



Improving Canada's Position in Healthcare Innovation:

Learning from the Swiss Experience

Swiss cheese with Canadian bacon and a grain of salt

Working Paper

based upon the

International Innovation Forum

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Executive Summary

This paper is an outcome of an international forum on innovation in healthcare hosted by the Ward of the 21st Century (W21C.org) at the University of Calgary on June 26, 2012. The annual forum provides a venue for leading health researchers and innovators to network and explore the challenges of health system innovation. This year the forum takes an international focus to understand the global innovation environment.

The forum was motivated by Canada's consistently weak performance on innovation measures when compared to other countries. In contrast, countries like Switzerland have in recent years ranked very highly, often number one, so the forum was designed to engage in a discussion with Swiss representatives to determine if there were lessons to be learned from the Swiss experience.

This paper consolidates those lessons learned regarding innovation through the three themes of strategy, culture and policy to distill implications for practice in Canada and Alberta and future research.



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INTRODUCTION

The annual forum provides a venue for leading health researchers and innovators to network and explore the challenges of health system innovation. This year the forum takes an international focus to understand the global innovation environment.

Dr John Conly, one of the original founders of the W21C and Professor of Medicine at the University of Calgary, set the context for the forum by bringing to our attention the recurring, and consistent message from academia, industry, government and the media, of the failing grade Canada regularly receives on various evaluations of innovation performance and productivity (c.f., Jenkins et al. 2011; AUCC 2011; OECD 2010; Conference Board of Canada 2012) when compared with other countries. However, in looking at the various rankings in either the World Economic Forum ([WEF](#)) or the Organization for Economic Co-operation and Development ([OECD](#)), Switzerland consistently ranks very high, often number one, and one begins to wonder if there are a number of lessons that could be learned or best practices that could be garnered from the Swiss experience that could be applied within a Canadian context? An area where such improvements are of paramount importance is healthcare (HQCA 2012; Langford 2007). Dr Conly, who had returned from spending a year's sabbatical in Switzerland and experienced first-hand the Swiss innovation enterprise there, provided the impetus for this forum. The goal of the forum was to learn from the Swiss experience, to understand how they have been able to accomplish what they have with their innovation system, and then to set a course to adapt any significant lessons or strategies to the Canadian context in a meaningful way.

The forum was structured by considering different levels of analysis of the topic. First, beginning with an international perspective and then focusing on the Canadian experience at the national, provincial and municipal levels. The second half of the forum attempted to integrate and synthesize across these levels of analysis through a Panel Discussion and "Open Mic" sessions to develop key messages and next steps for building on what we learned. This working paper is one of the first outputs from this forum with the purpose of critically evaluating what was learned in the forum and reflecting on the learnings through various levels of analysis (e.g., national, provincial, municipal) and then distilling local implications for practice and future research. For the purposes of analysis the findings from the Panel Discussion and "Open Mic" session are integrated in the relevant themes at these different levels of analysis.

LEVELS OF ANALYSIS

International Perspective

Dr Didier Pittet, Professor of Medicine and Hospital Epidemiology, Director of the WHO Collaborating Centre on Patient Safety at the University of Geneva, and President of the Organizing Committee for the Innovation Day Program at the University of Geneva Hospitals, opened by firstly looking at how to scale an innovation developed locally to make it globally available and secondly, to critically evaluate if the Swiss experience with innovation in healthcare is unique.

From Local to Global

To address the issue of how to scale an innovation globally, Dr. Pittet described a project dealing with preventing infection in hospitals through handwashing, noting that 1.4 million people are getting infected in hospitals annually. There was only a 40% compliance rate with hand hygiene at the time, and handwashing using soap and water was often not convenient or available at the point of prevention. Therefore, they proposed to use an alcohol based hand rub at the point of care (Pittet et al. 2000), and now referred to as the “Geneva Model”. This successful initiative was then scaled globally to other hospitals through the WHO Global Patient Safety Challenge in 2005 with 130 countries now committed to the strategy, which is now embedded in the WHO’s annual “[SAVE LIVES: Clean Your Hands](#)” campaign. Some interesting lessons that were learned from the experience with this initiative included:

