

Health Research Funding in Crisis

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Can. J. Neurol. Sci. 2011; 38: 783-784

In 2000, the Medical Research Council of Canada (MRC) was folded and re-emerged as the Canadian Institutes of Health Research (CIHR). This was set-up as an organisation with no buildings conducting research; rather it was a group of 13 virtual institutes whose mandates were to tackle important health issues for Canadians (Cancer Biology, Mental Health and Aging are a few examples). Although these institutes were given a budget and a mandate to direct research at their specific interests, the central activity of the MRC (awarding operating grants) continued to be run from the central CIHR organization. Plans were to increase from the old MRC budget of about \$250 million per year to \$1 billion per year by 2008. Currently the CIHR budget is about \$650 million. In sum, the plans as laid out in 2000 for biomedical research have not been met.

The impact of this failure to meet this funding goal is that over the past five years the CIHR has been steadily reducing its support of the open operating grant (OOG) research competition. This has occurred despite the statement by the CIHR that the OOG is the cornerstone of health research for the country. Thus, it is difficult understand why it is funded at current levels. Compounding the problem is that this shortage of support comes at a time when the Canadian Foundation for Innovation (CFI) has spent billions of dollars to increase research capacity in the medical schools across the country. These two trends are obviously at odds with one another, as highly advanced research infrastructure is being underutilized due to limited support provided from CIHR operating grants. This is like being given a Maserati sports car but then finding that there is no money for gas.

Let's look at a brief overview of what has occurred over the past ten years. After an initial period where funding became reasonably attainable (30% success), in the past five years funding rates began to decline. This occurred for a number of reasons not the least of which was the increased mandate of the CIHR to conduct not only biomedical research but also social, health care delivery policy and even business development. So, although the budget was more than doubled, the mandate was also significantly increased as well. Today, according to the CIHR's own numbers the central OOG funding now accounts for only \$400 million of the \$650 million budget. The other approximately \$250 million is allocated to the 13 institutes and to priority announcements where research is funded based on a perceived need. While one can debate the merits of such an allocation they will not be discussed here. For the OOG completion in 2005-2006, CIHR funded 33% of all grants submitted. In the past competition (Sept 2010) only 23% were funded. This reduction in success can be partially accounted for by an increase in the number of submissions (30% over the five year period), but in 2010-2011 over a 100 fewer grants will be awarded. Thus, no matter how one looks at the picture, funding

is down and there are signs that this is having a significant impact on the productivity and competitive nature of Canada's health research. More troubling is that these are "best case scenario numbers" and are highly controversial as they include onetime grants called "bridge funding" plus monies that are specifically allocated to priority areas. If one takes these grants out then funding drops from about 28% to 17%; a drop in success rate of 39%. This means that more than 1 in 3 grants that were funded in 2005-2006 are now denied support. Is the country so rich that we can throw away 1/3 of our medical research? Bridge funding is usually about \$100,000 for one year and is non-renewable. It is also not uniformly "handed out," as it depends if the institute that the research is affiliated with (Aging, Mental Health, and Cancer for example) has the money to give in the first place. Priority funding is also usually derived from the satellite institutes. So, central CIHR funds are not used for bridge or priority funding. Thus it is a bit disingenuous for the central CIHR to claim these funds as part of the overall success rate. The bottom line is that no matter if you go by the more positive CIHR numbers or the numbers that have been typically used to gauge funding, it is down and not likely to increase (see below) unless significant pressure is felt by this or subsequent governments.

On the CIHR website there is a FAQ section where questions are posed on these issues, but the answers are less than clear and sound (as they might have been answered in the House of Commons).

Q. Will CIHR put more money into the OOG Program?

A. Every year, CIHR carefully reviews its budget and allocates money across its programs to maximize impact and deliver according to all aspects of our mandate. The OOG Program is one of CIHR's cornerstone programs and we intend to keep our commitment to create and maintain a stable Open Operating Grant Program - i.e. a commitment to fund at least 400 grants per competition.

Was the question answered here? No.

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RECEIVED MARCH 9, 2011. FINAL REVISIONS SUBMITTED APRIL 13, 2011.

