KRC Insights

NeuPath Health Inc.

NPTH-V: $0.68

28 April 2021

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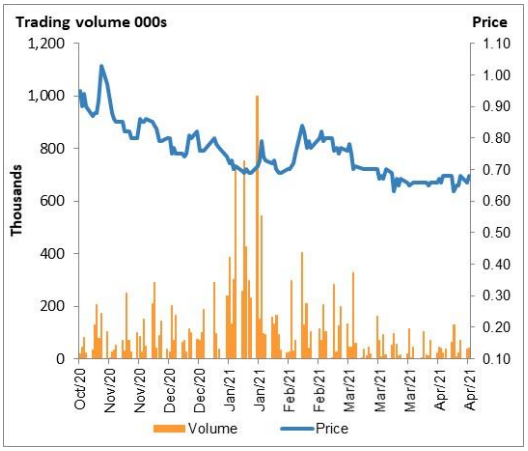
Price	$0.68	Market Cap.		$30,646
Target Price	$1.80	Debt		$12,675
Projected Return	165%	Cash		$7,650
52 Week Range	1.43/0.62	EV		$35,671
Basic Shares (000's)	45,068			
FD Shares (000's)	70,869			
Insiders	9.0%			
Y/E December	**2019**	**2020**	**2021E**	**2022E**
Revenues	49,638	47,639	62,517	65,560
EBITDA	1,898	1,975	3,126	4,261
EPS	-0.34	-0.21	0.00	0.02
EV/EBITDA	18.8x	18.1x	11.4x	8.4x



Profile

NeuPath Health Inc. (NeuPath) is a vertically integrated health care provider utilizing research, data-driven insights, technology, and interdisciplinary care to help restore function for patients impacted by chronic pain, spinal injuries, sport-related injuries, and concussions. NeuPath owns and operates thirteen clinics in Ontario and Alberta and has a minority interest in two physiotherapy clinics in Alberta. NeuPath is building out a national network to better serve patients across Canada. NeuPath is focused on transforming the hope of a better life into the reality of a life more fully lived.

Disclosure

Please refer to important disclosures on page 42.

INITIATING COVERAGE: RESILIENT REVENUES, IMPROVING OPERATING METRICS, ACQUISITION OPPORTUNITIES AND TRADING AT A SIGNIFICANT DISCOUNT TO ITS PEER EMPHASIZES UNDERVALUATION

- NeuPath Health Inc. (NeuPath) is Canada's largest service provider in the highly fragmented chronic pain management market, operating 13 clinics: 12 chronic pain management clinics in Ontario and a pain, spine and sport clinic in Edmonton, Alberta.
- **Chronic pain.** Chronic pain (79.3% of revenues) was recognized as a disease by the World Health Organization in 2019. The expected data flowing from its classification, which facilitates enhanced insurance reimbursement, will: drive improved understanding of the disease, allow for improved patient care outcomes and lead to governments to take a new interest in pain and how their health systems assess and treat it.
- **Chronic pain is an underserved market**. Studies show that chronic pain's cost is greater than the cost of HIV, cancer and heart disease combined and yet, by comparison, there are only 18 chronic pain specialists in Canada vs 625 medical oncology specialists and 1,509 cardiology specialists. Given the evolving state of the chronic pain market we expect to see an increased number of chronic pain specialists.
- **Other markets.** With the 8/2/21 acquisition of Alberta-based HealthPointe, NeuPath entered the Sports Medicine market, which is growing by 7.6% p.a. in North America, and the Concussion market, which is seeing increased prevalence from sports injuries.
- **Growth strategy.** Current 54% clinic capacity utilization shows significant opportunity for organic growth. With its $7.6m in cash NeuPath can also fulfill its stated objective of making acquisitions.
- **Sensitivity**. We estimate that every 1% increase in capacity utilization adds ~$270k in EBITDA. Management has placed increased emphasis on increasing capacity utilization.
- **Technology.** NeuPath is developing a digital health tech solution targeting musculoskeletal conditions, the costliest condition for employers. The tech solution is a component of its end-to-end solution, which is based on NeuPath's current blended care model of in-person visits combined with virtual care.
- **Target price $1.80**. Using a 2.7x EV/2022E revenues and adding a $5.0m notional value for technology development, we derive a target price of $1.80 for NeuPath. We understand that there are variables which would influence our target price to the upside: faster capacity utilization than currently forecast and evidence of progress on the technology front.

CONTENTS

FIGURES

Executive Summary

NeuPath is Canada's largest service provider in the highly fragmented chronic pain management market operating 13 clinics: 12 chronic pain management clinics located across Ontario from Windsor to Ottawa, and a pain, spine and sport clinic in Edmonton, Alberta. It operates its 12 Ontario pain clinics through two leading brands:

- CPM – Centres for Pain Management, and
- InMedic Creative Medicine.

Immediately after the 8/2/21 HealthPointe Medical Centres Ltd acquisition, NeuPath's revenue comprised 79.3% from chronic pain, 15.9% from sports medicine and 4.8% from non-clinic revenue. Now, ~78.2% of revenues are generated through the Ontario Health Insurance Plan (OHIP), down from 93%.

Neupath targets the chronic pain market, and with the HealthPointe acquisition, it has expanded into the Sports Medicine and Concussion markets.

