Submission to the British Columbia Conversation on Health

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Open Letter from the Chair of Life Sciences British Columbia

In the year 2006, it was clear the debate on man’s effect on the environment was finally resolved – we have and we do effect our environment and we need to change our ways in order to preserve our earth. Similarly, in 2007, Life Sciences British Columbia believes the debate on the sustainability and efficacy of our BC health care system will reach a conclusion as well – it needs to be reformed if we are to meet the sustainability challenge while at the same time realize the expectations of our citizens.

In September of 2006, Premier Gordon Campbell invited British Columbians to participate in a dialogue called the Conversation on Health. This process was initiated to engage British Columbians in determining the direction of their healthcare system as it faces issues of sustainability and quality of services. Life Sciences British Columbia (LSBC) applauds this initiative as above all, it recognizes that our citizens are not just the consumers of BC health care services, but are actually the source of the democratic currency required to support and to undertake health care reform. This broad engagement is a first of its kind in Canada and clearly demonstrates the government of British Columbia’s commitment towards finding sustainable health care solutions that meet the expectations of its citizens. Life Sciences British Columbia is pleased to participate.

In announcing the Conversation on Health, Premier Campbell sought honest and objective input on five key questions:

1. What can we do today to prepare for the massive increases in costs that are built into our aging population?
2. How can we protect our fundamental health services for our children and grandchildren without having health costs inundate the other essential public services?
3. How can we put new knowledge to work for all of our lives, and how can we put that new knowledge to work for the benefit of our children?
4. What do we mean by a system of public health care that is truly accessible, universal, portable, comprehensive, and publicly administered?
5. How can we improve health care delivery to live up to the principles of the Canada Health Act and clearly define them in the law of the province of British Columbia?

What the Premier is asking in short, is how we can renew our health care system to meet the needs of patients now and into the future, in a manner that is financially sustainable and universal and that meets the requirements of the Canada Health Act? These questions and others frame the challenges that face our health care system. Nonetheless, LSBC believes that sustainable universal health care is not only possible, but with proper engagement and utilization of our resources, BC can provide a leadership model for the rest of Canada as well as the world.

As a province, British Columbia has an enviable record of success in both health research and innovative health industries. We have established world-class research centres, as well as leading biopharmaceutical and medical device companies. In addition, we have
the required science, technologies, and talent needed to create a sustainable industry, which can translate our public and private investment into improving patient outcomes, both in BC and for export around the world.

British Columbia is also acknowledged as a Canadian leader in its delivery of health care. While this is to be applauded, it must also be noted that the same study ranked BC last in terms of its patient satisfaction. In other words, the consumers of health care, those who elect, and unelect governments - are not satisfied with our health care system.

The Conversation on Health also presents an opportunity for government, health care providers, and industry to explore new collaborations within the British Columbia health system. LSBC believes that the interests of patients and the future of British Columbia converge in our innovative health industry and that we have an opportunity to leverage our strengths to create both health and economic benefits for the province of British Columbia. Industry’s interests are aligned with those of both healthcare consumers as well as healthcare providers. Moreover, industry certainly understands that a sustainable health care system is essential if industry itself is to be sustainable.

Life Sciences British Columbia believes that healthcare delivery is one of the single most important issues facing our province. It affects all of us in profound ways and as British Columbians; we have a responsibility to assist in addressing the issues and being a part of improving patient care and outcomes for us all. As such, LifeSciences British Columbia, representing the broad innovative health sciences industry and community of the province is participating in this process for the following key reasons:

- We believe that our present healthcare system is financially unsustainable and as such endangers our ability to provide acceptable universal healthcare;
- We support the view that our healthcare system is not adequately meeting the reasonable expectations of its citizens;
- We believe that the entire health care system is trapped in a series of segregated budgeted functions that need to be cross-linked in not just planning, but cause and effect outcome budgeting;
- We believe, for example, that PharmaCare’s operations are neither transparent nor evidence-based. This leaves British Columbian’s with a drug insurance program driven by a myopic budgeting practice, which frustrates the application of a more comprehensive evidence-based process which would address the cost/benefits of innovative medicines across the entire health care continuum;
- We see many areas for improved healthcare delivery with significant potential savings to the entire system - steps that, we believe, would help to secure the foundations for a sustainable universal health care system for future generations;

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1 Conference Board of Canada (2006) Healthy Provinces, Healthy Canadians: A Provincial Benchmarking, Conn Hamilton
The development of British Columbia’s biopharmaceutical, medical device industry and all related academic and industrial institutions who feed the lifescience industry, are directly and negatively impacted by our present healthcare system, and in particular, by BC’s Pharmacare policies. We believe there is a better way forward – one that recognizes the interests and value of industry while advancing the public interest and delivering appropriate patient outcomes.

Within this context, it is critical to keep in mind that for our industry, improving patient outcomes is the passion that drives the desire to innovate new health products and processes. We are therefore committed to engage and offer partnership with government to create the conditions required to mobilize the strengths of the innovative health industry. We believe British Columbians expect this from industry and from their government.

In doing so, we ultimately hope to achieve together with government, and the many stakeholders involved in this Conversation, a healthcare system that is itself healthy. In other words, a system that is sustainable, one that generates world-class patient outcomes, and a system that embraces the obligation to increase patient access to the best innovative technologies available.

David M Hall
Chairman, Life Sciences British Columbia
Context for the Conversation on Health

Life Sciences British Columbia believes it is important to put in context both the need for and our understanding of the Conversation. We think our citizens should better understand not only the present state of our health care system, but our ability to finance and deliver the level of services we expect. We believe that our citizens trust our government to drive dialogue towards not just a review, but also a sustainable solution. In that regard, we have some contextual messages for British Columbians.

First, in a well-researched paper written by David Baxter and Andrew Ramlo, the genesis of Canada’s universal healthcare insurance system was presented with clarity and a factually correct historical perspective. The paper points out that Tommy Douglas, the acknowledged father of Canada’s universal healthcare system along with Saskatchewan’s CCF government had the model for a sustainable universal insurance system correct in the beginning. The problem is that Federal and Provincial politicians and bureaucrats failed to follow his vision — a vision that is now widely misappropriated by those who claim that all would be well in Canadian health care with the application of more tax monies. What they have missed consciously or unconsciously, is that Premier Tommy Douglas had eight tenets for a sustainable health care system. The first five are largely embodied in what has evolved over the years into the Canada Health Act. The missing three tenets called for a plan which, according to Premier Douglas, had to embrace a form which will operate **effectively, efficiently and responsibly**.

