



Health City

Edmonton, Canada

Health City

*A different kind
of economic
development*

Report to the City of Edmonton, September 2018

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Message from the CEO

This has been an exciting year for Health City. It has been a privilege to be appointed the inaugural CEO and to work with the Health City Board and the new team we have developed. Within a few short weeks of becoming CEO, I found myself caught in the momentum and potential of what is happening here, now, in Edmonton. What we are accomplishing in this ecosystem would not have been possible just a few years ago. There is a powerful convergence of leadership, talent, collaboration and will in this region that is igniting and fueling the shift in the way we are approaching how we look at health innovation and economic development.

I am so energized and grateful for the enthusiasm and support that Health City has received from individuals and organizations within our local health ecosystem, across the country and beyond. The interest in Health City continues to grow – we are working with multinational companies that offer investment, global scale and reach, mentorship, talent development and additional partners. And our local, provincial and national stakeholders continue to demonstrate their commitment to champion our vision, support one another and seize opportunities while continuing to address the challenges identified in our ecosystem.

The future for economic development in Edmonton in the health sector will be driven by what Health City calls “engines of growth”. These engines create economic development opportunities, both in terms of bringing investment to our region, but also for local SMEs to solve problems and develop technologies that scale globally. These engines for growth are attracting capital and partners to generate long term growth in the health sector in Edmonton.

We have an opportunity to serve as an example for the rest of Canada: to build a stronger economy by taking a lead in developing, validating and exporting novel health solutions to the rest of Canada and abroad and at the same time transforming health to meet the evolving needs of our populace.

Reg Joseph

Health City – where we’ve come from and where we’re headed

From the genesis of an idea to an organization with impact

Health City has evolved quickly from the original announcement by Mayor Iveson in 2016. The Mayor understood that Edmonton’s strengths in health research and health innovation could be an economic driver for Edmonton and the province. His vision was to make Edmonton the place where health innovation would thrive, delivering economic outcomes as well as advancing health and social benefits to citizens.

Health City was developed from the grassroots. Our strategy and business plan were developed by visionary and dedicated stakeholders in the health innovation ecosystem, with a significant contribution from industry. Together, they identified priorities and initiatives to advance health innovation in Edmonton and the province, while also addressing challenges and barriers to overcome. They made a commitment to be active and unified in their approach and guidance of Health City. Health City was created to be disruptive, different, unique, nimble – they entrusted us to be the broker for the ecosystem. The choice to develop Health City in this very different and dynamic way is what has created and continues to create momentum for this organization.

Health City has matured from the genesis of an idea to an organization with buy-in and impact. While our mandate is economic development, we build on the strengths of the ecosystem, not duplicate them. Health City is a representation of the ecosystem and is not intended to be competitive with anyone in the ecosystem. This allows us to be a neutral, non-partisan facilitator for the ecosystem.

Our partners are engaged and use Health City to leverage and accelerate their objectives because we’ve created and fill a space in the ecosystem as an honest broker, where we are faster, more efficient and seeing results. We are hosting tables outside the traditional structures, allowing traditional ecosystem partners and non-traditional players to be at the table together. Interest in Health City continues to grow - we’re attracting the attention of industry and investors nationally and internationally and we’re being invited to tables we never imagined.

In the first half of 2018, we have already helped create and advance several platforms that deliver on the business plan.

Health City Operations and Team

Health City strives to operate in the most cost-efficient manner possible. We are managed by a small team of people and work to leverage resources and expertise from our partners wherever possible. Many operational functions are outsourced to save on staffing, including IT and website, administrative, design, legal, financial and communications support. We have rented a temporary and cost-effective, full-service office space for the Health City offices, with a plan to leverage partner support for future space within the innovation corridor in downtown Edmonton.

Health City received its full funding from the City of Edmonton on March 15, 2018. Currently, TEC Edmonton acts as our fiscal agent, providing us with book-keeping and financial management support. Health City is in the process of incorporation as a legal, not-for-profit organization. Approved by the board in July, this move is to provide the opportunity for partners and stakeholders to use Health City as a trusted flow-through for money and allow us to obtain the legal insurance to protect our board members and employees.