Chronic pain. NeuPath's core focus on chronic pain was designated a disease by the World Health Organization (WHO) in May of 2019. With this recognition, we expect improved data and hence an improved understanding of the complexity of chronic pain. This will in turn allow for improved patient care outcomes and lead to governments taking a new interest in pain and how their health systems assess and treat it.

Chronic pain, is a large, growing, underserved and fragmented market. In terms of *size*, pain and pain-related diseases are the leading cause of disability and disease burden globally. It is estimated that chronic pain affects ~10% of the world's population but is almost 2x that in developed countries such as the US (20.4%) and Canada (~25%). The Canadian Pain Task Force estimates that ~25% of Canadians (around 7.3m) over the age of 15 live with chronic pain. A separate study estimates that the total direct and indirect cost of chronic pain in Canada was estimated at $38.3bn-$40.4bn in 2019. The North American chronic pain market is estimated to be *growing* at 6.5% p.a.

In terms of an *underserved* market, chronic pain's cost is greater than the cost of HIV, cancer and heart disease combined. Yet, by comparison, according to the Canadian Medical Association, there are only 18 chronic pain specialists in Canada vs 625 medical oncology specialists and 1,509 cardiology specialists. According to a study published in 2020, only 222 clinics could be considered multidisciplinary pain clinics, of which only 104 met the qualifications of being staffed with professionals from a minimum of three different disciplines (including at least one medical specialty) and whose services were integrated within the facility. As for *fragmented*, McMaster University estimated that there are 67 pain clinics in Ontario, NeuPath's core market, while The Toronto Star estimated that there are now 99 pain clinics.

Sports medicine. NeuPath gained access the sports medicine market through the HealthPointe acquisition. HealthPointe operates a $9.0m p.a. revenue, 20,000 ft^2 facility in Edmonton, offering physician-based care services for a wide range of injuries and issues including chronic pain management, spinal injuries, sport medicine, and concussions. The North American sports medicine market is estimated at US$2.53bn in 2020 and forecast to be growing at 7.6% p.a. to reach US$3.65bn by 2025.

Concussions. NeuPath also entered the concussion market through the HealthPointe acquisition. With 200,000 concussions annually in Canada, sports-related concussions are "among the most complex injuries in sports

medicine to diagnose, assess and manage." The global concussion market is forecast to grow at 3.6% p.a. from 2020-2027. However, Canada seems to be growing faster with the number of emergency department visits for brain injuries in Ontario and Alberta having increased 28% over the last 5 years. Of all the brain injuries in Ontario and Alberta, 26% were sports related.

Workplace Health Services. Spending on employee benefit group life and health plans in Canada was estimated to be $46.1bn in 2019, with $21.9bn spent on medical benefits. A Deloitte study found that employers reaped a significant return on investment by offering mental health programs to employees. Similar benefits could be garnered by offering programs around chronic pain, thus reducing absenteeism and increasing work productivity.

As for COVID, NeuPath weathered the COVID-related downturn better than US hospitals as its revenues did not decline as much as US hospital revenues. This suggests that the chronic pain market sub-market is more resilient than the general services offered by hospitals. However, the extensive Ontario lock downs have resulted in a nominal lag in revenue recovery vs these US hospitals. As for its closest comparable, MCI Onehealth Technologies Inc. (DRDR-T), DRDR's revenues declined more than NeuPath's (-16.7% vs -4.0%) suggesting that chronic pain revenues are also more resilient than general practitioner revenues.

NeuPath's operating results are sensitive to changes in capacity utilization. In 2020, based on 54% utilization of its 12 clinics, NeuPath generated $44.9m in revenues and $2.0m in EBITDA (4.1% margin). At full capacity (80%), we estimate that NeuPath would generate $83.7m in revenues (including the HealthPointe acquisition) and $9.1m in EBITDA. This suggests that every 1% increase in capacity utilization generates an additional ~$270k in EBITDA. Management has placing increased emphasis on increasing capacity utilization.

The balance sheet is strong with $7.6m cash after the HealthPointe acquisition, and $12.7m in total debt, of which $3.7m is non-interest bearing.

From a valuation perspective, there is only one directly comparable company against which to benchmark NeuPath: the recently-listed DRDR. Our analysis shows that NeuPath is the larger company, weathered the COVID-related slow down better than DRDR, and its operating margins are only slightly lower than that of DRDR if DRDR's rental income is excluded from calculations. This is offset somewhat by DRDR's stated growth strategy which includes a more advanced technology offering to increase its capacity utilization. On the technology front, DRDR is further ahead of NeuPath, however, we believe that NeuPath is focussed on developing its technology angle and we expect updates in this regard.

Within this context, we applied a 30% discount to the DRDR valuation to account for its relative technology advancement and for its rental income (included in Other Income) which NeuPath does not have.

Using a 2.7x EV/2022E revenues and adding a $5m notional value for NeuPath's technology development to date, we derive a target price of $1.80 for NeuPath. We note the variables that would influence our target price to the upside include faster capacity utilization recovery than currently forecast, and evidence of progress on the technology front.

Recent Events

6/7/20: NeuPath started trading on the Venture Exchange.
13/11/20: Closed a $12.0m bought deal financing at $0.90 per share.
8/2/21: Closed the HealthPointe Medical Centres Ltd. acquisition for $4.7m ($3.2m cash). In 2020, HealthPointe generated revenues of ~$9m with an adjusted EBITDA margin of ~ 6%. HealthPointe is a leading pain, spine, and sport medicine clinic located in Edmonton, Alberta.

