

Life Sciences Ontario Annual Policy Forum

December 4th, 2019



*Digital Transformations in Life
Sciences*

Report & Recommendations

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Life Sciences Ontario: Digital Transformations in Life Sciences

Digital transformation has played a substantial role in the life sciences sector and it continues to play a central role in its current and future success. Digital transformation is revolutionizing health care and in order to fully appreciate the economic benefits of our sector, meaningful policy measures need to be put in place in order to bring our nation forward. This year's policy forum examines what key lessons we can learn from our international partners on digitalization in healthcare, the policy landscape in Canada post-federal election, and finally how we can facilitate advancement and adoption through public policies.

LSO will continue to advocate for a **coordinated provincial life sciences strategy** to capitalize on the economic potential of Ontario's diverse sector to drive job growth and create world-leading companies.

Why Ontario needs a coordinated Life Sciences Strategy?

- “Ontario has all the ingredients but lacks a recipe” – Kevin Lynch, Vice-Chair, BMO Financial Group, at the 2015 Ontario Economic Summit.
- We need to ask the question: “With all our strengths and investments in science, why does Ontario lack a homegrown billion-dollar biotech success story?”
- Ontario needs a life sciences strategy that will set a clear target to create a made-in-Ontario global success story in biotechnology. LSO has created the Blueprint for this coordinated strategy that will help the government create high-skilled, high-paying jobs, creating innovations that drive economic and social prosperity.
- A Life Sciences Strategy builds on the significant public investments already made in research and science in order to realize a return on this investment.



To read the full text of the Blueprint, visit: <https://bit.ly/2DiJyEG>

What are the Economic Impacts of the Life Sciences Sector in Ontario?

- Ontario's life sciences sector directly produces **\$27 billion of economic output (GDP)**, and directly employs **90,000 highly-skilled workers** at more than **6,140 establishments** in Ontario.
- Generates **\$5.5 billion in wages** and jobs in the life sciences sector are generally **24 percent higher** than the provincial average.
- Generates approximately **\$56.8 billion** in revenue, making it a significant economic driver in the province.
- The economic activity of the sector supports **\$31 billion in output from other industries** due to indirect and induced contributions and close to a further 100,000 jobs.
- **1-in-13 jobs** in Ontario are in the life sciences or supported by its activity.
- **51%** of all of Canada's research and development in life sciences occurs in Ontario. Accelerating growth in the sector would create an even more vibrant innovation hub.
- The life sciences sector is a significant driver of medical innovations that improve healthcare delivery and patient care in Canada and overseas.

To read the full text of the Deloitte Report, visit: <https://bit.ly/2019SectorReport>



Life Sciences Policy Post Federal Election

National pharmacare, PMPRB reform, and the HBEST Strategy played key roles leading up to the election. Now with a new government in place, what is the emerging terms of policy directions and priorities for our life sciences sector? How does our sector best engage with this government post-election?



Bill Dempster,
CEO, 3Sixty Public
Affairs



Michelle McLean,
Senior Vice President,
Health and Wellness,
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**Deborah Gordon-El
Bihbety,** President
and CEO, Research
Canada



Jason Lietaer,
President,
Enterprise



Trevin Stratton,
Chief Economist, Canadian
Chamber of Commerce

Key takeaways:

- Canada is a world leader in research on key metrics like academic publications per capita. However, we lag in terms of patents and inventions, translating that research into business and health system opportunities
- Research is not being translated as often or as well as other jurisdictions
- Two divergent policy goals: Life Sciences is a huge economic driver but adoption is expensive and is a cost that displaces other investments
- Ottawa finalized changes to the federal patented medicine price control system, turning the Patented Medicine Prices Review Board from a ceiling price reviewer, to a very active price regulator and reducer, which will – if implemented on July 1, 2020 – drastically reduce Canada’s capacity to attract clinical trials and commercialize new medicines by regulating prices down well over 70% in many cases, in a market that is already extremely complex.
- Regarding National Pharmacare, the fill the gaps approach is more sustainable and allows provinces to spend transfer payment in a way that works for them.
- Liberals have a strong minority because the opposition is in disarray. Will likely last 2-3 budget cycles but short terms thinking is always top of mind and public support is critical.
- Individual MPs hold a lot more sway –notwithstanding party identity
- Committees have more influence
- There has been a shift in the Liberal agenda from innovation to affordability
- Premiers have become the “official opposition” so efforts in the provinces will be as important as federal efforts
- Life Sciences has an opportunity to build consensus across provinces because there are no regional divides (like oil and gas for example).