- *Protecting the innovation.* Without such mechanisms there is no control over whether the innovation is made available versus simply being acquired and ‘shelved’ in favour of the status quo, continuing to be in a position to improve the innovation and embarking on commercialization as a viable option.
- *Planning for success.* This is as important as mitigating the risks. For example, one of the unintended consequences in this project was that the supplier of the hand sanitizer was not able to keep up with demand at the hospitals, while supplies were still being sent to fill commitments with other vendors, such as pharmacies.

Next was the issue of the potential uniqueness of Switzerland with respect to its ability to innovate, especially in the healthcare sector. In this regard, Switzerland appears to have built upon its strengths to establish a number of key clusters that feed innovation in the healthcare space, including life sciences, medtech and biotech. This has led to Switzerland becoming a major biotech cluster in Europe by melding high quality research with an innovation and business incubator environment.



Major themes were being able to protect the innovation and organize for rapid turnaround, facilitate broad networking and taking a multi-prong approach.

A Systems Innovation View

Mr. Christoph Ebell, Counselor, Office of Science, Technology and Higher Education, Embassy of Switzerland in Washington, USA, provided a complementary “macro” level perspective to Dr Pittet’s “micro” level experience with healthcare innovation in Switzerland. Mr. Ebell provided a systems innovation perspective that considered the components (e.g., organizations and institutions) and the interactions (e.g., activities) between the components to provide a picture of the multi-causal ecosystem in which innovation occurs. Mr Ebell organized this systems analysis into six layers: (i) research and development (R&D) provision, (ii) competence building, (iii) markets, with their supply and demand equation, (iv) enhancement of entrepreneurship, (v) interactive learning and networking between organizations, and (vi) creating and changing institutions (e.g., intellectual property rights, tax implications, and the regulatory environment). These areas may be expanded with respect to some of the major issues.

(i) R&D provision. Two relevant issues in this component were that while there is publically funded R&D within Switzerland, the majority of the R&D is private industry funded and much of that work is actually performed outside the country at subsidiary locations headquartered in Switzerland or through partner organizations. In the Open Mic session Mr. Ebell, reiterated that there is no government funding going directly to industry, and R&D activity is split 25% public and 75% private.

(ii) Competence building. From a competence building perspective the potential differentiating feature of why the Swiss are successful was a close integration between the innovation engine and technical education within the country. That is, much of the innovation is driven by the technical community and not the PhD community. There is also an impetus to keep manufacturing production local to ensure the knowledge base is available and capacity can easily react to new opportunities. Dr Conly noted in the Open Mic session that technical schools and universities form a tight network and wondered how the Swiss were able to accomplish this? Mr. Ebell responded that the strong apprenticeship system, whereby students are hired by companies and spend 3 days at work and 2 days in school each week was the primary facilitator for this. There are also Universities of Applied Sciences and it is this combination of technical degrees that serve as the foundation upon which the research institutions and universities build. Interestingly, later in the Open Mic session Dr Peter Josty, Executive Director for The Centre for Innovation Studies (THECIS), noted that 73% of PhD students in Switzerland are not from Switzerland and furthermore 26% of the inhabitants were born outside Switzerland, while in Canada only 22% were born outside Canada. Mr.



Ebell commented that this mechanism becomes self-sustaining as more people want to move there and make further contributions.

(iii) Markets and Supply and Demand. It is essential to have an ongoing collaborative relationship with potential end users/customers of the innovation and this type of research needs to be embedded in the end user environment and not separated from it.

(iv) Enhancement of entrepreneurship. From a national cultural perspective the Swiss are quite conservative and failure is viewed very negatively, qualities not typical of entrepreneurs. However, due to the tradition of precision manufacturing, highly efficient use of resources, and having to access larger markets, out of necessity, Switzerland has produced a particular type of entrepreneur well suited to the healthcare landscape.