NeuPath Background and Brief History

NeuPath is a healthcare services company incorporated in Ontario for the purpose of providing chronic pain management services in Canada. NeuPath's pain clinics offer a comprehensive chronic pain assessment and multi-modal treatment plan to help patients manage their chronic pain and optimize their quality of life.

NeuPath is Canada's largest service provider in the highly fragmented chronic pain management market and operates 13 clinics: 12 chronic pain management clinics located across Ontario from Windsor to Ottawa, and a pain, spine and sport clinic in Edmonton, Alberta. It operates its 12 pain clinics through two leading brands:

- CPM – Centres for Pain Management, and
- InMedic Creative Medicine.

NeuPath reports its revenues in two segments:

- Clinic revenue
- Non-clinic revenue

Clinic revenues

In 2020, ~93% of revenues were derived from The Ontario Health Insurance Plan (OHIP), however, the recent HealthPointe Medical Centres acquisition, located in Alberta, will see this reliance decline to ~79.3%. Within this context:

- all the revenues are derived from Assessments and Treatments,
- but increased emphasis is being placed on technology.

Assessments and treatments

NeuPath's mission is to provide patients with the care and tools they need to live a complete and fulfilled life; to reclaim the daily life activities that have been taken by injury or illness. NeuPath employs more than 100 health care professionals providing a broad range of specialties including: physiatrists (physical medicine and rehabilitation physicians), psychotherapists, neurologists, and anesthesiologists, general practitioners with specialized training in chronic pain, medication management physicians, athletic therapists and nurses.

NeuPath, once receiving a patient referral, assesses the patient's needs. Based on these needs, NeuPath provides a multi-modal treatment plan customized to each patient. In a multi-modal treatment plan, several different types of therapies are provided together. As an example, prescribed pain medication may be combined with physical therapy and mental health counselling.

Additionally, NeuPath owns and operates CompreMed Canada Inc. (CompreMed) provides workplace health services and independent medical assessments (IMEs) to disability insurers. IMEs are third party health exams

for injured or ill employees or plan members. The reports that follow an assessment help benefit managers, case managers and employers make informed decisions about short/long-term disability management and to optimize return to work strategies. CompreMed also offers the following evaluations:

- **Functional Ability/Functional Capacity Evaluations** that assess an individual's physical capacity/limitations to perform various physical tasks and duties.
- **Physical Demands Analysis (PDA)** used to assess whether or not someone can return to their former duties following an illness or accident or to assess whether or not a job candidate can meet the physical demands of the job.
- **Workplace Assessment and Solutions** that provide ergonomic and psycho-vocational assessments in the workplace to improve a person's working experience.
- **Occupational Psychiatric Services** that helps provide strategies and coaching for those supervising an employee with a mental health condition.

Technology

NeuPath used insights from its medical specialists, patients and its contract research organization to build its digital health solution for chronic pain. This remote pain management app will utilize a more holistic, patient-centered approach to chronic pain management by including education and tools around sleep, exercise, diet, and behavior modification in addition to traditional pharmacotherapy approaches for managing chronic pain. This technology will serve to maintain touchpoints with clients between actual visits to its clinics and to provide an offering to communities that do not have ready access to chronic pain medical services.

This technology is under development and we expect to hear an update.

Non-clinic revenues

Non-clinic revenue is derived from:

- **Physician staffing** where NeuPath provides physicians for provincial correctional institutions, federal correctional institutions, and hospital health departments across Canada, and
- **Contract research** services provided to pharmaceutical companies and clinical research organizations. These clinical research capabilities allow the company to evaluate the efficacy of new and existing services and treatments, fill research gaps in underfunded areas like chronic pain and to communicate the positive impact on patient's lives of the NeuPath's treatment services.

Corporate history and background

The NeuPath acquisition was the Qualifying Transaction (QT) of then-CPC Klinik Health Ventures Corp. (Klinik). Klinik itself:

- 17/4/19 –incorporated pursuant to the provisions of the Ontario Business Corporations Act (OBCA),
- 3/12/19 – completed its capital pool company (CPC) IPO, and
- 6/12/19 – shares commenced trading under the symbol "KHV.P".

On 24/4/20, Klinik entered into an agreement with NeuPath whereby the NeuPath acquisition would constitute Klink's QT. Then, almost two months later, on 25/6/20, Klinik announced that:

- the QT was completed,
- its name would change "NeuPath Health Inc.", and

- there would be 5:1 share consolidation.