The current team at Health City:

- **Reg Joseph**, CEO
- **Karen Wichuk**, Executive Lead (*until October 31, 2018*)
- **Karen Gilchrist**, Communications Director
- **Lisa Laferriere**, Operations Manager
- **Chelsey Van Weerden**, Communications Associate
(*part-time secondment from TEC Edmonton*)

See **Appendix A** for our financial summary.

The Opportunity

Health is increasingly top of mind for politicians and governments, administrators, health providers and citizens, as spending continues to increase without a corresponding increase in health outcomes. The primary cause is the changing face of disease. In the last several decades, the health burden has shifted from acute care to the prevention and management of chronic diseases. This global shift requires a new way of looking at healthcare capacity with the goal to be more predictive and proactive in managing wellness.

The challenge is to enable better patient outcomes and more effective utilization of health resources. With the convergence of technologies in the health sector, delivering on this challenge can be a reality. Most importantly, it is possible to deliver these outcomes in a way that drives the economy and has economic benefits for Edmonton and Alberta.

Health City sees the shift in health care as a significant economic development opportunity for this region. Edmonton has fundamental strengths that are fueling significant investments globally and will drive the health industry in the next few decades. As traditional supply chains break down and new ones form, companies from the “new” health economy can transform care. This shift in health care will also necessitate the use of novel tools and technologies, many of which are emerging in Edmonton.

Data will be a key driver for the new health economy. Alberta has many data assets, including strong health data, Edmonton’s world-class municipal open data portal and social services data. We can combine these various data sets using artificial intelligence (AI) and machine learning to provide new intelligence on health solutions. Utilizing our strengths from these sectors and in this way unleashes the power and economic potential of this data. Health City is positioned to bring together the data assets that lie outside the acute data sets in a way that has never been done before. We are building opportunities for our regional companies to use this data to test, validate and scale their novel solutions in health.

Edmonton is also well positioned with world-leading capabilities in artificial intelligence and machine learning, augmented and virtual reality plus emerging capabilities in blockchain and the internet of things (IOT). Global multinationals and the next generation of health start-ups are already developing solutions around the power of data and artificial intelligence. We have a unique opportunity in Edmonton

to serve as the test-bed to prove out these solutions and have our companies contribute to those solutions. These solutions are addressing global problems such as senior's frailty, youth mental health, and chronic disease. Solutions validated in Edmonton will be positioned to scale globally thereby allowing Edmonton innovators and companies to compete immediately in the global market.

Building on the momentum

Health City's three-year Business Plan was developed by key stakeholders in the health innovation ecosystem, who identified high-level goals and areas of priority to be addressed.

These goals include: developing programs that increase access for innovations to be tested in the system; talent attraction, development and retention; access to data; capital attraction and access to finance; and raising Edmonton's profile nationally and globally as a destination of choice for health innovators, leaders, entrepreneurs, researchers and businesses. (See Appendix B for a full list of goals from the December 2017 three-year Business Plan.)

The Health City team is pleased to share four projects that we have contributed to and championed in the health ecosystem since March of 2018 that are already delivering on our business plan goals:

Attracting global industry to Alberta

Health City, along with BioAlberta, brokered meetings with the Ministry of Health, Alberta Health Services (AHS), the Strategic Clinical Networks (SCNs) and Innovative Medicines Canada to create four data projects that could be run through AHS' innovation adoption pathway as "test" studies. The data sets are being liberated by Alberta Health and come primarily from the acute setting.

The goal is to use these projects to streamline and test the process by working with "tried and true" technologies from large multinational industry partners. This allows AHS a less risky way to test their data and generate evidence in their innovation adoption pathway.

Once these interventions have been run through the rigour of AHS's innovation adoption pathway, it will be easier for smaller businesses and entrepreneurs to run their less "rigoured" technologies through the system.

Outcomes:

- Global pharmaceutical companies recognize the need to contribute to improving outcomes for patients; four multinational companies have invested money and

time into the Alberta health innovation pathway as part of their continued partnership with health systems around the world.

- Each project tests a technology intervention that could change a care pathway for better patient outcomes.
- Creating a streamlined innovation process for all innovation, regardless of whether it comes from a large multinational or a local company, means that projects will run through in a timely and efficient manner and innovations will be adopted more quickly into the system.