(v) Interactive learning and networking between organizations. Switzerland is able to benefit from high density clustering in a relatively small country. This proximity facilitates an ongoing communication as a conversation between academia and industry so that innovations are able to avoid the 'Valley of Death' (Ford et al. 2007) that occurs between basic research and the application of those findings in useful innovations that can be used in practice. The 'Valley of Death' is a phrase that refers to the scenarios whereby a small high-tech company begins with an innovative idea and a small loan. The company builds an initial prototype and provides a workable model. Seed money for the commercialization comes along but somewhere between the prototype developed in the laboratory and the commercial market, initial loans expire and the seed money is used. The business model dries up and the company fades away, becoming another casualty in a landscape littered with the remnants of other fading or dying companies.

(vi) Creating and changing institutions (e.g., intellectual property rights, tax implications). Not having regulation disables innovation in the healthcare industry since without such standards of practice the innovations are often considered too high risk to proceed. Notably, no tax credits are provided to industry and no public funds flow directly to industry partners in Switzerland. Systematic identification of bottlenecks occurs and then plans are embarked upon to rectify the bottlenecks. Interestingly, in the Open Mic session Mr. Edell identified that there is no roadmap for this in terms of a strategic planning exercise and noted that the OECD described this as an arena system where things are negotiated, and debated until a consensus model is in place (OECD Reviews of Innovation Policy – Switzerland 2006).

National Perspective - Canada

Dr Gabriela Prada, Director of Health Innovation, Policy and Evaluation with the Conference Board of Canada presented "Innovation in Canada" and identified what Canada does well and commented on areas for improvement.



In particular, procurement was identified as a key consideration for healthcare innovation (Prada 2011), noting that Canada performs poorly in translating academic outputs to local and international innovations. Furthermore, Canada potentially looks weak because of a strong resource sector that benefits from a focus on energy/forestry/manufacturing instead of knowledge-based sectors. Later in the day, Peter Josty, the Executive Director for The Centre for Innovation Studies (THECIS), noted that we should be looking at identifying sources of sustainable competitive advantage, which naturally have been built upon our resource and banking industries. Dr Conly asked the question, “Where are our Canadian bioclusters and what are their rankings?” Either we have not done a good job of developing these clusters or we are currently not capturing adequate information on those clusters if they do exist. Other than the [MaRS Discovery District](#) in Toronto there does not appear to be strong clusters in the healthcare space to leverage, compared to the many clusters identified in the Swiss context.

Provincial Perspective - Alberta

Mel Wong, Assistant Deputy Minister, Alberta Enterprise and Advanced Education, reiterated that Alberta’s economy is energy driven but less so with growth in the services sector, including the health sector. Also, the trend locally is for companies to sell the business and then do something else. In recent years, the province has seen a depletion of serial entrepreneurs leaving a smaller pool to start new businesses, help mentor the growth of other businesses and to maintain the investor pool for growth capital. On the government side of the innovation system, there is a shift towards zero based budgeting with annual review of programs and the need for high quality data and confidence that we are measuring the right indicators.

In the Open Mic session, Dr Ghali, W21C founding member, asked if there are barriers to innovation and dealing with smaller enterprises built into the procurement processes with AHS? Various panelists responded to his question. Peter Garrett, CEO of Innovate Calgary, noted the need for policies that do not discriminate against small enterprises but recognize the need to be mindful of trade agreements. The recent Jenkins report (Jenkins et al. 2011) noted the importance of good strong lead customers, especially as the company gets ready for investors. In this regard Dr Prada emphasized that we require different vehicles to deal with (i) public procurement of R&D where there is no existing product and trade agreements don’t interfere, (ii) innovative procurement that deal with requirements that cannot be met by an “off the shelf solution” but can be developed in a reasonably short period of time (e.g., common approach in the UK) versus (iii) procurement of innovation when an innovative solution exists but is not widely adopted and effort needs to be directed towards improving adoption and diffusion (Prada 2011). Interestingly, Dr Prada noted that less than 30% of healthcare organizations use panels of users to assess products or express an ability to



communicate innovation plans to market. Mr. Ebell noted that the Swiss do not specifically disadvantage small and medium size enterprises (SME) but this is not stated policy and instead they simply want to keep their procurement options open. Finally, Peter Josty suggested that AHS should allocate 2.5% to SME procurement to foster this going forward.

