




The Medical Devices Research Centre (MD) supports Canadian medical device companies, other government departments, and multinational enterprises to develop innovative medical technologies that provide rapid, sensitive, accurate and low-cost solutions aimed at saving lives, reducing healthcare burden and stimulating economic opportunities for Canada.

Research Thrusts

-  **In Vitro Diagnostics** – Develops scalable and affordable bioanalytical solutions that may be deployed in settings such as hospital Point of Care, clinical diagnostics.
- Simulation and Digital Health** – Develops research software solutions in surgical efficiency techniques, medical technology software, health IT and homecare rehabilitation.
- Implantable Devices** – Develops, manufactures, and tests biocompatible materials (e.g., orthopedic devices).

 **MD's Budget (2012-13 to 2017-18)**
Total Expenditures: \$81.0 Million
Total Revenues: \$16.7 Million

 **MD's Resources (as of 31 Mar 2018)**
Staff: 69 full-time equivalents
Locations: Boucherville, QC / Winnipeg, MB

RESULTS

The evaluation found there is a need for MD's research. MD's research addressed societal needs as well as areas of importance for the medical devices industry. MD had notable successes and is positioned to contribute to others in the future:

-  **✓ Advancement of Scientific Knowledge**
 - Research used in patents, medical and treatment guidelines, health policies, and health insurance assessments
 - Microfluidics and lab-on-a-chip technologies are leading-edge
 - International stature of previous neurosurgical simulators
-  **✓ Industrial Innovation Impacts**
 - Transferred knowledge and technology to clients
 - Increased product valuation for clients
 - Increased commercialization and market valuation for clients
-  **✓ Government Solutions**
 - Research aligned with federal government policies and priorities
 - Past and ongoing collaboration with federal departments with future impacts on health and safety

RECOMMENDATIONS

1 Appropriateness of research

MD can refine the focus of its research within each of its three thrusts to have a greater impact. MD's potential is far greater than what is currently realized. This would, however, require MD to grow. A clearly defined strategic planning process, including consultation and consideration of end-users, will facilitate these refinements.

Recommendation 1: Devise and implement a strategic planning process for each of its three research thrusts, and renew these plans on an annual basis. Plans should identify opportunities to exploit (e.g., *In Vitro* Diagnostics' lab-on-a-chip technology), reconsider and revise research focus where appropriate (e.g., Simulation and Digital Health, and Implantable Devices), and consider involvement of and implications for end-users (e.g., patients, marginalized populations).

2 Engagement

MD should work more with pharmaceutical companies, major diagnostic firms and community health organizations to have a greater impact on the Canadian economy. MD has not consistently maintained stakeholder engagement plans. Outside of its current clients and collaborators, MD is not well known.

Recommendation 2: Develop and maintain stakeholder engagement plans, per research thrust, and report against progress made to ensure continued alignment with the strategic plan.

Recommendation 3: Identify strategies to increase awareness of its capabilities within relevant industries.

3 Capabilities

MD's reliance on key staff poses a risk to its ability to succeed, should they leave. Key components, which once distinguished MD from other organizations, are now outdated. Equipment in MD's clean room may no longer be considered state-of-the-art.

Recommendation 4: Develop a strategic plan for staff development and succession planning for each of its thrusts.

Recommendation 5: Prioritize investments in its major facility for *In Vitro* Diagnostics, the BioAnalytical Clean Room, to support current work and to allow for future growth.

METHODOLOGY

The evaluation was conducted in 2018-19 and used these mixed methods: data and document review, 25 internal and external interviews, six case studies, bibliometric analysis and a peer review.

MANAGEMENT RESPONSE AND ACTION PLAN

Recommendation 1

MD should devise and implement a strategic planning process for each of its three research thrusts, and update these plans on an annual basis. Plans should identify opportunities to exploit (e.g., *In Vitro* Diagnostics' lab-on-a-chip technology), reconsider and revise research focus where appropriate (e.g., Simulation and Digital Health, and Implantable Devices), and consider involvement of and implications for end-users (e.g., patients, diverse populations).

Response: Accepted

Action 1: Hire Strategic Advisor responsible for, among other things, establishing process and template for Research Thrust Strategic Plans.

Action 2: Develop strategic planning process and templates.

Action 3: Draft Research Thrust Strategic Plans that are based on a systematic process with consideration of and consultation with stakeholders and end-users like patients and / or diverse populations.

Recommendation 2

MD should develop stakeholder engagement plans, per research thrust, and report against progress made to ensure continued alignment with the strategic plan. As part of these stakeholder engagement plans, consideration could be given to the pharmaceutical industry, major diagnostics firms and community health organizations. Engagement plans should be revisited on an annual basis to maintain alignment with the above-recommended strategic plans.

Response: Accepted

Action 1: Draft engagement plans for each thrust and establish a renewal framework.

Action 2: Report against progress in engagement plans for each thrust.

Recommendation 3

MD should identify strategies to increase awareness of its capabilities within relevant industries, in particular those where its profile is low but there are opportunities for growth (e.g., pharmaceutical industry, major diagnostics firms).

Response: Accepted

Action 1: Draft marketing plan to increase awareness of MD.

Recommendation 4

MD should develop a strategic plan for staff development and succession planning for each of its thrusts.

Response: Accepted

Action 1: Develop staff development plans for succession planning.

Recommendation 5

MD should prioritize investments in its major facility for *In Vitro* Diagnostics, the Bio Analytical Clean Room, to support current work and to allow for future growth.

Response: Accepted

Action 1: MD will explore options for increased investment, internally and externally, and seek NRC Senior Executive approval.