DynaLIFE accelerator - Start local; be world-class

DynaLIFE is a world-class medical laboratory offering a complete range of diagnostic testing services, with their main testing facility located in Edmonton. DynaLIFE has provided high quality laboratory services across Canada and the United States for more than 50 years.

Together with Health City and TEC Edmonton, DynaLIFE created an accelerator where companies can clinically validate their diagnostic technologies in a real-life setting that is relevant for global market expansion. Health City helped develop the program, selection criteria and was part of the selection process.

In addition to validation of their technology, the program offers companies access to clinical samples, the opportunity to build standard operating procedures, generate data evidence, plus mentorship and assistance with strategic investment, business management and industrial partnerships. Through DynaLIFE's relationship with US-based [LabCorp](#), there is a built-in opportunity for these companies to engage international receptors for their products and solutions.

Outcomes:

- The launch of the program generated twenty applications which were reviewed by an expert committee and narrowed to five successful finalists.
- Two local companies, [Prominent](#) and [mmHg Inc.](#) were selected to move forward. They are currently working with DynaLIFE as part of the accelerator program.

Medical cannabis brings investment to a local company and Alberta

Alberta is attracting attention from Ontario companies (a leading jurisdiction in retail cannabis) and others outside of Canada as a compelling place to invest in the medical cannabis market. Alberta has several conditions that support this market: good locally grown supply; easy legal access to the retail market; access to data to legitimize and test products; and progressive players in the ecosystem.

In May 2018, Health City brought together Ontario-based [Emblem](#) (a licensed producer of medical cannabis), Alberta Blue Cross, [NACTRC](#) (Northern Alberta Clinical Trials and Research Centre) and University of Alberta researchers and clinicians. With these progressive leaders, we established the first complete value chain for the development of medical Cannabis – from research to medical prescribing. Beyond the specific outcomes of this one meeting, which generated investment in a local company, this collaboration positions Alberta to lead the way in the production of medical cannabis.

Outcomes (specific to the first meeting):

- Emblem is planning to do real-world evidence trials with NACTRC to look at specific indications for Multiple Sclerosis or arthritis.
- Emblem has taken an equity stake in [DriveABLE](#)¹ - an Edmonton-based company that provides driver assessment tools to help identify if medications or medical conditions have affected a person's ability to drive. They will be working with Emblem to extend their software solution to develop a new paradigm around impairment testing.

Smart Cities Challenge: City of Edmonton a \$50 million finalist

The Smart Cities Challenge was developed by Infrastructure Canada to “empower communities across the country to address local issues their residents face through new partnerships, using a smart cities approach. A smart cities approach means achieving meaningful outcomes for residents through the use of data and connected technology”.

¹ Emblem, (2018) *Emblem partners with DriveABLE to support research that evaluates impairment risk* [Press Release] September 24. <http://emblemcorp.com/blog/emblem-partners-with-driveable-to-support-research-that-evaluates-impairment-risk/>

During the first phase of the competition, Health City worked closely with the City of Edmonton's Open City and Technology team to create the initial "Healthy City" proposal, which was selected out of 130 applications as one of five finalists in the \$50 million award category.

The City's decision to compete in the area of health has garnered the attention and imagination not only of our local SMEs but also other provincial, national and global companies Health City has engaged. The proposal leverages many of the opportunities that the Health City team has secured and continues to build. We have engaged hundreds of individuals, from students to senior level health executives.

Health City is fully immersed in the next iteration of the proposal and is actively working to help bring additional partners and funders to the table. We are also assisting with securing pilot projects that can demonstrate the immense value of the proposal, both in advance of and as a part of the submission.

The selection of Edmonton as a finalist demonstrates the international leadership position Edmonton is taking as a "smart city" in the field of health and health innovation. The ecosystem has agreed that regardless of the outcome of this challenge, Edmonton will still drive this proposal forward.

Outcomes:

- As the proposal develops, Edmonton is garnering international recognition as one of the many cities that understands the power of a municipality to affect the health and wellbeing of their citizens. Large multinationals are realizing that cities can have impact as a smart city – in infrastructure but also health.
- Boehringer Ingelheim has a Global Smart Cities program and they have selected Edmonton as the representative for Canada.