In this regard, Dr Conly noted that Alberta is now 4 years into its reorganized Alberta Health Services organization (AHS) and the recent 2012 [Workforce Engagement Survey](#) indicated a significant drop in confidence by its medical staff in the area of innovation, compared to 2010 identifying a gap and an opportunity.

Local Perspective – Calgary

Peter Garrett, CEO Innovate Calgary presented “The Regional Innovation Ecosystem” and in the “Open Mic” session noted that there is a need to service multiple institutions and that locally Innovate Calgary offers an entrepreneur toolkit, mentoring, and entrepreneur in residence programs.

Dr Ghali posed the question of “if I had a billion dollars how would we allocate it to fix this problem? That is, what is missing and are there too many agencies”? Peter Garrett claimed complementary roles for the agencies but there is missing early stage funding and the need for more entrepreneurs in residence.

Mel Wong thought before we move to solving the problem we should really clarify our objectives. Is it to create more startups, strengthen sectors or some other aims that we are hoping to achieve?

The motivation for the forum was to learn from the Swiss experience but a number of panel members expressed reservations about simply duplicating what the Swiss have done. In the Open Mic session, Peter Josty noted that we need to make our own path and not necessarily replicate the Swiss system, while Dr Ghali emphasized the need to tailor our approaches to the context and culture of Alberta. Mr. Ebell reiterated that you cannot simply transplant the ideas and practices of the Swiss but you can take inspiration from their experience and use this forum as an opportunity to collaborate going forward.

Dr Andre Buret, Associate Vice President Research at the University of Calgary (UofC), moderated the Open Mic session and he took the opportunity to release the University of Calgary research priorities report and to highlight some of the local plans that connect with the discussions during the forum. These included an entrepreneurship graduate course that more broadly provides training so students see more commercialization opportunities in their work. Dr Conly asked if we should be embedding PhD/MBA people in clinical practices? Peter Garrett suggested that this is already happening where Innovate Calgary’s commercialization staff are embedded in Faculty of Medicine and serve as on site



champions. Dr Conly replied that in Switzerland they are embedded within the hospitals and that Faculty of Medicines are not the same as the hospital environment. Perhaps the two should be viewed as complementary.

Dr Ed McCauley, Vice President Research (VPR), further explicated the UofC plans, with Step 1 being to complement the VPR role with Associate Vice Presidents filling key portfolios (Big Pharma, ICT etc.); Step 2 being to develop a [UofC Strategic Research Plan](#); Step 3 to start messaging at the undergraduate level – what are the big problems, enable mentorship, and foster a culture of innovation; and Step 4 to revisit the structures and policies at UofC to promote innovation (e.g., intellectual property management and overhead) while engaging the community.

DISCUSSION

Synthesis: Swiss Cheese with Canadian Bacon and ...

In this section we synthesize the findings through a number of integrative themes and offer a critical assessment from the Canadian and Alberta perspectives.

From the discussion and presentations that occurred at the forum, we identified three integrative themes, including (i) the innovation strategy, (ii) an innovative culture, and (iii) innovation policy, and discuss these in the context of managing the innovation process.

We start with consideration for the enabling conditions of innovation in terms of whether a clear innovation strategy is in place and whether there is a culture of innovation to foster the core processes. These processes include searching for opportunities, selecting specific opportunities based upon some criteria, implementing those in practice and ensuring that the benefits accrue to those responsible for the innovation.

Strategy

While the role of innovation in healthcare is well established for clinical practice and for technologies that directly impact patient care, the behind the scenes business processes upon which the effectiveness and efficiency of those innovations depends has received considerably less attention within the health sector.

