personnel – D HS Pers

Annual Cycle

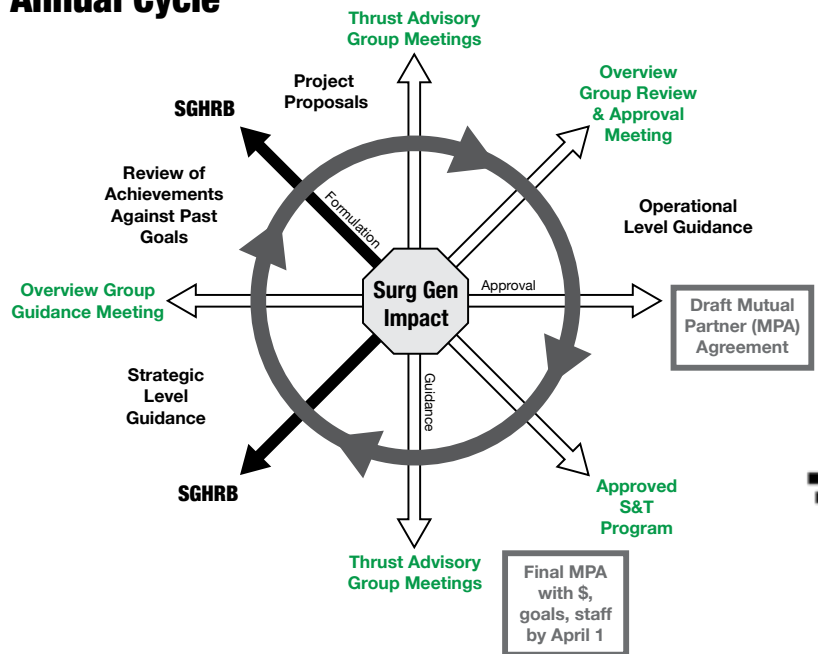


Figure 6. Governance Cycle

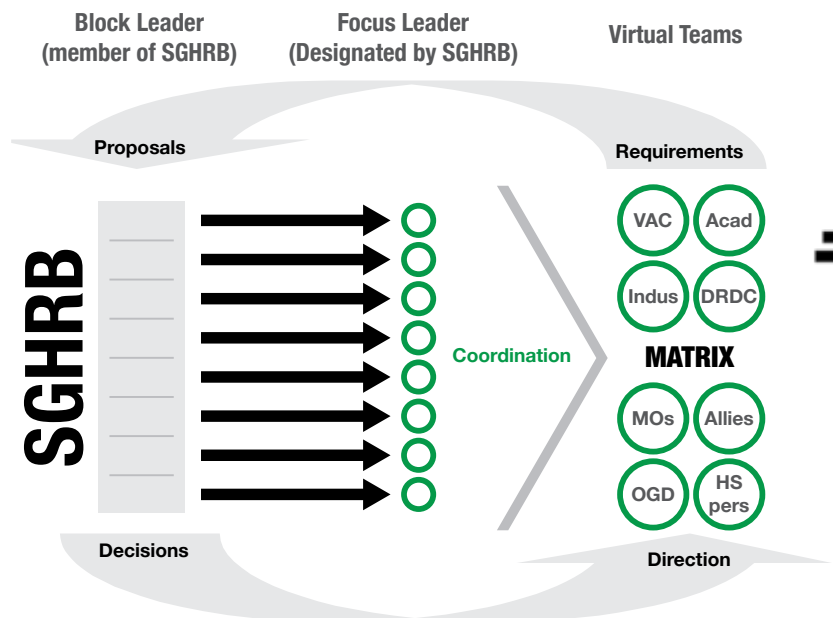


Figure 7. Leadership Model

Appendix 2 – Effective Partnerships

In order to build on the Surg Gen Health Research Strategy, a number of partnerships will be reinforced, with the immediate focus being on DRDC and VAC. Formal agreements among partners will be established through various mechanisms. For DRDC, the agreement will take the form of a Mutual Partnership Agreement (MPA) signed annually by the DRDC Scientific Authority and the Surg Gen. For VAC, a formal Memorandum of Understanding will be developed that includes Project Arrangements within which health research can take place. Partnerships with academia and industry will take the form of competitive contracts or existing MOUs. Projects with allies will be carried out through existing mechanisms or newly created MOUs.

Internally, CFHS personnel wishing to engage in S&T will be attached to one or more of the Teams of Excellence. Clinical personnel assigned to civilian hospitals will be able to engage in health research through MOUs between the hospitals and CFHS.

Current linkages are as follows:

- DRDC through CFEME, other embedded CFHS staff, and Mutual Partnership Agreement – PG (PG 1, 2, 3, 4)
- D CBRN D, CDI, and ECSs through integrated CFHS officers
- Surg Gen MOUs and embedded clinician-scientists with London Health Sciences Centre, London Health Research Institute, Sunnybrook Health Sciences Centre, Vancouver General Hospital, University of Alberta Hospital, McGill University Hospital, Queen Elizabeth II Hospital (Halifax), Hôpital Enfant Jesus (Quebec), and others
- Liaison functions with Veterans Affairs Canada, Statistics Canada, Health Canada, and the Public Health Agency of Canada
- CFHS membership on national scientific committees such as the Committee to Advise on Tropical Medicine and Travel, National Advisory Committee on Immunization, Pandemic Influenza Committee, Pest Management Advisory Committee, etc.
- US DOD through the Assistant Defence Attaché for Health at CDLS(W), membership on the DOD Joint Environmental Surveillance WG, and integrated CFHS officers at USNORTHCOM and US Defense Intelligence Agency/National Center for Medical Intelligence
- US/UK/AUS/NZ through TTCP, ABCA, ASIC Aerospace Medicine Group, Medical Countermeasures Coordinating Team, Occupational/Environmental Health Surveillance WG, Quadripartite Medical Intelligence Committee, Quadripartite Medical Intelligence Analysts WG
- NATO allies through numerous COMEDS Expert Panels and RTA – Human Factors and Medicine Panel
- CFHS individual and directorate-level collaborations with civilian and allied health research initiatives

