Another Face of Healthcare Innovation: Commercialization

The publication, in this journal, of issues related to innovation in healthcare is timely (see *Healthcare Quarterly* 8(3)). The word or topic of innovation is employed almost every day by nearly everyone who transacts with research and clinical care. It is also referred to by politicians and renowned management gurus as the only modern way to ensure economic comparative advantage during periods of scarce financial resources.

The Health Innovation Canada (HIC) proposal goes beyond the usual meaning of innovation: the proposal is not that there should be more funds devoted to research for new discoveries, but that Canada and the provinces invest to move a step further in activities that will enable them to reap the benefits of their current investments—commercialization of innovations. If successful, by return of the pendulum, more funds would be available for R&D and health services. To do so there must be, as a prerequisite, a breakdown of several barriers including well-known tendencies to work in silos and in competition with one another (e.g., between universities, between research centres, between cities, between provinces, etc.).

The HIC proposal by Tingle and Friesen is well known to the author. Indeed, early in 2003, in preparation for the writing of the first version of the document, at the request of Drs. Tingle and Friesen, five regional groups were set up, composed mainly of representatives of universities, teaching hospitals, private businesses (not necessarily healthcare related), venture capital firms as well as clinicians-investigators who had set up their own companies. Problems were identified and solutions proposed based on the specificities of the region represented by the members. Since the presentation of the original manuscript, a number of changes have been introduced, not the least of which being the localization of the commercialization/innovation centres at, or in partnership with, large teaching hospitals or health authorities.

What's in It for Us Teaching Hospitals?

This question is not vain, and several answers readily come to mind.

First, I am convinced that working as part of a network – implicit in the HIC proposal – will facilitate recruitment of the best brains in a given field and, not to be minimized, their retention in a region, beyond the issue of income. Since what is important is not that these highly skilled persons work in one teaching hospital/research centre or another but within a network hopefully composed of these teaching hospitals/research centres, the temptation to move from one to the other or even out of the region will be minimized, the overbidding thus rendered perhaps useless or at least more manageable.

Second, healthcare has much to learn from other disciplines in terms of process efficiencies, ingenuity, applications to other fields and vice versa. The best example I can think of in this context is the amount of knowledge learned by healthcare workers from the aviation or oil-rigging industry in the approach and prevention of accidents. The regular contacts of medical or healthcare professionals with engineers, physicists, biophysicists, architects, experienced managers, technicians and so on can only strengthen the applicability of innovative discoveries. In return, other disciplines can learn from healthcare processes and subsequently use the acquired knowledge to compete with other countries. For example, in Montreal, for the first time in several decades, the construction of two major university health centres is being planned for completion in or around 2010. Should this opportunity not be used by Canadian firms – of all types – to learn and be able to export elsewhere? I submit that we and they should, as much as possible.

Let us examine how, from the financial point of view, this could benefit teaching hospital centres. The use of these centres as Beta sites for testing new discoveries or technologies and indirectly acquire access to them that would otherwise be denied for several years owing to financial constraints, readily comes to mind. Moreover, why should Canadian and provincial hospital centres have to pay more for materials, devices and technologies discovered and devised here but manufactured elsewhere, a so-common occurrence? We should not have to, given Canadian ingenuity and entrepreneurship.

Stumbling Blocks

Anyone who has worked in the Canadian healthcare system will be able to cite several potential objections to the HIC proposal.

There will be resistance from some who will submit that funds invested in this endeavour should rather be invested directly into patient care (e.g., the famous waiting times). There may be resistance from the granting agencies that will undoubtedly try to demonstrate in the first place there are not enough funds to grant the already existing research programs and those that will occur in the future. Moreover, they may submit that it is their role and responsibility to oversee the commercialization efforts of innovations funded by them in the first place. There is likely to be resistance from universities more or less for the same reasons as the foregoing: large sums of money are diverted that could be used to support more research and teaching infrastructures. Their reactions to the creation of a program of reimbursement of indirect costs of research directly to the teaching hospitals and their research centres may have been premonitory in this regard.

This issue of funding – the how and how much – by the federal government remains the major first hurdle, however. Without it, there cannot be implementation of any of the HIC proposal. Thus the federal government will have to decide about the added value of this proposal, given the predictable difficulties: Which ministry should take the lead? How to ensure that provincial jurisdictions are not infringed upon? Being satisfied with an arm's-length approach, albeit with regular performance appraisals.

Previous proposals have been submitted in the past. To my knowledge, none has been fully implemented or is working very well. The HIC proposal is daring and novel in that it aims to link various Canadian regions toward a given objective – commercialization of innovation – but at the same time avoid duplication of efforts and structures whenever possible, and involve the private sector (not privatize healthcare). Its implementation will require political will, major changes in culture, a large volume of communication among stakeholders, the establishment of effective and solid partnerships, energy, trust—and the contribution of university teaching hospitals and their research centres.

I submit that the timing is right and that it should be given serious, unbiased examination.

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Biotechnology Commercialization: A Poster Child for the Long-Cycle Innovation Challenge

In regard to Brimacombe's proposal for CIHR's participation in biotech commercialization, and Edelson's response that the government should stick to funding basic research (see *Healthcare Quarterly* 8(3)), it seems that there are two separate considerations.

1. Is there a case for government in biotechnology commercialization? If so,
2. What form should it take?

My interest flows from assisting Dr. Friesen lead the conversion of MRC into CIHR and my subsequent work with a science commercialization company.

A feature of Paul Martin's support for CIHR was the role that a new-knowledge agency could play in an innovation economy. There is little evidence that CIHR will be effective in creating economic value. Ottawa's desire to grow the economy through innovation, then, brings us to question one.

Is there a case for government participation in biotechnology commercialization?

Yes, for three reasons.

1) To reduce wasted knowledge.
   a. CIHR researchers are at the forefront of knowledge. Unfortunately, the economic fruits of their insight are neglected. Technology transfer functions are a contributing factor in biotech under-performance. An error in tech transfer thinking is that I.P. creation is value-creation. I.P. is a cost in the innovation chain. Having a large inventory of I.P., which Canadian research facilities do, is like having a warehouse full of rotting fruit. Government needs to intervene to reduce inventory wastage.
2) To learn how to create growth with long-cycle innovation.
   a. Why should government take the burden of reducing wastage?
      i) it's public research dollars being untapped
      ii) a desire for prosperity
      iii) government has interest in knowing how to make economic growth happen when the time between innovation and the market is long. Biotechnology is a poster child for this long-cycle innovation challenge.
3) Capital market failure is a barrier to social good.
   a. A classic reason for intervention is when there is social cost to market failure. There is capital-market failure in biotechnology because better returns are always available in other investments. Unfortunately, capital cannot be relied upon to be stupid over the long run. Without government participation, biotechnology innovation is left to rot.

What form should government participation take?

The suggestion that CIHR should participate is a non-starter. It is a research based researcher-led organization and would be distracted from its mission by a market agenda.

Government participation in commercializing should improve the risk profile of biotechnology for private investment. On the taxation side this means:

i) tax-favoured investment pools rewarding long-cycle capital
ii) rewritten labour-sponsored fund rules to target innovation better
iii) expand tax-favoured investment pools into the wholesale capital market.

On the government expenditure side this means: matching investments in small to medium proof-of-concept and beta development opportunities and refundable tax credits for early-stage investors.