This was echoed by Walter Erb, the Minister of Public Health for Premier Douglas’ 1961 government stated “we feel that it is taken for granted that whatever form of administration is finally chosen, it should be effective and efficient...” Sad, if governments both provincially and federally had adopted those critical principles — effective, efficient and responsible — no following legislation would ever have been passed that allowed for or excluded the use of many different forms of health care delivery nor the adoption of health care policy that was neither properly funded nor sustainable. In addition, while Premier Tommy Douglas is the acknowledged father of public health care, he never promoted nor intended to have the delivery of health care controlled by the government. In fact, Premier Douglas tied public administration of health care directly to a universal insurance program and not to services, which were to involve public or private services where covered under the insurance plan. Exclusive delivery of health care by public sector employees was not the intention of Premiers Douglas or Lloyd as that would potentially exclude those models of delivery that could be **effective, efficient, and responsible**.

The Conversation on Health is an opportunity for British Columbians to encourage politicians and subsequently the health bureaucrats to move towards legislation and

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2 The Urban Futures Institute Report 57, Effective, Efficient and Responsible: The CCF Vision and the Future of Health Care in Canada, David Baxter and Andrew Ramlo, including excerpts from Hansard.
3 The actual foundation for Saskatchewan’s 1961 legislation was derived from the municipal plan of the Reeve (Matt Anderson) of the rural Saskatchewan municipality of McKillop (1927) and the regional healthcare plan established by the Swift Current Health Regional in 1946.
4 Public Administration, Comprehensiveness, Universality, Portability and Accessibility.
policy that would meet Premier Douglas’ essential eight principles (Public Administration, Comprehensiveness, Universality, Portability, Accessibility, Effective, Efficient and Responsible) for sustainable universal health care. Indeed, it is hard to imagine that coming out of this year-long Conversation on Health, both politicians and bureaucrats alike will not be aligned on a program that will give primary weight to sustainability!

**The Real Cost of Health Care: Chronic Disease**

For many years, much of our popular public and political focus on health care has been on surgical wait times and emergency room crowding. While these issues are clearly important, it is essential to understand that the management of chronic disease is the greatest and the fastest growing burden on the health care system. Depending on the Canadian jurisdiction and costing methods, between 60-70% of total health care spending relates to chronic disease. In BC, it has been reported that at least 36% of British Columbians suffer from one chronic illness and over 66% of senior citizens have one or more chronic illnesses. In British Columbia, annual costs for patients with more than one or two chronic illness costs $2,500, four to six chronic illnesses $12,000 and seven or more cost $30,000.

In exploring the real costs of health care with a focus on sustainability, significant focus should be placed on the actual care that is provided to the chronically ill versus the care that should be provided from evidence-based treatment protocols. This gap of treatment leads to an unnecessary burden (and incremental costs) being shifted to the acute care health system. Diabetes in BC is a perfect example. In 2002/2003, approximately 5% of BC residents had diabetes. However, for retinal disorder patients undergoing surgery, over half were diabetic as were patients whom had limbs amputated. Almost half of patients needing dialysis, thirty percent of coronary artery bypass patients, twenty-five percent of angioplasty patients and twenty percent of cataract patients are diabetic. Prevention and proper management of diabetes would clearly save the healthcare system significant expense as well as advance our population’s health.

The Ministry of Health has recognised the health care quality gap as a key issue and has initiated programs over the years to close the gap. However, what is of concern to LSBC is that the gap is not closing and that none of the programs have been scaled up. While LSBC recognizes the enormity of the task, it is should be noted that industry is not asked to be part of the solution, despite great experience in chronic disease management and significant capacity to co-invest. We believe industry can – and should – be part of the solution, as well as carry part of the financial risk. British Columbians should expect industry to leverage their knowledge base on chronic disease and not the exclusion. After all, the very basis of the innovative medicine industry is the effective management of chronic illness.

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5 R. Coleman (2002), The Cost of Chronic Disease in Nova Scotia,  
6 A. Broemeling, D., C. Black (2005), Chronic conditions and co-morbidity among residents of British Columbia  
7 BC Ministry of Health (2007), Ministry of Health Primary Charter  
8 CHSPR, (2005), Proceedings of the 17th Annual Health Policy Conference, As Good as it gets? Strategies for Improving Chronic Care Management.
Misconceptions of Innovative Medicines and BC Practice

LSBC believes that for the Conversation on Health to be successful, politicians, bureaucrats and the public need facts. In the case of the innovative life sciences industry and British Columbia, the facts are often overshadowed by fiction that has been propagated by those who believe that status quo of our health care system is the only way to protect universal medicine. Respectfully, we submit status quo has not advanced sustainability. Rather status quo has deepened the divide between present state and our citizens’ expectations, which includes sustainability. In addition, the public should understand that status quo is being sustained by many of their own health care bureaucrats and that as tax payers and voters post Conversation, they should not only expect objectivity from their bureaucracy, but they should demand such objectivity be driven by their elected representatives.

The following lists a number of misconceptions related to innovative medicines and our health care system:

1. Misconception: Patented medicines and drug spending in general are the primary cause of the rise of health care costs in BC and Canada.

   Fact: Government expenditures on prescription medicines (patented and generic) are increasing faster than any other component of health spending in the last decade ended 2006. It is also a fact that introductory prices of innovative medicines are generally priced higher than in the past.

   These facts have prompted some organizations like the CUPE and the CCPA to claim that drug costs and patented medicines are the main cause of unsustainable health-care costs in Canada.