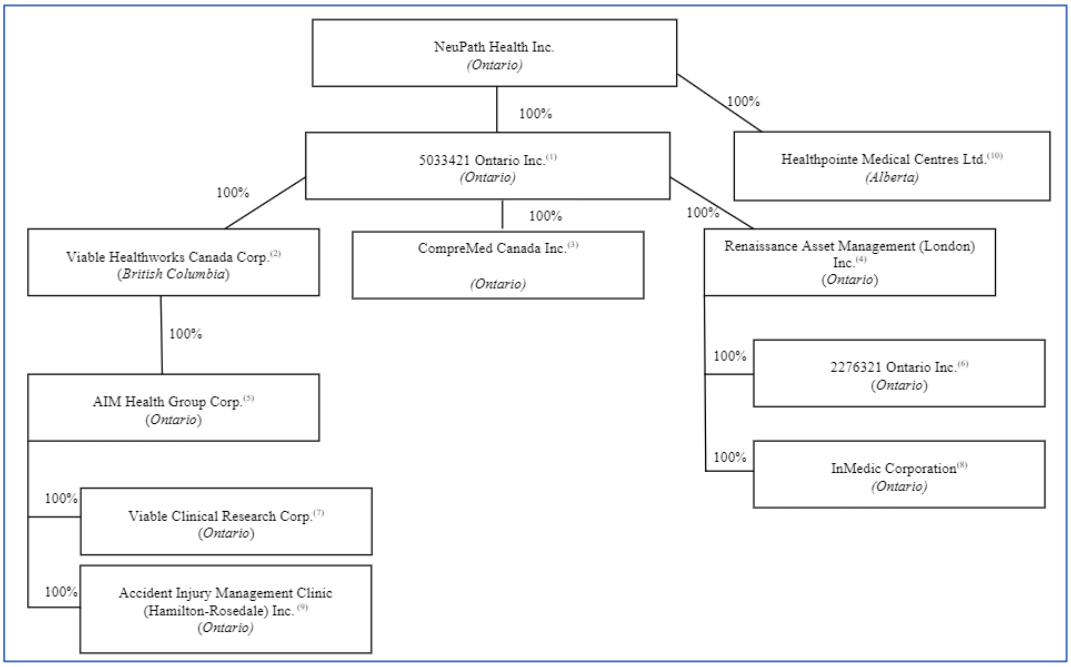
On 6/7/20 trading resumed as NPTH-V (formerly KHV.P).

As for NeuPath, its corporate evolution is as follows:

- 26/5/17 – acquired Viable Healthworks (Viable). Viable provided NeuPath with its first nine chronic pain management clinics, located in Brampton, Hamilton, London, Mississauga, Oakville, Oshawa, Ottawa, Scarborough, and Toronto. In addition, the acquisition also provided a platform to build out a medical services business focused on chronic pain management.
- 26/2/18 – acquired Renaissance which comprised three chronic pain management clinics in Kitchener, London, and Windsor, under the "InMedic" brand name.
- 8/2/21 – acquired HealthPointe Medical Centres for $4.7m. It comes with $9.0m revenues and is a pain, spine, and sport medicine clinic located in Edmonton, Alberta.

NeuPath's corporate structure is shown in Figure 1.

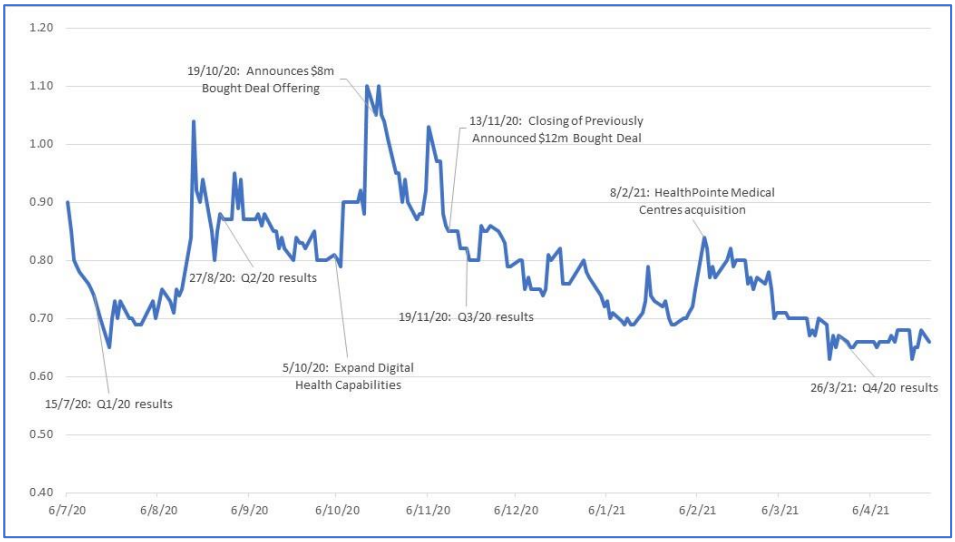
Figure 1: NeuPath corporate structure



Source: Company filings, KRC Insights

Since listing, the NeuPath shares have traded in a range of $1.10 and $0.63 (Figure 2).

Figure 2: NeuPath share price and selected news events since commencement of trading (6/7/20)



Source: Refinitiv Eikon, KRC Insights

Refer to Appendix I for a listing of recent press releases.

NeuPath has two years of financial data. We provide a high-level overview of past results covering 2019 and 2020, the review period, in Figure 3.

Figure 3: NeuPath financial summary 2019-2020 ($000s)

	2020	2019	1-year growth	Explanation
Sales ($)	47,639	49,638	-4.0%	Capacity utilization declined to 54% in 2020 from 56% in 2019 due to the temporary closure of 3 clinics and patient-limiting safety protocols because of COVID-19, and the temporary closure of a medical clinic due to a flood.
Gross margin (%)	20.4%	20.1%		The benefit of reduced costs due to lower medical services revenue and CEWS[1] payroll subsidy of $500k was mitigated by additional staff required for COVID-19 pre-screening checks prior to appointments, and personal protection equipment.
EBITDA ($)	1,975	1,898	+4.1%	Operating expenses were essentially flat on a year-over year basis.
Total debt ($)	12,675	19,692	-35.6%	In 2020, $4.8m of convertible debt was converted by the issue of 6.7m shares, and lease obligations declined by $1.0m
Total assets ($)	46,120	37,990	+21.4%	Increase in assets materially attributable to increase in cash from RTO ($2.8m) and equity offering ($10.6m).