In a healthcare context what does having a clear innovation strategy imply? To start, strategic thinking elevates our concerns from individual practices and dealing with specific patient needs to longer-term vision and goals for healthcare. Such thinking provides a framework we can use to then guide where we look for opportunities to innovate, and also serves as the basis for the criteria we would use to select particular opportunities, and how to implement those strategically over time. Such a process facilitates the creation of roadmaps for the innovations needed



at key points in time by providing an indication of the trajectories that the organization is heading and why.

Thus, an area in healthcare that potentially represents a boon for innovation are the core business processes upon which the system is built. These include systems for the management of human resources, scheduling, and the procurement and payment systems for products and services. Within other industries these are the first to be addressed since they are the enabling infrastructure needed before client, customer or patient-focused innovations can be properly implemented. To draw upon an analogy of what to do in an in-flight emergency, recall the advice of “Make sure to secure your own mask before assisting others” really focuses our thinking here. That is, from an innovation perspective we need to get our internal innovation processes in order before we can bring those innovations to those we are hoping to help since otherwise, these internal limitations undermine the effectiveness of our external efforts. This has significant implications for healthcare since the absence of a parallel stream of innovations in our ‘backoffice’ limits our ability to capture the value created patient focused innovative efforts, often unintentionally.

Strategic thinking also involves a critical evaluation of our capabilities (i.e., the things we can do) and our resources (i.e., the things we have) so we can identify what we are particularly good at (i.e., our core competencies) with the intent of building upon those strengths while at the same time mitigating our weaknesses. This also involves looking at our current portfolio of capabilities and resources with the intent of critically reflecting on whether from an innovation perspective those are the ones we need going forward and whether we need to remove some from our portfolio while developing others.

Interestingly, the presenters at this forum suggested that no such roadmap was in place in Switzerland but there was open debate and established mechanisms to get out of *analysis paralysis* whereby an issue might be endlessly debated without moving to an action plan. While no formal strategic document might have been identified there was certainly evidence of considerable strategic thinking with respect to the strengths and weaknesses within the Swiss healthcare sector and the plans to systematically build upon those strengths (e.g., pharmaceutical cluster) and mitigate the impacts of some of the limitations (e.g., small domestic market).

Two areas where the Swiss excelled in this regard were in protecting intellectual property (IP) and procurement policy. We typically think of protecting intellectual property in terms of patents and certainly the Swiss situation with the pharmaceutical and biotechnology industries benefited greatly from such protections. However, we view this more broadly in a business sense, and consider creating companies that can develop, market and ultimately control the lifecycle of the innovation as a key strategy for protecting the innovations they create and



leverage. For many in the healthcare industry there is a strong desire to help the patient and to do no harm and few would argue with these as guiding principles. However, in many respects, commercializing health innovations is often viewed negatively since there is a perception that this might potentially reduce who ultimately can access those innovations for care. While there are certainly many examples of this, that does not necessarily have to be the case and can be an unintended consequence of our lack of direct involvement rather than some systematic attempt to limit the diffusion of the innovation. When we do commercialize health based innovations, it is often in the form of licensing since this is perceived as being easier to do and does not require creating and operating a company, which would be viewed as a distraction not worth the effort. The unintended consequence of this approach is the loss of control over the innovation and the possibility that the innovation might just be shelved to prevent it from competing with the status quo technologies. Consideration should therefore be made for business model innovations like social enterprises that bring business discipline to social causes and the profits from which are re-invested back into addressing the social cause. Such an approach connects directly with the key innovation processes that are often ignored in our innovative initiatives, which is the process of value capture, since without mechanisms such as patents or commercialization wrapped around the innovation, the value does not accrue to the innovators. Certainly the intent is for some of that value to accrue to the customer, client or patient as well but without some way to ensure the innovators are accounted for in this, these efforts will not be sustainable, as the resources needed to further the innovation will go elsewhere.

Similarly, the Swiss experience with procurement is at odds with our own. In the forum discussion, Dr Prada reiterated that Canada has yet to recognize procurement as a tool for injecting innovation in to the healthcare system, despite procurement innovation being embraced by leading OECD countries, with Switzerland topping that list.