   Objective Analysis and Recommendation:

   a. While expenditures on prescription medicines have increased, it is also true that innovative medicines have been responsible for improving the health outcomes of the citizens of BC and the world, each year for over a century. The global innovative medicine industry is responsible for developing more than 90% of all medicines and vaccines in the world. The presumption that the increased cost of public spending on innovative medicines is the primary cause of financial distress on our health system is – at best – misguided. Most of the growth in public drug costs relates to increased volume and the selection of the drugs prescribed. Importantly, these costs should not be viewed in isolation as it is these very medicines that are responsible for many reduced costs in the more expensive part of

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the health continuum. Better drug therapies have been a key part of reducing the length of hospital stays.

b. In each of 2005 and 2006, total national spending on all types of drugs (including patented, non-patented prescription drugs, non-prescription drugs, dispensing fees, mark-ups and appropriate taxes, and personal health supplies including such items as oral hygiene products, diagnostic items such as diabetic test strips and incontinence products) accounted for 17.0% of total health spending by both the public and private sector. This amounted to approx. $23.7B in 2005 and $25.2B in 2006. The growth rates were 8.7% and 6.0% respectively. Total public and private prescribed drug expenditures amounted to $19.7B in 2005 and $21.1B in 2006 and represented approximately 14% of total national health care expenditures in each year.9

c. However, publicly funded prescription drugs (patented and generic) accounted for only $9.2B in 2005 and $9.6B in 2006 or 6.6% and 6.5% respectively, of government spending on health care.9 Even more telling is that generics account for approximately 44% of total prescriptions dispensed in 2006 meaning that patented prescriptions by definition are lower than the above numbers as a percentage of government spending on health care.13 In BC, PharmaCare budgeted expenditures including patented, non-patented drugs, insulin, needles, glucose test strips, digestive enzymes, and nutritional supplements for Cystic fibrosis, ostomy supplies, designated prosthetic devices and children’s orthotic devices represented approximately 8% of the Provincial Health Care Budget.14

d. The higher introductory prices of innovative medicines relate directly to the fact that the cost of developing these new innovative medicines has also increased to meet the higher costs of science and the increasing costs of regulatory review amongst many other cost factors.15 In addition, there is now a weighting of new drugs to treat small patient populations. Yet, these are small populations and while the price per patient is high, the overall impact on the budget is muted by the absolute small patient populations and expense. British Columbians should also understand that only three out of ten new innovative commercialized medicines ever recover the cost of their research and development.16

e. Most importantly for British Columbians to understand in terms of the PharmaCare budget are the facts looking forward. During the next five years, between 14% and 48% of the top patented pharmaceuticals are coming off patent representing a huge reduction in costs to payers such as

16 Rx&D (July 2007) The Pharmaceutical Industry in Canada
LSBC estimates that if one takes the next top 10 patented drugs to come off patent in the next 3 years and adopt the Ontario generic pricing model, it would lead to approximately $30 million in cost savings to the drug plan per year. There is more to be saved in years 4 and 5.

f. Consequently, to promote that “patented prescription medicines” are the primary cause of accelerating healthcare costs is misleading to the public. The evidence according to Skinner and Rovere actually suggests that neither patented drugs in the singular nor drugs in general are the main culprit for unsustainable health care expenditures. To be sure, they are a factor, but only on the margin.

g. An objective analysis would focus on the absolute maximization of the medicines as they relate to the entire continuum of health care delivery versus present practice on the magnitude or even growth rate of government spending on innovative medicines. Clinical guidelines and chronic disease management programs emphasize drug therapy as one of the key variables in improving outcomes and importantly, controlling costs. Rather than innovative medicine spending being the cause of strained health care budgets, it should be looked upon as a key factor in forward-thinking strategies to control health care budgets. Budgets should be constructed with all cause and effect factors across all parts of the government-funded system. Moreover, industry should be engaged by government in providing concrete solutions to strained budgets. Sadly, industry is neither engaged, nor allowed to be engaged, by the current administration of PharmaCare within the Ministry of Health.

2. Misconception: Increased prices of patented prescription medicines are driving up health care costs.

Fact: After market prices of patented prescription medicines have been stable for almost two decades.

Objective Analysis and Recommendation:

a. Historical data demonstrates that once an innovative prescription medicine has been approved for sale in Canada, the average annual price increase has been less than inflation for sixteen of the past eighteen years and in fact has declined in six of those eighteen years. Patented medicine prices have actually grown less than allowable under law meaning that industry has not pushed prices. Few industries could make that claim.

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17 PriceWaterhouseCoopers, Pharma 2020: The Vision, Which path will you take?
b. PharmaCare should engage in active business discussions with innovative medicine providers to negotiate savings on drugs covered as well as industry investment in chronic disease management.

3. **Misconception: New Patented Medicines are over priced.**

   **Fact:** Prices for new patented medicines are consistently below the average of the countries (France, Germany, Italy, Switzerland, Sweden, UK and US) used by the Canadian federal government to establish and measure prices. Patented medicines are subjected by the Patented Medicine Price Review Board to a vigorous price review based on the level of innovation as well as the comparative international prices.

   **Objective Analysis and Recommendation:**

   a. For the period 1987 through 2005, the average ratio of Canadian to median international patented medicine prices was 0.95. In the last ten years, the ratio has averaged 0.83. Canadian prices of patented medicines are clearly not over priced.

   b. PharmaCare should be negotiating prices for innovative medicines and, in so doing, encouraging industry investment, and engagement in chronic disease management.

4. **Misconception: Generic medicines are competitively priced.**

   **Fact:** Generic drug prices in Canada are more expensive than they should be. In fact, Canadian generics are approximately 115% higher than the equivalent products in America.

   **Objective Analysis and Recommendation:**

   a. Ironically, generic drug prices in Canada have been distorted by the drug pricing policies of Federal and Provincial governments. Pricing policies virtually preclude patented drug companies from competing with the generic versions of our innovation due to the structure of Canada’s price-control policies. The policies use the highest price of an existing drug in a therapeutic class as the price for setting the maximum allowable price for any new or future innovative medicine in that therapeutic drug class. No rational business would reduce the price of their now-off-patent drug to compete with the generics, as it would endanger any pricing of a future patented drug. (Note: a patented drug is priced at a level to recoup the approximate US$800 million to $1.3 billion invested in development and only 3 out 10 approved patented drugs ever recover cost of development.) That has the effect of limiting competition with the generics from the innovators themselves.
b. Generics are generally priced depending on the province, at a percent of the patented medicine that it is copying. Historically, once a discounted generic has been listed, no real competition arises. (Note: Two privately owned Canadian generic companies control approximately 70% of the market. After the first generic enters the market, the next entrant comes in marginally lower and experience shows that no real price competition arises. The US experience is very different in this regard.) It has been estimated that in 2006 these policies cost Canadian governments between $2.5 billion and $6.6 billion in excess expenditures for prescription medicines. There have been nine different independent and/or government studies since 2000 that reported on the price differentials of generic medicines between the US and Canada. Each study found that prices for generic prescription drugs were higher in Canada than the US. Both federal and provincial governments have openly ignored this easily correctable problem to the detriment of our health care system. LSBC can only conclude that either the Canadian generic industry is being openly subsidized or both legislators and bureaucrats alike have concluded that encouraging active competition amongst producers of a commodity is not in the best interests of Canadians. Neither finding makes much sense if you are a taxpayer and consumer of health care.