Source: Company reports, KRC Insights 1=Canada Emergency Wage Subsidy (CEWS).

Significant highlights/events during the review period comprise an equity offering and an acquisition (Figure 4).

Figure 4: NeuPath fiscal highlights 2020 to current

Fiscal year	Achievements
2020	$12m bought deal (gross)
2021	HealthPointe Medical Centres acquisition

Source: Company reports, KRC Insights

Markets

Pain and pain-related diseases are the leading cause of disability and disease burden globally.[1] Within this context, NeuPath provides chronic pain management services in Canada, and its markets are:

- Chronic pain,
- Sports medicine,
- Concussions and
- Workplace Health Services.

Conditions often coexist amongst these markets and pain is likely to run through all of these market segments. Below we cover each of these markets.

Chronic Pain

Pain is categorized as acute or chronic.

Acute pain is the body's normal reaction to an injury; it comes on quickly and will disappear in a few months, the usual time frame over which most injuries take to heal. The vast majority of people manage acute pain on their own using over-the-counter medication or a prescription pain killer offered for the short-term.

Chronic pain, by comparison, is defined by pain that lasts greater than 3 to 6 months. It is pain that continues long after the onset of the illness or injury. Chronic pain negatively impacts an individual's well-being, including significant negative impacts on an individual's physical and mental well-being, family and community, society and the economy.

This section of the report focuses on chronic pain, the primary service provided by NeuPath.

Chronic pain can affect many parts and systems of the body including:

- Muscles, bones or ligaments,
- The central nervous system, and
- Viscera including the kidney, heart, gut etc.

Chronic pain has many causes such as:

- An underlying disease or medical condition such as shingles or AIDS,
- Inflammation caused by various illnesses such as rheumatoid arthritis or gout,
- Medical treatments such as surgery that may cause pain that morphs into chronic pain or nerve damage,
- Injury such as an amputation that leads to phantom limb pain,
- Neuropathic pain caused by diseases such as diabetes, or injuries such as stroke that can cause damage to the central nervous system,
- Unknown causes for pain causing ailments such as irritable bowel syndrome, chronic headaches such as migraines and cluster headaches or fibromyalgia.

[1] Vos T., Allen C., Arora M. Global, regional, and national incidence, prevalence, and years lived with disability for 328 diseases and injuries for 195 countries, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. Lancet. 2017;390:1211–1259.

The prevalence of chronic pain

At a global level, it is estimated that chronic pain affects ~10% of the world's population, but is twice that in developed countries such as the US (20.4%) and Canada (~25%).

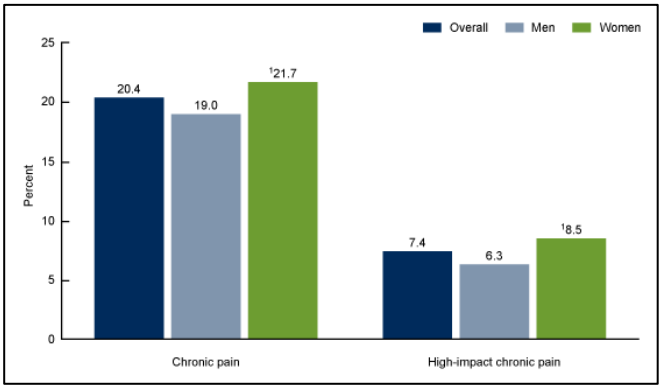
Worldwide

The Global Burden of Disease Study 2016 reaffirmed that the high prominence of pain and pain-related diseases is the leading cause of disability and disease burden globally.[2] **Chronic pain affects at least 10% of the world's population** or approximately 600m people. In some countries and regions chronic pain prevalence is closer to 20-25%. An additional one in 10 people develop chronic pain every year worldwide.[3]

United States

The National Center for Health Statistics (NCHS) in the United States published that overall, the prevalence of chronic pain amongst adults (18+) was 20.4% and the prevalence of high-impact chronic pain was 7.4%. (Figure 5).[4]

Figure 5. Percentage of adults (18+) with chronic pain and high-impact chronic pain in the past 3 months, overall and by sex: United States, 2019



†=Significantly different from men ($p < 0.05$).
NOTES: Chronic pain is based on responses of "most days" or "every day" to the survey question, "In the past 3 months, how often did you have pain? Would you say never, some days, most days, or every day?" High-impact chronic pain is defined as adults who have chronic pain and who responded "most days" or "every day" to the survey question, "Over the past 3 months, how often did your pain limit your life or work activities? Would you say never, some days, most days, or every day?" Estimates are based on household interviews of a sample of the civilian noninstitutionalized population.
Source: National Center for Health Statistics, National Health Interview Survey, 2019.