Equally troubling, Langford (2007), in defining health industries in terms of the activities that *support* the direct providers of health services to patients, identified that while scientific and technical talent are strengths in Alberta, there is a shortage of experienced managerial talent in the health industries. Langford (2007) identified that in large organizations such as the health regions formerly represented by Calgary and Edmonton procurement strategies are not usually friendly to growing local firms, since these firms are not able to satisfy the requirements of these regions in scale and scope of offerings. With the recent amalgamation of the health regions into a single entity in Alberta, this issue has been exacerbated with the current structures of AHS and its Board that have even more demanding requirements in this regard.



The Swiss experience in contrast is to not disadvantage smaller enterprises and to develop local, buy local and then sell internationally. The Swiss approach highlighted in the forum pointed to no direct funding going to industry for R&D, and instead such funds are directed through public institutions for partnership *with* industry. In Canada, in response to the Jenkins Panel (Jenkins 2011), the government recently revamped the funding model by reducing the Scientific Research and Development (SR&ED) tax-credit pool in favour of allocating more to a \$400 million venture capital fund and additional funds for the grant based Industrial Research Assistance Program (IRAP) (Ovsey 2012)

While we do have some solid understanding around how innovations are developed, adopted and diffused in organizations, our understanding of the mechanisms by which our various interventions are going to improve healthcare, and more importantly how the benefits are going to be captured and not eroded by a competing innovation elsewhere in the healthcare system, is not fully understood. A systems perspective to both innovation and healthcare would be quite beneficial in this regard but at this point there is no 'grand unifying theory' that would allow us to systematically understand the interplay between these two complex systems.

Ultimately we need to take a more strategic view of the role of innovation in healthcare and where it is reasonable to consider sources of competitive advantage. There is also a real possibility that one of those sources is not necessarily the ability to develop new innovations but instead to ensure that they are available through procurement and that we are organized to exploit those innovations in practice. For an innovation to be a source of competitive advantage it must be valuable, rare, inimitable and we must be organized to exploit that innovation. We often focus on the first three factors, directing our efforts to developing new technologies that satisfy a customer need (valuable), that is an invention new to the world (rare) and that is not easily copied by others (patentable). However, even with all of these components in place, if we are not organized to exploit those innovations, then all that effort in R&D, basic science and collaboration is potentially lost. This does not mean that the benefits of the innovation will not be realized; instead those benefits will accrue elsewhere (e.g., another jurisdiction) or in a manner that was unintended. For example, Alberta is in somewhat of a unique position with a single health care system for the entire province. From one perspective this potentially gives Alberta a source of competitive advantage through procurement that would allow the province to capture more of the value of the innovations that are developed here or to adopt and adapt innovations more rapidly and economically from elsewhere, however this does not currently appear to be occurring.

From a research and innovation perspectives this highlights the need to become embedded in the end user environments within Alberta (c.f., W21C.org, [Innovate Calgary](#), [Clinexus](#), Glenrose, Nanotech Centre etc.) so that we are actively engaged with the entire innovation process.



Culture

Canada and Switzerland are characterized as being risk adverse, stemming from a fear of failure and a greater reliance on government leading in Canada's case to a commercialization gap (Ovsey 2012). In contrast, Canada is geographically dispersed with limited innovation clusters compared with Switzerland.

Modesty is a major prevailing theme within Swiss culture. During the forum, not once did we hear from the Swiss just how great they are. In fact they were quite candid in identifying areas where improvements can be made. While we are cautious to ascribe too much to the existence of a homogeneous national culture, the very openness for critique, striving to do better, and multiple rounds of genuine ongoing debate appeared to permeate their activities. This represents a middle ground between highly structured approaches where innovation is allowed in certain parts of the organization on one end and on the other a laissez-faire approach where we just let things happen as they may.