c. Today in Ontario, the first generic medicine in a category must be priced at 50% of the listed branded equivalent. In BC, there is no set policy. The first generic typically enters the market at a 10% -20% discount with the following entrants driving the discount down, depending on the number of entrants. As a result, if you were to take the present BC listed generics and compare them to prices that would be set if the Ontario algorithm were applied in BC, the government would reach an immediate savings of approximately $30 million. LSBC sees no reason as to why BC’s generic’s should not be equivalent or better priced than Ontario, particularly when none of the generic drugs are manufactured in BC while the majority of the generics are produced at two private Canadian owned Ontario based companies. Indeed, in addition to the simple exercise of addressing the discount, there are many millions more to be saved in addressing supply chain inefficiencies as outlined in the 2005 PRI preliminary report. These pricing anomalies (amongst many other savings for PharmaCare) were clearly identified to the British Columbia Ministry of Health and PharmaCare in the 2004 CSCW PharmaCare Review. This report was tabled in draft form and was essentially

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21 Rx&D industry calculation, (September 2007)
22 PRI: Supply Chain Research and Analysis, Preliminary Analysis, (PharmaCare Business Management and Stakeholder Engagement Branch, 2005)
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ignored by the Ministry of Health and PharmaCare. The lost opportunity costs for British Columbians, quite apart from tangible savings, which could have been realized through implementation of the report, were – and remain – considerable.

d. PharmaCare should reimburse for generics at a level at least equivalent to the Ontario program or even more progressive European programs.

e. PharmaCare should establish a program of renewal as outlined in the CSCW PharmaCare Review.

5. Misconception: Reference Based Pricing or derivatives (therapeutic substitution, maximum allowable cost, lowest cost alternative, tendering) and access control policies save taxpayers monies in the long term while not adversely affecting patient outcomes.

Fact: Reference Based Pricing is a pure cost control policy, which only temporarily controls the total cost of a referenced drug and gives little weight to health impacts and subsequent costs to the entire health care continuum.

Objective Analysis and Recommendation:

a. The start of Reference Based Pricing can be measured back to Germany in 1989. Despite this start, as of May 26th, 2005, researchers could only find twenty-nine journal articles covering the efficacy of Reference Based Pricing and cost shifting of dictating medicine usage. The study determined that of the twenty-nine articles, twenty (69%) are not supportive, four (14%) are neutral and five (17%) are supportive.24 It should be of specific interest to British Columbians that of the twenty-nine studies, sixteen were specific to BC: only five studies supported Reference Based Pricing while nine did not and two were neutral in their findings. In reality, the only studies that were supportive were from BC. In addition, there were a further three studies that included BC and none of those were supportive of the policy. Yet BC PharmaCare maintains they have saved millions while providing no objective data to support their claims or the actual costs of these policies transferred or created in other parts of our health care system. Meanwhile, doctors have had their prescribing privileges usurped and patients have had their choices, unreasonably restricted.

b. An example of PharmaCare’s flawed policy is their therapeutic substitution program introduced in 2003, which forced patients to take a government designated proton pump inhibitor (used for the treatment of gastrointestinal disorders) drug over another regardless of the preference of the physician or patient. In a research paper undertaken by the

24 M. Beaudet, Laetitia Sabbah, Reference Based Pricing Literature Review (May 26, 2005)
Canadian Society of Intestinal Research\textsuperscript{25}, BC PharmaCare’s policy of forced therapeutic substitution was found to have had a negative impact on the quality of patient care and resulted in an increased cost to our health care system. The study found that referencing of proton pump inhibitors led to increased costs from more frequent doctor visits, more frequent diagnostic testing and increased hospital utilization (18\% of the approximately 53,000 patients could not tolerate the dictated medicine). Still, PharmaCare refuses to acknowledge the failure of that program while looking to expand reference (or derivative) programs.

c. A present example is PharmaCare’s apparent plan to tender test strips for glucose monitoring devices for diabetics. PharmaCare has informed industry that they will take bids for the supply of covered strips and announce reimbursement of one or two lowest costs tenders. Objective and common sense analysis suggests that this process will not save the government money. In fact, short-term myopic actions like this actually will lead to increased costs to the government and British Columbians.

In BC, there are roughly 250,000 people with diabetes (6\% of the population). Approximately 175,000 patients are covered by PharmaCare while the remainder are covered under private health plans or other private pay. (Note: in the short and medium term, the number of diabetics is growing. In the long term with an appropriate focus on preventative health care, disease management, and appropriate use of innovative medicines, our system should be able to reduce and even reverse the affected population.) Today, the total cost of diabetes to the health ministry is approximately $776 million. By 2016, it is estimated that direct costs to treat patients with diabetes in BC will increase by 78\% to $1.38 billion.\textsuperscript{26} Approximately 10\% of the 358,000 patients in BC admitted to acute care hospitals in 2005/2006, 10\% listed diabetes as the underlying cause of admission.\textsuperscript{27} This is a chronic health issue in BC. Addressing it will require funding and industry wants to provide not only innovative solutions, but also innovation funding. However, funds alone will not be sufficient. This is an area where constructive engagement with industry can – and will – produce significant advancements towards affordable positive patient outcomes.

PharmaCare’s coverage of test strips accounts for 3.7\% or $29 million. PharmaCare is looking to reduce its glucose strip costs by approximately 20\% (an industry guess) or $5.8 million. On the surface and without any other direct or indirect considerations, this seems like a reasonable undertaking. However, virtually all line items in health care do have other

\textsuperscript{25} Canadian Society of Intestinal Research (January 2005), Stemming Rising Drug Costs & Providing Quality Patient Care: A Delicate Balance
considerations and in this instance are being ignored.

If it happens, tendering of strips will see British Columbians forced into using a certain product. If experience tells us anything, it is likely that patients will ultimately be left with the oldest (cheapest) version of the product. Patients will in effect – be compelled to use older and less efficacious technology. Patients will be forced backwards in time and technology. For example, in New Zealand, strips were tendered and one company was awarded the contract. Patients were by definition, subjected to a step backwards in their disease management, as the product selected for purchase was an older generation strip designed for an older generation glucose meter. Patients in BC should not be expected to accept this kind of retrogressive step – and they likely will not.