Canada

According to The Canadian Pain Task Force, which was formed in March of 2019 with a three year mandate to provide advice to Health Canada regarding evidence and best practices for the prevention and management of

[2] Vos T., Arora M. Global, regional, and national incidence, prevalence, and years lived with disability for 328 diseases and injuries for 195 countries, 1990-2016: a systematic analysis for the Global Burden of Disease Study 2016. *Lancet*. 2017;390:1211-1259. [PMC free article] [Pubmed] [Google Scholar]

[3] Tracy P. Jackson, M.D., Victoria Sutton Stabile, B.A.,K.A. Kelly McQueen, M.D., M.P.H., *The Global Burden of Chronic Pain*, ASA Newsletter June 2014, Vol 78, 24-27

[4] Carla E. Zelaya, Ph.D., James M. Dahlhamer, Ph.D., Jacqueline W. Lucas, M.P.H., and Eric M. Connor, B.S., Chronic Pain and High-impact Chronic Pain Among U.S. Adults, 2019, NCHS Data Brief No. 390, November 2020

chronic pain, an estimated 7.3m or one in four Canadians over the age of 15 live with chronic pain. Of these, 28% were aged 65 years or older.[5]

The cost of chronic pain

Chronic pain is the number one cause of disability and disease burden globally. While some of the data below may appear dated, the numbers provide context for the cost of chronic pain. Certainly, in the US and Canada the cost of chronic pain exceeds the sum of several other, smaller but better-funded diseases.

United States

Putting the cost of chronic pain in perspective, the total financial cost of chronic pain in the United States was US$635bn in 2010 dollars, which was greater than the annual costs of heart disease (US$309bn), cancer (US$243bn), and diabetes (US$188bn).[6]

Canada

In Canada, the total direct and indirect cost of chronic pain was estimated at $38.3bn to $40.4bn in 2019. The total direct costs were between $15.09bn-$17.23bn or $1,980-$2,260 per person which represented about 10%-11.4% of total combined health expenditures on prescribed drugs, physician services and hospital care.[7] It is estimated that the cost of chronic pain could be as high as $60bn, more than HIV, cancer and heart disease combined and is considered to be epidemic.[8]

Interestingly, according to the Canadian Chiropractic Association, back pain is the cause of 40% of work absenteeism.

Australia

In Australia, which is a good proxy for Canada given its relative size and demographics, chronic pain costs the Country $73.2bn dollars each year including $48.3bn in lost productivity.

Additionally, the reduction in individuals' quality of life who suffer from chronic pain is valued at $66.1bn.[9] The costs of chronic pain are expected to increase 55% by 2050 in real 2018 dollars, if prevalence rates and treatment regimens remain the same as the population ages.

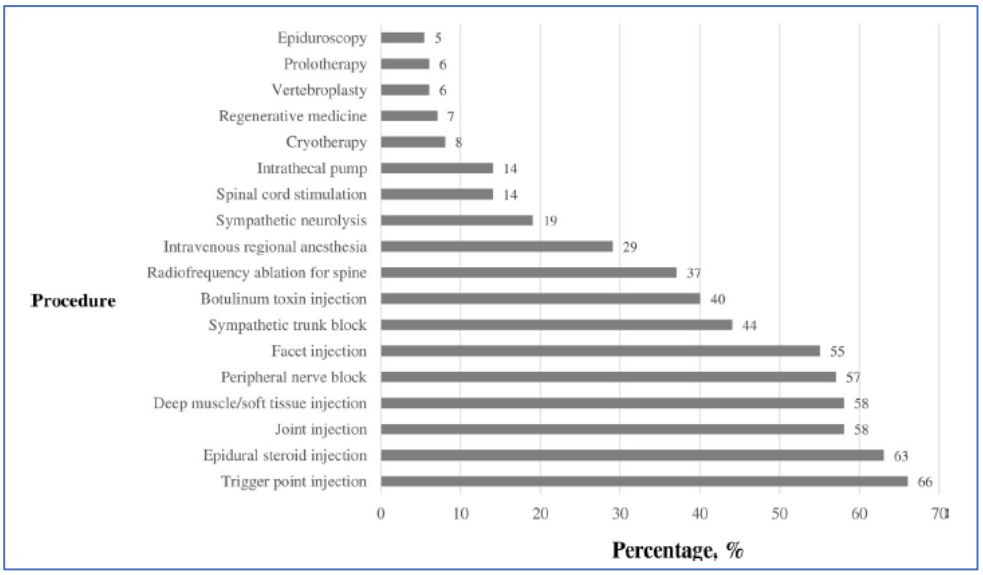
Drawing on the Australian data, the implication for Canada, as a country, is that we too can expect a significant increase in the costs associated with chronic pain.

[5] Canadian Pain Task Force, Working together to better understand, prevent and, manage chronic pain: What We Heard (Ottawa, Government of Canada, October 2020)
[6] Darrell J. Gaskin and Patrick Richard, "The Economic Cost of Pain in the United States," The Journal of Pain, Vol 13 (August 2012) pp 715-724
[7] Canadian Pain Task Force, Working together to better understand, prevent and, manage chronic pain: What We Heard
[8] Alexandra Radkewycz "Chronic pain costs high to Ontario healthcare system and individual patients." University Health Network, Toronto General Hospital July 6, 2016 www.uhn.ca (accessed March 6, 2021)
[9] Deloitte Access Economics Pty Ltd., *The cost of pain in Australia* (Canberra, Painaustralia, 2019)

Types of pain treatment

Building on a 2005/6 study, an updated 2020 study[10] shows the types of pain treatments provided by multidisciplinary pain treatment facilities (MPTFs). MPTFs are described as those providing three or more services. The focus was on non-pharmacological treatments including interventional, physical, and psychological.