Swiss innovation is not necessarily the result of Swiss nationals, but the nation does allow for those individuals to thrive. Competitive salaries, high quality of life, and networks all contribute to an ecosystem conducive to further innovation. Therefore, a key aspect of building and maintaining an innovation culture is the education system of the country. The Swiss education system integrates colleges and polytechnic institutions with the activities of universities as part of their innovation system and their funding models. The Canadian education system is structured and funded quite differently, but still highlighting the potential benefits for similar integration ties with technical education (e.g., Southern Alberta Institute of Technology ([SAIT](#)), Northern Alberta Institute of Technology ([NAIT](#))), the universities (e.g., [University of Calgary](#), [Athabasca University](#), [Mount Royal University](#), [University of Alberta](#), [University of Lethbridge](#), etc.) and embedding those activities in the end user environment (e.g., [Alberta Health Services](#)).

Canada has a dual advantage of being both a resource economy and a knowledge economy so our challenge is to recognize, preserve and significantly enhance this vital advantage (Hawkins 2012). It is primarily in the capital-intensive technology adopting sectors where the productivity latent in technology goods is actually realized (Cosh & Hugues 2010). This is because resource sectors have long supply chains (i.e., must procure an enormous variety of goods and services from many sectors simply to operate) and deep value chains (i.e., have the potential to produce and consume products and services from the most basic to the most advanced) and thus can drive the technology sectors and have the potential to drive new forms of value (Hawkins 2012). However, within the Alberta health industries activity is not intensive and without a strong sense of community – with Edmonton leading in biotechnology and Calgary in IT. However, the vast majority of firms being small with revenues derived from sources outside Alberta, and although an



entrepreneurial spirit was recognized these efforts often get directed toward the oil and gas sector (Langford 2007).

All regions differ significantly and there can be no one-size fits all policy, instead innovation policy must be tailored to the context, ensuring relevant stakeholders have incentives to maximize their engagement and have appropriate governance and institutional coordination (Hong et al. 2012). The main message in this regard is not to attempt to change the culture radically, which is extremely difficult. Instead the focus should be on strategically building upon the strengths already part of the culture and to enact policies and actions that mitigate factors which culturally might undermine innovation. That is, we need to consider the cultural impacts for enabling and constraining each of the core processes and to revisit these over time.

Informing Policy

A critical implication for these discussions is the ability to inform policy. We have already seen the implications of policy decisions around procurement and intellectual property in enacting how we envision innovation improving key aspects of healthcare. These discussions have also pointed to specific mechanisms by which we are going to be able to implement those changes and ensure we are in a position to capture the value from our innovations. While there are far reaching policy implications, we focus here on the implications of compensation policy for innovation.

While many in healthcare are uncomfortable discussing the financial aspects of practice, in many respects what gets rewarded gets done. Therefore, we need to be cognizant that certain practices will happen since they are financially rewarded, while at the same time there are other incentives that can also be leveraged in support of innovation. Consequently, we need to look for situations where there are built-in disincentives, either expressed or implied, in the innovation cycle since as previously discussed we need to ensure our activities are sustainable over time, while simultaneously building on those incentives that foster innovation.

For clinicians working under a fee-for-service model, the quest for innovation, while personally rewarding, often has built-in disincentives since the very metrics by which they are rewarded are often undermined by the new innovation. Therefore, any innovation will likely also necessitate policy changes for compensation since without such an integrated approach, innovation efforts will be undermined, and our ability to capture the value will be negated.

In Alberta, there is a growing interest in Alternate Remuneration Plans (ARP) that are based upon fee-for-service metrics but also value other activities of the clinician, the levels of which are then set in a contract. While there are obvious budgeting benefits to this approach, there are also significant opportunities to



facilitate innovations more readily, since the financial incentives and the flexibilities can be aligned more easily with the broader strategic shifts needed at the system level rather than the individual requirements of a particular practice. Without such flexibility, the compensation model represents a significant barrier to innovation.