In BC, the government pays about $0.74 per test strip, a price that has actually remained the same over the last decade. The increase in the government’s strip expense is related to the increase in the volume of patients. Given that strips have actually gone down on an inflation adjusted basis, it would appear that industry has actually delivered significant value to the payor and the patients. Industry also spends approximately $3 million in BC on patient education and training on the use of readers and strips to help manage their disease. Education and training are a critical part of disease management and industry is footing a significant part of this expense in BC for this activity. If there was a tendered and, therefore, a government dictated product, the existing intangible benefits would likely be eroded.

In addition to the potential negative effects on the patients, PharmaCare is also ignoring the direct impact this decision might have on the economy. The market leader for glucose monitors, LifeScan Canada, is located in Burnaby, BC and generates approximately $40 million in economic activity in BC. The potential harm that could be caused to a currently stable significant BC company does not seem to be under active consideration by anyone in the Ministry of Health.

d. Industry has offered many other solutions that would not only reduce costs through investment in disease management programs, but also increase patient care and improve outcomes. Sadly, PharmaCare has made it clear they are not interested in industry partnerships. This action should be unacceptable to not only BC’s diabetics, but to all British Columbians.

e. LSBC argues that RDP (and derivatives) is simply a PharmaCare policy that is entirely focused on price in the short term while ignoring the effects on patient outcomes and the costs to the entire system. It is an indefensible policy highlighted by PharmaCare’s inability and refusal to defend in public its claimed savings and efficacy.
f. PharmaCare should immediately engage industry in negotiating innovative medicine pricing and investment in chronic disease management programs for British Columbians.

6. **Misconception:** Patented Medicines are approved for PharmaCare reimbursement by an objective and unbiased process.

**Fact:** There is no publicly available evidence to support the representations of the Ministry of Health or PharmaCare that the approval process is objective and thorough in its considerations of safety, efficacy and cost effectiveness across the entire health care continuum. The process is described on the web site of PharmaCare, but there is no disclosure of the evidence, proceedings, or actual decision considerations.

**Objective Analysis and Recommendation:**

a. The process for the approval of innovative medicines is conducted behind closed doors and all advising parties, such as the Therapeutic Initiative, are equally restricted. No stakeholder including the health care prescribers, patients or the innovative medicine sponsor are ever provided any data around the process of approval or non-approval – it is simply a yes or no answer.

The consequence of the current approach is perhaps best illustrated through BC’s record of accomplishment in approving medicines relative to other jurisdictions in Canada. By the end of 2006, BC had approved only 76% of drugs that have been approved at a federal level by the Common Drug Review Board. Moreover, the average time to approval by a provincial body was 476 days while BC ranked second to last at 654 days, almost 40% longer. BC is only surpassed in this regard by Prince Edward Island).28 British Columbians should not be satisfied with the secretive and unaccountable approval process or the time to processing.

It should be noted by British Columbians that by the time an innovative medicine has been submitted for listing by PharmaCare, hundreds of millions of dollars have been spent in research and development including massive clinical trials. In addition, these medicines have been previously presented for approval not only at a Canadian federal level, but also at international levels including the US Food and Drug Administration. While British Columbians should expect strict scrutiny of the safety, efficacy, and cost of these medicines, they also are entitled to expect timeliness and transparency. This would provide a means for the public determine the efficiency of our provincial universal drug insurance program.

LSBC can only conclude that PharmaCare is making listing decisions

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28 Canadian Pharmaceutical Industry Review (2006), IMS Health
biased by short-term budget constraints. While budgets are of a great concern to industry and citizens alike, without a transparent process, no party including our elected representatives can pass judgement on the efficacy of the PharmaCare program. Moreover, even if PharmaCare is making its listing decisions based on budgets, without transparency, there is no way to determine if PharmaCare is taking into consideration the effects of its decisions on other parts of the health care system. This is important in that most innovative medicines properly prescribed and used are to keep people out of the most expensive parts of our system such as the emergency rooms and the tertiary hospitals. Silo’d budgeting is by definition, detrimental to the entirety of our strained health care. If PharmaCare is to be an effective universal insurance program for innovative medicines, then they must be not only made to, but also allowed to budget in a manner that demonstrates the return of their expenditures across all other health care costs incurred by the government. Life Sciences British Columbia believes the health bureaucrats require a better planning environment and certainly, the public deserves better.

b. PharmaCare should immediately engage in a process with all stakeholders to develop a transparent and accountable process covering all aspects of approval of innovative medicines.

c. Pharmacare should immediately engage industry in discussions regarding post approval studies to advance the depth of evidence on approved medicines and the BC population. Access to PharmaNet should be granted to industry-funded studies with the appropriate security around patient information and industry/PharmaCare data findings must be public. In addition, the BC government should launch a program to make BC a center for electronic pharmacovigilance\(^29\), which will help establish BC as a center for patient-focused and evidence-based medicine.

7. **Misconception: International Pharma Industry has a big presence in BC**

**Fact:** Since the early 1990’s and largely due to the passing of Federal Bill C91\(^30\), international Pharma companies volunteered to invest approximately 10% of their Canadian sales in Canadian based R&D, clinical trials, patient education and other similar activities. In 2007, the international industry will invest approximately $1.4 billion in Canada during 2007. The majority of that funding will go to Ontario and Quebec. In BC, the amount might reach $30 million. On a per capita basis, BC should be receiving in excess of $100 million and given the strength of our research centers, academic centers and developing industry – perhaps more.

\(^29\) On September 13, 2007, Bristol-Myers Squibb and Accenture announced the establishment of an international pharmacovigilance center in Chennai, India to monitor the of patient safety data to ensure optimal use of medicines. There is no reason why this center or other like it could not and should not be located in BC, except that the innovative medicine industry is not welcome in BC. The BC Cancer agency already conducts activities such as this.

\(^30\) Originally passed in 1992 and with subsequent amendments.
Objective Analysis and Recommendation:

a. Competition for international industry investment, even within a corporation is fierce and investment logically flows to jurisdictions where industry is welcomed. Investment in BC has been minimal.

b. International industry has the capacity as well as the will to invest and collaborate with BC. The BC government must adopt a more constructive partnership based approach with industry to attract international pharma investment. BC needs industry investment and expertise if we are to develop a sustainable health care system and a strong life science industry.