These are just four examples of how Health City has begun to deliver successfully in a very short time. Health City has also been developing strategies to deliver on other key components of the three-year business plan, including talent, investment and scaling regional companies, described in the next section.

What the future holds for Health City

The future for economic development in Edmonton in the health sector will be driven by what Health City calls “engines of growth”. These engines will enable innovators from industry, academia, community and health care professionals to “plug in” to drive targeted outcomes. We can create engines around data, capital investment or talent, for example.

Building these engines creates economic development opportunities, both in terms of bringing future investment to Edmonton and Alberta, but also for local SMEs to solve problems and develop technologies that the health system needs. Our needs in this region mirror the needs across the globe, hence providing a global marketplace for our regional companies.

We are already working with several companies who are exploring novel yet integrated approaches to develop and prove innovative health solutions in Edmonton to scale these solutions globally. These companies include local SMEs such as [Clinisys](#), [Salu \(Health Gauge\)](#), [TestFire Labs](#), [AltaML](#) and [DIRRT](#); large multinationals such as [Medtronic](#), [Boehringer Ingelheim](#) and [TELUS](#); as well as non-traditional companies such as [Hitachi Vantara](#). These companies are investing time, human capital and dollars in Edmonton. They are co-developing health innovations to be tested and validated in Edmonton using local talent.

What we learn from these engines and the partners that come to the table generates a wealth of relationships, opportunities and future investment.

Data Enablement Engine

The data enablement engine is a combination of the latest tools, systems and talent that will allow for the manipulation and analysis of many disparate data sets. Using artificial intelligence and machine-learning, we can arrive at unique correlations and findings that will lead us to new insights and new solutions in health care and health. By solving health challenges in the Edmonton region, we create solutions that are relevant to us but are also immediately globally scalable and can be exported to any jurisdiction in the world.

The data engine will not be owned by one partner but will be an asset provided by Health City that can be used by local innovators (companies, researchers, industry) as

well as to attract other innovators from outside the Edmonton region (MNE's, SME's, etc.). Already, this engine is causing excitement and interest from numerous partners and stakeholders, who see the value and opportunities it will provide. We have attracted global partners to participate in the data enablement engine and are identifying the pilots and proof-of-concept projects that will run through the engine.

Specifically, the data enablement engine:

- (i) Provides better analytics on the data we have to improve individual patient outcomes.
- (ii) Enables us to form new care patterns and new evidentiary models of deciding new ways of delivering care.
- (iii) Provides the evidence and learnings needed to develop new technologies and practices that can be commercialized.
- (iv) Generates better evidence to inform investments of both capital and operational dollars across the care continuum - both acute and non-acute settings.
- (v) Allows us to use a host of other relevant data sets (e.g. social services data, municipal data, social media data, private health provider data) that more effectively address the chronic disease burden that exists outside the non-acute setting.

Health Innovation Engine

Alberta has established a nationally recognized model for acute-care innovation with our Strategic Clinical Networks (SCNs). The SCNs have applied research rigour to develop innovation pathways to improve and adopt more effective care models. Much effort has gone into acute-care innovation. While there will always be room for more innovation in our acute-care system, the burden of disease is in the non-acute world with the management of chronic disease (e.g. diabetes, obesity, mental health, etc.). Pathways and innovation from the acute-care system often do not translate well in community-care settings.

Health City is developing a complementary and parallel innovation pathway - innovation that will influence health more broadly with social determinants in mind. Addressing the social determinants of health may be better addressed at a [Primary Care Network](#) (PCN) in the community, where they can apply new health technologies and solutions to a particular issue they are trying to solve. At that level, a community

health provider or a social services organization can test, generate data and adopt the innovation much more quickly.

The economic value of this “engine” centres around the opportunity for local companies to test and validate their solutions to local health challenges, while being immediately relevant and exportable to the global market. This is also another opportunity to attract investment; both because this model can be scaled and spread and because testing and validating in the non-acute area of health is unique.

Both Alberta Health and AHS are represented on the Health City board; they are aware, interested and excited about the opportunity for Health City to work with our partners to create these complementary evidentiary pathways. Once an evidentiary pathway has been proven to work in a community setting, it can inform the larger system.