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More troubling is***Q. Will CIHR guarantee a minimum success rate?***

A. We recognize that the limitation in CIHR's capacity to fund additional numbers of grants through the OOGP contributes to a highly competitive funding environment which brings with it opportunity losses, applicant fatigue, reviewer fatigue and funding challenges for many researchers.

The underlined statement gives one the impression that they are purposely creating a situation to wear down the biomedical research community.

The current situation is that on a number of grant committees (usually reviewing grants where Canada has a lot of strength) there is often a backlog. This is because an unfunded highly-rated grant (one scored as excellent) comes back into the system for the next competition along with the "normal" contingent of grants that are submitted. This creates a situation on panels (like Neuroscience A for example) where up to half the grants will be rated in the excellent range (>25 grants). At the current funding rate only eight to nine will be funded (assuming 50 grants). So over 15 grants rated as excellent are thrown back into the system for the next round. Thus, with each round the "log jam" gets bigger. There is now a widely held view that once a grant gets to a certain level of quality the process becomes more or less a lottery. In fact, studies have found that once the finding levels drop below 20% the process becomes essentially random¹.

Beyond the immediate impact of wasting talent and resources, graduate students are voting en masse with their feet in research programs across the country. They see their supervisors sitting in their offices constantly chasing support and decide that the job is too difficult and frustrating. The conversion rate to PhD from MSc is very low. Clinicians also do not have the time or the resources to chase CIHR funding, as the process is largely viewed to be a futile exercise. So, we are squandering future research talent that is required to keep improving health care in Canada. This is particularly wasteful as substantial public funds are used to subsidize the Canadian university system and so the system abandons freshly minted students to go to other countries; their systems benefit from our tax dollars!

There are those who rise up against the arguments raised here, stating that paying for basic research and even clinical research in Canada is worthless. Detractors of basic biomedical science see it as having no obvious relevance or a game played by intellectuals in ivory towers. This is incorrect. First, virtually everything taught in medical school, neurophysiology, heart activity, immunology was first understood as basic science observation. Thus, to deny further discovery means that we stop

advancing the education of the medical profession. The next most often heard statement is "Why even try? The Americans will just beat us to it." This is also unnecessarily cynical. This presumes there is essentially a finite number of things to be learned and that we are in some sort of race to cross off the discoveries on some well defined check list. Well funded science will always find out new things; there is no foreseeable endpoint to biomedical knowledge. The last argument says we can always buy what we need from other countries, sparing ourselves the cost of developing new knowledge. This is probably the most short-sighted attitude. Yes, Canada has lots of natural resources, but they are finite. Countries such as Switzerland, having one of the highest standards of living in the world has no natural resources but spends about 3% of GDP on research. The USA has increased its health research budget to about \$30 billion. Scaling this based on our population (about 1/10) we would need to spend three billion to be in the same league. In the past three federal budgets the CIHR budget was increased by about 2-3%/year (roughly the inflation rate). In countries where substantial GDP is targeted at basic research it generates tremendous wealth as biomedical and other high tech industry thrives in such an environment. Economic study after economic study indicates that a dollar generated in high value goods is much more powerful in generating wealth than a dollar generated by a natural resource. Likewise delivery of better care does not arise from what we know now; new clinical research must be supported so better health outcomes occur. We can ill afford not to get into the game as we will be left behind in making new discoveries and improving patient care.

If you accept in part or all of what has been stated here you may be asking why the current government (and to be fair most others in recent history) is so reluctant to develop strategies that would improve the health and wealth of Canadians. The short answer is that few people understand how biomedical science "works" in Canada or what potential impact it could have. We have written this commentary as a means to raise awareness of the looming problems ahead. Please take the time to discuss with your colleagues and write your Member of Parliament. The CIHR could and should be a massive tool for good in the country. It needs to be better supported. This begins at the grassroots; only when politicians see palpable awareness in any issue do they change policy. Let's let them know there is a heart beat out there and perhaps things will change!

REFERENCES

1. Jayasinghe UW, Marsh HW, Bond N, JR. *Statist Soc A.* 2003;166 (3):279-300.