Health care is currently growing at an unsustainable rate. The real question is not the cost of innovative medicines. The real question is how can our universal health care system be renewed to provide sustainable and timely access to innovative medicines and innovative delivery models?

Role of Innovation in Healthcare

Innovation has long been the driving force behind ever-improving healthcare. By reviewing just a few of the major historical medical innovations that have been introduced over the past two centuries, it quickly becomes apparent how these innovations are in large part responsible for the fact that our populations have become steadily healthier. These innovations include:

- 1800: opiates, anaesthetics; antiseptics; early vaccines
- 1900: analgesics; insulin (a Canadian discovery); early antibiotics….and virtually all other exiting pharmaceuticals;

Dr. Alan Bernstein, former President of the Canadian Institutes of Health Research recently noted, “The 20th century was characterized by remarkable improvements in health. Longevity in the west has improved by almost two years every decade for the past 16 decades.” These advancements in human health care, after improvements in general community hygiene, are mostly attributable to innovative medicines.

In addition, because of innovative drugs, we now have the ability to treat numerous diseases such as heart disease, bacterial infections, ulcers, HIV/AIDS, diabetes, asthma, anxiety, and depression. We have virtually eradicated polio, diphtheria, tetanus, measles, mumps, whooping cough, chicken pox, type B influenza, some meningitis, tuberculosis, smallpox, and potentially soon cervical cancer. With drugs and diagnostic technologies increasingly based on a detailed molecular understanding of human biology and disease, some diseases can now be prevented or slowed even before clinical symptoms become apparent.
Of course, we still have much to do as we now focus our efforts on cancer, autoimmune and neurological conditions, various existing and new viruses, and antibiotic resistance. In addition, we must drive research to identify specific patient genomes for treatment with specific efficacious and safe medicines and thereby reduce unwanted adverse events and costs. This would allow many very efficacious medicines for large populations that have not been approved due to adverse effects on very small percentages of the population. Only through additional research, technology development, and by actually investing in the adoption of new technologies will we be able to meet human health care needs.

The benefits of such investment are illustrated by the work of pharmacoeconomist Dr. Pierre Cremieux who in his paper *Public and Private Pharmaceutical Spending as Determinants of Health Outcomes in Canada* (published February 2004 in *Health Economics*), estimated the health benefits of higher overall health spending in Canada, and the health benefits of higher drug spending in the US and OECD countries. His analysis showed substantial health benefits associated with increased spending on pharmaceuticals in Canada during the period 1981-1998. Specifically, it indicates, “improved infant mortality rates and life expectancies for both genders have resulted from increased public and private drug spending.” It continues that cost-controlling efforts through restrained drug spending must consider these benefits. Delaying or denying access to innovative new drugs however, will certainly not allow us to move forward further.

**Life Science Industry in British Columbia**

The membership represented by Life Sciences BC is at the forefront of developing and delivering innovative medicines. This starts of course with the public and private funding of basic biomedical research. The provincial government has committed more than $1.2 billion to support research and innovation initiatives since 2001 in order to improve the quality of life for British Columbians. In addition, at least $800 million of research activity resulted from these investments. The importance of continuing this commitment and investment was recently expressed by the provincial government via the release of the Provincial Research and Development Strategy, *Local Excellence, Global Impact*.

The result of this research has been the emergence of a private sector life science industry founded on the resulting technologies. Pioneering companies QLT Inc. and Angiotech have both developed products that have resulted in these companies achieving profitability. These companies are followed by the next generation of life science companies, such as Aspreva, Cardiome, Neuromed, and Xenon amongst others. It is also important to note that because both Angiotech and QLT have license agreements with the University of British Columbia, and because they have achieved significant commercial success, both continue to pay millions of dollars in royalties to the University thereby supporting ongoing and expanded research.

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Through these companies and the approximately 75 more that call BC home, the industry is poised to translate government’s investment in research into significant advantages to both the BC healthcare system and economy. Clearly, British Columbia’s life science industry is an important stakeholder in this Conversation, and in evolving our healthcare system.

British Columbians should understand that in order for their life science industry to contribute to the health care system, there must be an enabling environment; an environment where the health care system collaborates with industry to bring innovation to its consumers. Today, the Ministry of Health does not promote collaboration with industry. In fact, the Ministry of Health and in particular PharmaCare openly shun collaboration with industry – local and international.

**Innovation Works**

How innovation is regarded varies greatly from representing a burdensome cost that must be strictly controlled to representing a virtual panacea for all that ails us. The truth is almost certainly somewhere in between these two views and only through thoughtful, consistent, and transparent analysis and evaluation can its appropriate and optimal adoption be reached.

When a new treatment becomes available, we have what is called a “treatment substitution effect” where old treatments are replaced by innovations\(^\text{32}\). This can have two different results: it can reduce the number of patients needing treatment, and the cost of treatment per patient (i.e. vaccines that can reduce or virtually eradicate some diseases). This may result in significant cost savings for the health care system. The other possible result is that the new treatments are more expensive than the old ones and the immediate cost to the healthcare system increase. However, what is important to note is that in this case, academic evidence shows that the *quality-adjusted price of medical care will still fall over time* as new technologies and processes are adopted.\(^\text{32}\)

In addition, improved health outcomes increase labour force participation as people are able to return to work or increase their hours of work. This is extended to broader economy-wide cost savings through the avoidance of productivity losses. Access Economics estimates a number of productivity benefits that are brought about as the result of life science R&D that lead to treatment that is more effective. These benefits would be a reduction in the indirect economic costs that are attributable to illness, such as:

- Earnings forfeited due to illness causing premature retirement and absenteeism;
- Earnings forfeited due to premature mortality;
- Earnings forfeited by carers;
- Costs of aids and modifications required as a result of illness; and
- Other costs, such as the costs to the criminal justice system that can occur because of untreated mental illness.\(^\text{33}\)

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The British Columbia Cancer Agency and the Canadian HIV Trials Network are examples of innovation leaders already existing within the health research centres of British Columbia. Both of these agencies are highly successful, internationally recognized and demonstrate the benefits of innovative practices applied for the benefit of chronic disease management and the support of research and discovery. We need to use these models to promote our provincial excellence within the health research and health industries sector and as a foundation for the further development of novel approaches to health management, health care, and health innovation.

One of the primary commonalities between cancer care and that of HIV in British Columbia is that authority for the prescription of medicines falls within the hands of physicians, and do not fall within the purview of the provincial PharmaCare program, thereby allowing physicians the opportunity to prescribe the specific medicines they feel appropriate for their individual patients. This is a key factor in the world-leading patient outcomes BC demonstrates in these disease areas.