- The premiers that are calling for a 5.3% increase in health transfers will derail the federal government's efforts for national pharma care
- Right now we have a government under siege, the 6 provincial governments will be the greatest challenge to the federal government
- Public confidence in science is low, impacting evidence-based policymaking
- 80% percent of Canadians are already covered, so they might have less coverage should national pharma care go forward
- The fact is, most Canadians don't know what a formulary is
- We have huge challenges, the new Health Minister has a lot more power than the previous minister and is an activist

Recommendations:

- Stop talking about ourselves as a sector, instead, talk about improving health outcomes & economy
- The sector has to become more of the how and less of the what.
- We have to put it in the terms that "most Canadians" would understand.
- We need to talk more about the "tradeoffs", what are the consequences of those changes. If we do that well it will suddenly come back on the radar to the government
- The hero is always the prime minister, the victim is the Canadian public and the villain pharmaceuticals for driving up medical prices. We must change the narrative.
- Tether it to nation-building – because the PMO should be interested in nation-building.



KEYNOTE SPEAKER

International perspective on leveraging digitalization in healthcare and how policy making is a key factor to drive nations forward.

- **Mette Harbo**, Head of Digitization, City of Copenhagen, Health and Care Administration



Key Takeaways:

- The health care system has been divided into a national, regional and local level.
- The Danish Health Care System has a universal coverage, free and equal access to healthcare and is paid for by general taxes.
- Denmark strategy for Digital Health:
 - Citizens as an active partner
 - Knowledge in time
 - Preventative health care
 - Trust and security
 - Momentum and common building block
- It's important to have a multi-vendor strategy – Denmark uses international and open standards
- Denmark has the highest confidence in the public sector in containing data. As part of consent, patients also have the right to block some data from others viewing.
- Denmark vision:
 - Ownership by working together across regions and municipalities
 - Sharing complexity, risks and costs
 - Reuse of national infrastructure to other solutions
 - Governance and cooperation structures that support visions
- Patient-Reported Observations (PRO) – is the citizens own view on health condition and situation – independently of health care professionals' view. This is now on a digital platform so that all health care providers are able to view.

- City of Copenhagen – the largest city in Denmark, 1.3 million home visits in Copenhagen (which is about 11,400 citizens. Self-booking now has a platform where people are able to change their appointments and appointments from all sectors are displayed using one infrastructure.
- The city of Copenhagen is the largest healthcare provider on the mobile platform.

Recommendations:

- Benefit realization – talk about it in phases
- Sharing data (it has to be part of health legislation) otherwise it is all built on consent. The infrastructure is digital possible, but it all is built on consent
- Make a strategic plan and don't build everything at once. Copenhagen started with the most critical, which was medicine - medicine database was built first.



Big Data – Unlocking the Opportunity

Ontario is sitting on a treasure trove of health data but unlocking its potential remains an elusive challenge. Privacy, informed consent, for-profit-use and access are rising concerns. In this session, panel members will identify key policy priorities for Ontario to unlock this potential and mitigate risk.



Cindy Bell,
Executive Vice
President, Corporate
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Dan Sinai,
Senior Innovation Leader
– IBM Canada Research
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Seema Nagpal,
Vice President,
Science and Policy,
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Abigail Carter-Langford,
Vice President, Governance,
Risk & Compliance and Chief
Privacy Officer, Canada
Health Infoway



Ricky Mehra,
Founder/Managing
Partner, Continuum
Ventures

Key Takeaways:

- Data production is occurring today at a rate that we've never seen before.
- In genomics, data produced worldwide is growing at a rate that far exceeds Moore's Law and it is doubling every 8 months on average.
- The broad institute produced 20 terabytes of human genome data every day; 1 terabyte is about 500 hours' worth of movies.
- We're good at generating data but need to be better at maximizing the usefulness of data
- When you analyze the data it has to be for a purpose that is linked to an outcome that is meaningful to patients, providers and or system. There has to be a purpose and desire to do something with the data once it has been recorded. It is very important to engage with the user of that information to ensure that is the right indicator.
- The linkage of data and connecting the data to something relevant like social determinates, and that helps you derive better insights. You can't look at data in isolation.
- There is existing data that has yet to be explored and can give us a lot of information on how to improve and fill in those gaps.
- So how do you know that you are making a difference in meaningful patient outcomes? That's through using the data we have and potentially creating new opportunities for collecting the data. But there is such a huge gap right now in terms of what we have in our data systems vs the information we have from that data. There is a large opportunity to measure for example: what's happening as a result of prevention initiatives or the result of patients who access treatments that are evidence-based vs patients who don't have access.
- Patient advocacy will support health outcomes, it's going to change how we treat patients and the types of treatments and diagnoses we look at.
- Hospitals were invented a long time ago, should probably think of reinventing them and perhaps monetizing data is not their primary benefit
- Only 4-6 countries in the world give their citizens the right to access their health data

- The role of data with respect for the demand for data. Start-up companies or even large companies will accelerate innovation on the supply side and create a product and hope someone will buy it and not understand that you need to be in a demand to solve a problem. Data determines that demand for innovation and we need to look at that perspective.