Targeted innovation funding, linked to the implementation of the ARP in both Edmonton and Calgary has also been a major enabler of change. Innovation strategies included enhancing linkages with primary care physicians, centralizing referral and triage processes, developing models of care supported by alternate care providers working to full scope of practice, application of clinical practice guidelines, and enhancing or creating new specialty clinics (Bichel et al. 2011). Continuing these types of targeted innovation investments could prove beneficial.

CONCLUSIONS

...A Grain of Salt

The implications of this forum across the innovation process are to take inspiration and lessons from the Swiss experience, while recognizing that it would be both impractical and unadvisable to try and duplicate exactly what they have been able to do. From an innovation perspective this is quite compelling since if you are trying to differentiate your activities from others, copying them verbatim is likely not going to lead to any sources of sustainable competitive advantage. We must build our innovation strategies around resources and capabilities that are valued in the marketplace, not widely available, not easily copied and we must be organized in such a way as to exploit that value in a sustainable manner (Barney et al. 2007). To this end we identify a number of areas that need local navigation and *a grain of salt*.

First, do the OECD metrics inadvertently value the type of innovation that is occurring in Switzerland versus the type of innovation that might be happening in jurisdictions like Canada? Freudenberg (2003) provides a critical assessment of the composite indicators used to measure innovation performance in OECD countries (e.g. In use for Innovation/Technology are General Indicator of Science and Technology (NISTEP), Technology Achievement Index (UN), Summary Innovation Index (EC) etc.). Of concern, are there conceptual obstacles in creating such an index in that they often reflect progress at various stages in the innovation process without necessarily reflecting outputs or aspects of innovation performance? Furthermore, such an index is sensitive to variations in methods of standardizing the data and in weighting the individual indicators, especially in the absence of any strong theoretical underpinning of how the various indicators are established (e.g., other than mathematical or statistical convenience). For a number of reasons, including ease of measurement and international comparison, there is a reliance on patent and R&D statistics, however these indirect measures are potentially problematic due to their weak linkages with innovation and the induced large firm bias (Hong et al. 2012). Equally challenging are direct measures of output (e.g., number of innovations) but tends to be biased towards radical/product innovation as opposed to incremental/process innovation where unsuccessful innovation is automatically excluded (Hong et al. 2012).

As noted by Hawkins (Hawkins et al, 2012), the perceived “horse race” that results from countrywide metrics is potentially unproductive and at worse destructive as it detracts our attention and resources away from what is important. This is especially salient if our strategy is to simply replicate what others have done (see above) since this not only does not offer a source of competitive advantage, but also takes resources away from *actual* sources of advantage (i.e., opportunity costs). However, a larger issue with these metrics is whether the rankings and in particular,



the spread between the rankings (i.e., the difference between first and tenth for example) is of material importance? What are the real consequences of the differences between countries? Given the margin of error on these country level data and are we simply arguing over trifles? Is the spread between the top and Canada so small, and within the margin of error of the data, as to be inconsequential? What does it really mean for Canada? Or from a different perspective is innovation something that we really should be aiming for here? Can results not be positive as fast second or other strategies?

Innovation policy tends to be directed towards the re-orientation of existing approaches and measures to new technological champions (e.g., nanotechnology and biotechnology, renewable energy etc.) rather than to any significant reassessment of the nature and function of innovation in today's economy (Hawkins 2012). The how and why of innovation in Canadian companies is not likely to become evident if we consider them in terms of the R&D intensive model that currently pervades our innovation measures (Hawkins 2012). Jurisdictions have been implementing a remarkably similar range of policies and measures for 25 years and it is the differences and not the similarities that are likely to be the greatest sources of future advantage (Hawkins 2012).

Consequently, further research is needed to provide additional guidance on whether what we are doing is ultimately going to impact the factors we believe are important and that we have appropriate metrics that accurately reflect what is responsible for the improvements.

Dr William Ghali closed the session with the following summary points highlighting:

1. The central importance of education systems
2. The value of government investment in R&D for our pipeline of innovations.
3. The promise in people feeling empowered, and people cheering you on for avoiding barriers, and fostering enthusiasm.

We can make a change.

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