Transformative products also already exist within the British Columbia health research industry. There are many examples of successful products that have been launched successfully and enjoyed significant market success in other markets after being denied or delayed access to the British Columbia market or health care system. These products can provide significant benefits to British Columbians if allowed access to the health care system. Provisional introduction of new technologies based on improved patient outcomes, efficacy and return on investment are possible if the Ministry of Health can work in partnership with the health industry to facilitate health system access to new and appropriate technologies to address the strategic priorities of the provincial health care system. Unfortunately, working in partnership with industry is not something that PharmaCare or the Ministry of Health has been willing to do.

In utilizing new drugs and other technologies, we have the opportunity to significant reduce the strain on other healthcare resources, and ultimately decrease overall healthcare costs. Investment in new medicines improves outcomes for patients, which in turn result in reduced demand for other more expensive healthcare services such as outpatient and physician services. The most effective way to save money within the healthcare system is:

- Keep the patient out of the hospital;
- Focus on aggressive primary care including Rx use;
- Provide access to drugs based on clinical evaluation;
- Review costs and benefits based on outcomes’ research.

Pharmacoeconomist Dr. Pierre Cremieux examined whether or not there were in fact such cost savings to be realized via the enhanced appropriate usage of pharmaceuticals. Cremieux notes that innovative medicine expenditures per capita have drastically increased over the last quarter century in Canada with a share of overall healthcare costs rising from 8.8% in 1980 to 16.8% in 2002.\(^{34}\) Pressure to curb expenditures on

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innovative medicines has increased accordingly. However, containing innovative medicine expenditures might increase costs elsewhere in the healthcare sector. Cremieux therefore set out to measure substitution patterns between innovative medicines and other healthcare resources over the last 26 years and in doing so assess whether containing innovative medicine costs might result in higher expenditure elsewhere in the healthcare system.

The result was that, using life expectancy at birth for males as the production function, increasing drug spending by $1.00 CDN (constant 2003 values) was accompanied by a decrease of $1.48 CDN in non-drug, non-physician healthcare resources over the study period without affecting life expectancy at birth. Results using life expectancy at birth for females as the production function showed a decrease of $1.05 CDN in non-drug, non-physician healthcare resources over the same period.

The conclusion is that using life expectancy as a general health indicator; results suggest that increases in innovative medicine spending could be more than offset by decreases in other healthcare spending without affecting the health of the population. This suggests that better access to innovative medicines may be an effective strategy to decrease overall healthcare costs. Freeing up healthcare dollars by reallocating spending towards innovative medicines could provide opportunities for overall healthcare cost savings without negatively affecting the health of the population.

British Columbia should therefore consider shifting form “The Current Solution” of access and cost control, to “The Innovative Solution” of appropriate use of new medicines.

*The Current Solution*

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Increased Demand on Health Services

Reduced Availability of New Medicines

Healthcare System

Cost Controls

Increased Cost
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The Innovative Solution

Appropriate Use of New Medicines

Enhanced Service Capabilities & Flexibility

Healthcare System

Improved Health Outcomes

Reduced Demand Facilitates Better Management of Health Services

It is clear BC and Canada need to shift resources into prevention and health promotion. Yet that shift has not happened to any significant degree. Innovation – the use of new knowledge, experimentation, the design, and implementation of new strategies to meet the challenge – needs to be accelerated. Industry should be engaged in that effort.

There are proven models where industry has been a major partner that have been executed within Canada and other jurisdictions that can be adapted to create pilot programs within British Columbia that can provide insight into measurable improvements for patients and provide insight as to how to optimize resource allocation. This will ensure that the costs borne by publicly funded health care within BC provide the highest possible return on investment in improved patient outcomes and within the health care system.

Florida: A Healthy State provides an excellent example of a successful pilot program. It is a collaborative program launched in 2001 between the State of Florida and Pfizer Inc. The program provides a patient education and nursing care to high-risk Medicaid patients afflicted with high cost chronic disease, including diabetes and asthma.

The program provided community-level managed care education, counselling, and medicines to address costly chronic diseases. Program outcomes included reducing Florida’s medical costs by $41.9 million during a 27-month period ending in September 2003. The program reached nearly 150,000 Medicaid beneficiaries while saving the state $61.1 million overall and Florida received about $19.2 million in additional Pfizer investments and donated Pfizer medicines. Importantly, Pfizer carried the risk for any

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cost overruns on the use of the medicines. The program has since been transferred to the state of Florida to manage and oversee.

Within Canada, in the province of Nova Scotia a program was undertaken as a province wide study of heart disease called Improving Cardiovascular Outcomes in Nova Scotia (ICONS). ICONS is one of the largest studies ever undertaken to measure and improve health care for heart disease. Partners in this study include the Government of Nova Scotia (Department of Health), Community Health Care Professionals (physicians, nurses, and pharmacists), the Division of Cardiology, QEII Health Sciences Centre, and Merck Frosst Canada Inc. (Patient Health Management Division).

The budget for the study is $6 million over five years contributed by Merck Frosst Canada Inc. The purpose of the study is to examine whether using the most effective evidence-based practices to treat heart disease will measurably improve the health of Nova Scotians. Benefits of study include the alignment of national health priorities with measurable studies, the opportunity to develop standards of care for chronic disease management which is more cost effective and increasing the efficiency of cost allocation to achieve the best health outcomes based on evidence based therapies.

Economic impact analyses results released demonstrated positive trickle-down effects on the Canadian and Nova Scotian economies. The analysis revealed that the $6.22 million invested in Nova Scotia by the private sector donor generated an initial net increase in total Canadian wealth of $5.32 million and a global net increase in total Canadian wealth of $10.23 million, including $2.27 million returned to the different governments through direct and indirect taxes.37

Today in British Columbia, large and effective collaborative efforts between government and industry do not exist. It is important for British Columbians to realize that it is not industry that prevents British Columbians from having access to these innovative partnerships. It is the Ministry of Health and the Ministry of Health only. Industry is fully prepared to collaborate with British Columbia. Industry is prepared to put its money at risk to prove that innovation works. However, British Columbians should not expect industry to come if the Ministry of Health engages in anti-innovation practises with no transparency and little in the way of accountability.