Recommendations:

- Patient should be the custodian for data
- Linkage of the data and connecting it to something important is imperative.
- Best practices: the patient is paramount and central to everything we do.
- We treat privacy as a synonym for security, for confidentiality, for protecting data, which is a component of the privacy landscape. But privacy, guided from a practice that started in hospitals spending a lot of time with patients and providers is about enabling choice.
- Need to move away from protection is privacy to privacy is enabling choice.
- Risk and benefit need to be a side by side conversation with policymakers (industry needs to figure out how to present data in plain language)
- We need more data on what Canadians expectations are on how we are using data
- Data should be used as a shared and renewal resource, it is not a commodity



KEYNOTE SPEAKER

“The 3R’s of Designing a Learning Health System”

Genomic data will increasingly play an important part in patient care. The ensuing novel duties and responsibilities for physicians, patients, and health care systems will require a dynamic and anticipatory approach.

- **Bartha Maria Knoppers**, Director, Centre of Genomics and Policy, Faculty of Medicine, Department of Human Genetics, McGill University



Key Takeaways:

- What is a learning health system? It is a bench to bedside and back again system. The patient gives up some of their data and that data goes into research and comes back maybe for the patient or for next patient.
- We have to be willing to give up some of our data to ensure the health system continues to improve
- The 3 R’s of designing a learning health system:
 - Reinterpretation
 - Re-contact
 - Return
- The world is changing, the percentage of whole genomes and exomes that are funded by healthcare systems >80% in 2022.
- One of the major issues we have, 81% of reference data we have available is Caucasian. We need data from all Canadian citizens.
- Data linkage leverages the value of data to answer specific questions
- The nature of what we understand keeps changing
- Elements of a Duty of Periodic Reinterpretations? 1) data storage 2) initiation of reinterpretation 3) process of reinterpretation 4) re-contact

Recommendations:

- Data must describe key prerequisites: a) individual patients/person level b) follow patients through cycle of care c) link to outcomes.

Audience Engagement Session

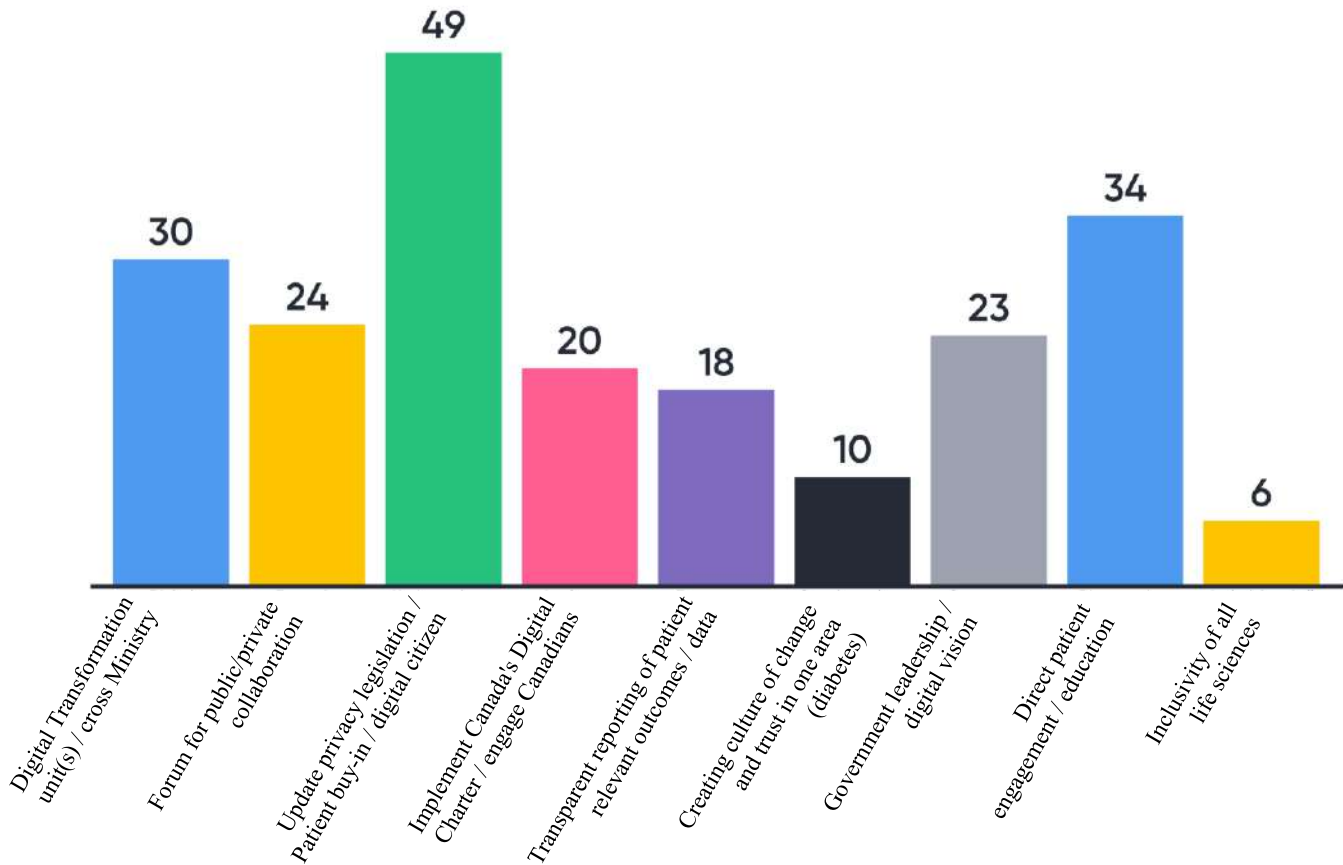
In this hour-long session, we'll be interacting with members of our audience to solicit their views on key policies and/or initiatives that would help accelerate digital transformation in life sciences. The session will include:

- Intro session to scope out key public policy opportunities
- Structured table discussion with facilitators
- Audience live polling



Lauren Fischer,
Vice President of Corporate
Affairs, Eli Lilly Canada Inc

Top 3 Policy Solutions from Audience Participation (73 participants)



AI, Machine Learning and Automation in the BioEconomy

Technology is evolving at a rapid pace and businesses need to adapt in order to stay relevant. In this session, panel members will discuss the potential impacts of these areas on life sciences? How do we facilitate advancement and adoption of these technologies through public policies? How should we be preparing our workforce to be at the forefront of this technological revolution?



Alison Paprica, VP, Health Strategy and Partnership, Vector Institute



Scott MacNair, President, Stryker Canada



Shelley Epstein, Vice President – Corporate and Public Affairs, Imagia



Shiran Isaacs, Senior Director, UHN Connected Care



Andrea Palmer, CEO and Founder, Awake Labs

Key Takeaways:

- We are an aging population and because of this dynamic there is an increase in age-related diseases
- Having good data is critical
- AI is very good at doing very specific things that you train it on a very specific dataset but it's not good at thinking like a human
- If we don't have good data access, we're not going to get there, none of the existing technology will be able to scale up without good data.
- Patient partners is integral on how we move forward and will give organizations the confidence that these are the solutions they are looking for.
- Labelling data is very important, and you must go back and revisit to re-evaluate that data.
- Canada is an ideal use-case market. In most instances, Canada makes up approximately 2% of global revenues. We are a health technology assessment country which means that what we do may be scalable to larger markets. AI is in our backyard – Canada is becoming known as an AI global hub so for all these reasons it's a perfect use case to start innovating in Canada.



Recommendations:

- How can companies stay competitive and relevant? Risk tolerance, appetite for collaboration and talent pool.
 - 1) Very few industries have access to this volume of data. Pharma and biotech will need to be more risk-tolerant and open up the datasets to uncover meaningful insights that have the potential to improve patient outcomes.
 - 2) Getting partners to trust and work together; very few single institutions and industry partners have sufficient data and expertise to tackle the complex diseases on their own.
 - 3) There is a need for diversity within the talent pool; don't stay in your sandbox because you're not going to have diversity in thinking.
- You have to really understand what problem in your organization you're going to solve and then come up with metrics of how you're going to measure if you're successful.



Fireside Chat

A high profile panel to speak to how Ontario is advancing public policy in areas of digitization, automation and AI



Ryan Wiley,
President, Shift
Health



Malcolm Campbell,
Professor & Vice-President
Research, University of
Guelph



Giselle Commissiong, Partner,
Ernst & Young LLP



Ira Parghi, Counsel,
Borden Ladner Gervais



Key Takeaways:

- Next phase requires policy changes and deep cultural change; equitable access to technology
- The bad news is what makes the news and against the backdrop it becomes harder to sell good news
- Agriculture examples: farmers trust the private sector more than the public sector and willingly provide access to their data.
- We are already providing loads of data (i.e. Fitbit etc.)
- By broadening the perspective of what Life

Sciences is, you can leverage what is being done outside of healthcare and then port it into healthcare



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