Figure 6: Types of intervention procedure offered by MPTFs



Source: Manon Choinere, Philip Peng et al, Accessing care in multidisciplinary pain treatment facilities continues to be a challenge in Canada

The hidden cost of pain

Chronic pain has spill over effects into patients' psychological well being due to depression and concomitant decline in productivity.

Depression and Hopelessness

According to a study by The Angus Reid Institute, 83% of Canadians experiencing chronic pain say that it prevents them from engaging in regular activities, 57% say it contributes to anxiety and depression and 33% say that it makes them feel like it is not worth living any longer (Figure 7).

Long-term pain sufferers are at higher risk of suicide than the general public.

[10] https://rapm.bmj.com/content/45/12/943.abstract, Accessing care in multidisciplinary pain treatment facilities continues to be a challenge in Canada dated 21/7/20

Figure 7: Angus Reid – Chronic pain costs

	Among those experiencing ongoing pain, by Pain Experience			
	Total (n=1,662)	Minimally Affected (n=582)	Moderately Affected (n=576)	Severely Affected (n=503)
Stress and anxiety	52%	43%	50%	66%
Depression	37%	24%	34%	57%
Isolation / Cut off from others	32%	18%	31%	50%
Loneliness	21%	10%	19%	37%
Feeling that life isn't worth living	19%	11%	14%	33%
No, have not experienced any (see full list in comprehensive tables)	10%	21%	6%	2%

Source: Angus Reid Institute, Chronic Pain Cost: access to treatment pose significant barriers for those suffering the most, 2019

One in five chronic pain suffers indicated that they have self-medicated with smoking (14%), alcohol (15%) or the overuse of prescription drugs (15%) in an attempt to numb the agony.[11]

Lost Productivity

A major portion of the cost of chronic pain is lost productivity due to job loss and sick days. 60% of people with chronic pain eventually lose their job, incur loss of income, or will have a reduction in responsibilities as a result of their pain. For people who are still employed, it is anticipated that they will have a mean of 28.5 lost work days per year.[12] As mentioned above, in Australia, which is a good proxy for Canada, the cost of lost productivity due to chronic pain is $48.3bn.[13]

The gold standard for the treatment of chronic pain

Evidence supports a biopsychosocial model of care as the most effective approach to treatment and management of pain (Figure 8). This model includes pharmacological, psychological, and physical interventions aimed at reducing the severity of pain and improving function and quality of life.[14]

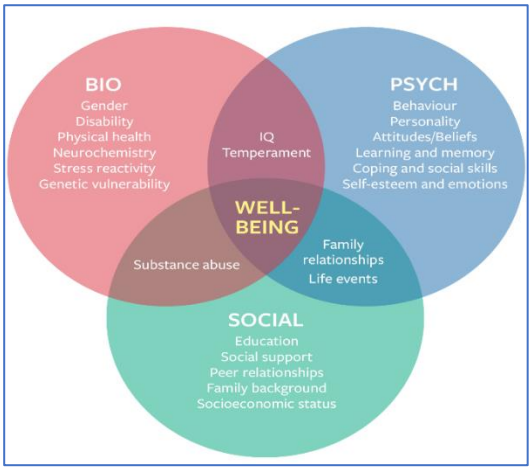
[11] The Angus Reid Institute, Canadians in Chronic Pain: Cost, access to treatment pose significant barriers for those suffering the most. (Canada, July 2019)

[12] Mary E Lynch, MD,FRCP, President The Canadian Pain Society, "The need for a Canadian pain strategy", Pain Res Manag.2011 Mar-Apr; 16(2):77-80 doi:10.1155/2011/654651

[13] Deloitte, The cost of pain in Australia

[14] Kathy Reid, Managing the chronic pain crisis in Canada – the nursing perspective, Canadian Nurse, March 16, 2020

Figure 8: Biopsychosocial model towards chronic pain treatment



Source: hgi.org.uk

In an article published by the *Pain Medicine*, the authors stated that, "From a policy perspective, we identify pain management as an area where the need for a shift to a more biopsychosocial model of health care is particularly pressing". The article recommends prioritization of interdisciplinary, multimodal approaches to pain as one key strategy in realizing this shift.[15]

NeuPath follows this approach with a broad service offering including physiatrists (physical medicine and rehabilitation physicians), psychotherapists, neurologists, anesthesiologists, general practitioners with specialized training in chronic pain, medication management physicians, athletic therapists and nurses.

The current state of Canadian pain treatment

In 2004, the International Pain Society and Global Health Community concluded that *"failure to treat pain is viewed worldwide as poor medicine, unethical practice, and an abrogation of a fundamental human right."*[16]

The Canadian Pain Task Force found that access to chronic pain care is impeded by shortages of health care professionals educated in and experienced with chronic pain, long wait lists for specialized chronic pain treatment programs and health services, and financial barriers.