It is important to note that industry (pharmaceutical, medical, and others) are changing their approach as well. Value-based medicine and health care is increasingly becoming a part of industry’s business model. These companies are building new health solutions based on multiple sources of data to help jurisdictions improve how they manage disease.

Health City is positioned to be an ideal partner to lead this change in value-based health innovation. We are working to bring together multiple sets of data from social services organizations, municipalities, social media and others to be able to address the many factors and determinants that affect the health of citizens.

Response to City of Edmonton Council

Original motion:

“That Administration report back in fourth Quarter 2018 on Health City progress, and recommendations addressing the following:

- a) Partner funding that is secured or being pursued as a result of the City’s investment.*
- b) Advice on how Health City’s work integrates into the City and Metro Region’s evolving approach to economic development.”*

Health City response:

- a) Health City is actively working on securing funds to the various initiatives we are pursuing. We have engaged with federal and provincial funders, large multinationals (e.g. Hitachi, TELUS, Boehringer Ingelheim, Medtronic), foundations and charitable organizations, other non-profit organizations, as well as venture capital and social innovations funds. Many of these discussions are for innovation investments in our ecosystem that are seven figures or greater.

We are well-positioned to secure at minimum a tenfold return on the original annual operating commitment to Health City. With this kind of leveraged dollars, Health City demonstrates that a small investment in this initiative has tremendous returns.

- b) Based on HC strategies and activities, we have engaged with and are co-developing our plans with a number of key partners, including TEC Edmonton, Edmonton Economic Development Corporation (EEDC), Edmonton Global and others. We are continuing to reach out and connect with more of our partners as the rest of 2018 progresses.

Through these initial engagements, we have established a model of how we work together and capitalize on our partners’ respective strengths; but more importantly a common narrative is emerging that will guide our message as we continue to attract national and international collaborators, business development leads and investors to our region.

Appendix A: Financial Summary

Statement of Expenditures and Fund Balance For the Period Ending August 31, 2018

Opening Fund Balance		\$	985,000
Interest Earned			5,366
Refundable Deposit			4,358
Human Resources & Professional Services	\$	377,205	
Other Operating Expense		60,681	437,886
Fund Balance at August 31		\$	<u>548,122</u>
Outstanding cheques at August 31			4,725
Bank Balance at Aug 31		\$	<u>552,847</u>
Outstanding Disbursements (September)			50,193
Outstanding Commitments (September - December)			181,548
Uncommitted Balance at September 14, 2018		\$	<u>316,381</u>

Appendix B: Health City Business Plan Overview

(Excerpt from Business Plan document, December 2017)

Health City is an organic network of interested stakeholders working together to achieve a common goal. As an organization, Health City is nascent, having only just been formed and staffed with an interim secretariat over the past year.

This business plan is a blueprint that will guide the direction of Health City efforts and help us to check our progress toward the achievement of our goals as we grow and establish our role in the health system. We will review our progress quarterly and adjust our course and expectations to account for unexpected opportunities and changes that may arise within the ecosystem.

Table 1 (below) provides a summary of the activities and goals included in the 2018-2020 Health City Business Plan.

TABLE 1: Overview of Health City Business Plan: 2018-2020

Health City's Goals	Priority Initiatives (2018-2020)
1. Foster a health innovation ecosystem that provides an unparalleled environment for success for health innovation and industry participants	1.1 Support development of processes and programs that increase accessibility for innovations to be tested in the system
2. Edmonton becomes a destination of choice for health innovators, leaders, entrepreneurs and researchers	2.1 Capacity building and business talent development 2.2 Talent attraction and retention
3. Create a policy environment that accelerates the development and growth of the health innovation continuum, from discovery to commercialization and application	3.1 Develop a mutually beneficial relationship between the health innovation and health delivery systems 3.2 Increase access to health data
4. Accelerate access to finance, capital, and institutional investment whilst removing financial barriers to growth	4.1 Lead generation and targeted investment attraction
5. Solidify Edmonton's reputation as a leading health innovation ecosystem	5.1 Brand promotion and reputation management

** The business plan does not provide details on the full scope of Health City's activity. It offers a stakeholder informed approach for pursuing the initiatives deemed most important by stakeholders.*