Innovation is critical to the preservation of a sustainable healthcare system in British Columbia, and given that this may be the first generation in 100 years who can expect worse health outcomes than their parents, we have no choice but to adopt a new business model for healthcare which incorporates innovation, and one that focuses on chronic disease prevention and management. Innovation is one of the foundations of a sustainable system and there needs to be an environment where the government both values innovation and embraces partnership with industry.

In the Annual Performance Report (2005) of BC PharmaCare, published by the Pharmaceutical Services Division of the BC Ministry of Health in April 2007, it notes that for drugs that do not go through the Common Drug Review (such as new indications for existing drugs or modifications to coverage), Pharmacare considers the following:

1. The evaluation provided by the Therapeutics initiative – a critical review of the clinical trial evidence and the current scientific literature;

2. A review of the manufacturer’s drug submission and other evidence-based scientific information regarding the therapeutic advantages; and

3. Economic factors including budget considerations and the cost of new drugs compared to current standards of treatment.

Nowhere are the pharmacoeconomics associated with the introduction of the new drug evaluated or considered, and therefore cost savings to other parts of the healthcare system are not taken into account. It appears that the only economics considered are the direct impact on the immediate PharmaCare budget of the next year with no consideration for the savings that could be reaped from other parts of our burdened health care system.

In the same report, the “increase in new drugs” is listed as one of the challenges facing publicly funded drug coverage programs. Again, innovative medicines actually represent an opportunity for better patient outcomes, lower system-wide costs, and the development of a vibrant biotech industry. PharmaCare must be encouraged to engage in budgeting that looks at cause and effect of their actions across the healthcare system and not just in terms of their singular budget.

Clearly, a different framework for decision-making is needed. Such a framework is outlined in the previously mentioned 2004 review of Pharmacare outlined in the CSCW report. This report calls for “Evidence-Based Formulary Management” and notes that stakeholders find the current system to be “opaque, unfair and arbitrary.” The ten recommended changes in this report aim to establish the type of efficient and effective methodology for reviewing the medical, administrative, economic and health evidence for formulary decisions for which LifeSciences BC supports. We believe that by adopting the recommendations of the CSCW Report in relation to evidence-based formulary management, that our ultimate goal of strengthening the healthcare system and its sustainability alongside the development of a strong biotechnology industry will be realized.

The report also notes that implementation of these changes is expected to improve the relationship between PharmaCare and its critical stakeholders – physicians and prescribers, disease advocacy groups, pharmacies, drug companies and – most importantly – patients. The CSCW report also notes, “The development of appropriate business relationships between the research, development, and industrial base within the province is fully consistent with the desire to encourage business investment which in

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LSBC believes that improved partnerships with industry can produce world-leading results on patient outcomes. For example, PharmaNet is one BC’s great health care resources and it is underutilized. PharmaNet is a province-wide network that links all B.C. pharmacies to a central set of data systems. PharmaNet supports drug dispensing, drug monitoring, and claims processing. Twenty eight million prescription claims are processed through PharmaNet each year. This database is one of few in the developed world and provides researchers with a great resource to study patient outcomes and medicine efficacy as well as to improve upon treatment protocols. It could also be a significant resource for monitoring patient safety in a real world setting. Unfortunately, it has been the experience of independent academic researchers sponsored by industry that access to PharmaNet is denied by PharmaCare. The same is not the case for academic researchers sponsored by the Ministry of Health. The double standard is unacceptable to LSBC and should be to all British Columbians. Importantly, British Columbians should know that the utility of PharmaNet is one of the reasons that industry can be attracted to invest in BC’s chronic disease management requirements as it allows true evidence based medicine on a large scale. PharmaNet is a truly underutilized asset.

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39 Ministry of Health, PharmaNet web site (September 2007)
Addressing the Premier’s Questions: Innovative Solutions for BC Health Care

The Premier of British Columbia is asking British Columbians how we can renew our health care system to meet the needs of patients now and into the future, in a manner that is financially sustainable and that meets the requirements of the Canada Health Act. The Conversation on Health has received significant input highlighting many innovative steps towards enabling our health care system to deal with future costs and expectations of our citizens. It is clear that status quo is not an option. It should also be noted that in BC, there are many progressive initiatives already being undertaken by the Ministry of Health and the Regional Health Authorities. However, given the relative performance to date of our health care system, LSBC believes that in order for BC to remediate our present treatment gap, the government must also embrace industry in helping to provide the solutions. Industry should be enabled to invest in our future and, like the Ministry of Health and our Regional Health Authorities, be held accountable for our performance.

The following recommendations represent the core of Life Sciences BC recommendations to help preserve our universal health care system and meet the challenges of sustainability.

1. Promote a more constructive interpretation of the Canada Health Act which embraces the principle of sustainability and one that will adhere to the original forward-thinking vision of Tommy Douglas.
2. Make health innovation a priority including:
   a. New Primary Care delivery models;
   b. IT convergence of patient records and service provider systems.
3. Embrace the innovative medicine industry in partnership by:
   a. Striking a Task Force on Innovative Medicines to present to government a series of Industry partnerships and investments in chronic disease management;
   b. Providing access to BC PharmaNet for industry sponsored post-marketing evidence based research that is driven by mutually agreed objectives.
4. Strike a committee of the Ministries of Health, Advanced Education and Economic Development to link and further advance the province’s innovation agenda in conjunction with our health care initiatives.
5. Develop benchmarks of accountability for PharmaCare including:
   a. Transparent process for the approval of medicines;
   b. Proper cross departmental and ministerial budgeting.
7. Initiate steps to implement the CSCW report on PharmaCare, thus developing a proper long-term plan for PharmaCare that is in accord with the entire health continuum.
**Note:** LifeSciences British Columbia supports and represents the biotechnology, medical device, and greater life sciences community of British Columbia through leadership, advocacy, and promotion of our world-class science and industry. Via active facilitation of partnering and investment into the life sciences sector, British Columbia is fast becoming a global life sciences leader.

Our members include: academic and research institutions; associations; government; and companies from the biopharmaceutical industry, agricultural biotechnology sector, bioinformatics, bioproducts, medical devices, international pharmaceutical multinationals, contract research and scientific services, communications, professional and legal services, human resources, systems and software; and consultants.

British Columbia is the seventh largest biotechnology centre in North America by number of companies, and the fastest growing in Canada. It is home to three of Canada’s largest and most successful biotechnology companies QLT, Angiotech, and Aspreva Pharmaceuticals.