Lack of experienced chronic pain-educated health care professional

According to the Canadian Pain Task Force, many family physicians or primary care practitioners lack the knowledge, skill and judgement to treat chronic pain. A landmark study by Watt-Watson and colleagues (2009) reviewed the curricula across 10 universities in Canada that had health sciences faculties (medicine, nursing, dentistry, pharmacy, physical therapy, occupational therapy, and veterinary medicine) and found that 68% were unable to specify any designated hours for pain education. Veterinary students received two to five times more pain education than health sciences students.[17]

[15] Megan Crowley-Matoka, PhD,* Somnath Saha, MD, MPH,† Steven K. Dobscha, MD,‡ and Diana J. Burgess, PhD§, *Problems of Quality and Equity in Pain Management: Exploring the Role of Biomedical Culture* pme_716 1312..1, Pain Medicine vol. 10 ch. 7 2009

[16] Tracy P. Jackson, M.D., Victoria Sutton Stabile, B.A.,K.A. Kelly McQueen, M.D., M.P.H., *The Global Burden of Chronic Pain*

[17] Kathy Reid, *Managing the chronic pain crisis in Canada* – the nursing perspective.

As in Figure 9 below, data from the Canadian Medical Association illustrates how underserved chronic pain is in Canada. In 2019, there were only 18 pain medical specialists servicing all of the 7.3m people suffering from chronic pain. Saskatchewan, Manitoba, Newfoundland & Labrador, New Brunswick, Prince Edward Island, the Northwest Territories, the Yukon and Nunavut had no pain specialists at all.

From above, we know that it is estimated that the cost of chronic pain could be greater than the cost of HIV, cancer and heart disease combined and yet, by comparison, according to the Canadian Medical Association, there are 625 medical oncology specialists and 1,509 cardiology specialists in Canada, or 34.7x and 83.8x the number of pain specialists respectively.

Figure 9: Number of specialists by province/territory and specialty, Canada, 2019

	Canada	BC	AB	SK	MB	ON	QC	NL	NB	NS	PE	TERR
Anesthesiology	3,393	479	380	108	130	1,262	798	52	56	115	12	1
Pain Medicine	**18**	**4**	**1**	-	-	**5**	**7**	-	-	**1**	-	-
Critical Care Medicine	491	50	60	15	26	204	120	5	1	10	-	-
Dermatology	634	64	63	12	15	215	228	11	9	17	-	-
Diagnostic Radiology	2,569	314	285	78	87	920	681	54	56	84	9	1
Pediatric Radiology	14	-	3	-	-	8	3	-	-	-	-	-
Neuroradiology	19	2	5	1	3	5	2	1	-	-	-	-
Emergency Medicine	1,011	181	170	13	38	393	185	2	4	24	1	-
Pediatric Emergency Medicine	113	9	26	2	4	40	27	1	-	4	-	-
Internal Medicine Specialists	10,228	1,204	1,195	213	287	3,929	2,862	141	137	238	21	1
Medical Genetics	111	11	16	1	6	39	32	1	1	4	-	-
Neurology	1,080	141	151	22	28	380	311	13	8	24	2	-
Nuclear Medicine	284	28	29	6	7	82	116	4	3	9	-	-
Occupational Medicine	54	6	14	1	1	22	9	-	-	1	-	-
Paediatrics	2,680	304	349	64	110	1,039	661	38	29	70	10	6
Adolescent Medicine	21	1	2	-	1	8	8	1	-	-	-	-
Developmental Paediatrics	29	6	3	2	1	12	2	2	-	1	-	-
Neonatal-Perinatal Medicine	81	4	12	2	-	21	40	-	1	1	-	-
Physical Medicine/Rehabilitation	501	80	74	13	14	202	88	2	13	14	1	-
Psychiatry	4,189	629	390	82	151	1,651	1,058	51	45	121	7	4
Child and Adolescent Psychiatry	362	48	32	2	24	152	87	7	1	9	-	-
Forensic Psychiatry	139	30	17	-	2	52	31	1	2	3	1	-
Geriatric Psychiatry	203	40	22	3	4	83	39	2	3	7	-	-
Public Health & Preventative Medicine	503	53	42	9	22	155	210	2	4	5	1	-
Radiation Oncology	582	76	61	14	14	238	143	11	8	15	2	-

Source: Canadian Medical Association

NeuPath relies on recruiting fully trained physicians or physicians from accepted specialties, like anaesthesiology, physiatry, or doctors who have completed a chronic pain fellowship.

Physicians who are licensed to practice medicine in Ontario learn interventional pain management through NeuPath's comprehensive, 6-part training program consisting of:

1. CPM Pain Primer (2 days)
2. MSK Focus Course (2 days)
3. McMaster Interventional Cadaver Course (1 day)

4. CPM Preceptorship (3 days)
5. Consultation Days (4 days)
6. Intense Preceptorship (2 days)

NeuPath also matches new physicians with clinical supervisors who guide trainees through CPSO-mandated, clinical supervision.

Long wait times for specialized chronic pain treatment

Many Canadians do not currently have access to comprehensive pain management services. There are very few multidisciplinary pain treatment facilities (MPTFs) and inter-professional pain clinics in Canada. The few that exist are located in large cities and have long wait lists.[18]

Data collected by the CIHR-funded research project StopPain found that, in Canada, approximately 557 doctors were practicing chronic pain management in 115 MPTFs, but usually no more than 1 or 2 days per week.

Delays in treatment can cause increased disability, further functional impairment, and create or add to the despair and mental health challenges such as depression. The Pain Task Force reported that the median wait time to obtain an appointment at an MPTF in 2017/2018 was 5.5 months and up to 4 years. A new MPTF was opened up at Health Sciences North, the hospital in Sudbury, Ontario in the fall of 2018. In July of 2019 the wait time for patients suffering chronic pain to be seen by this clinic was 18 months.

A study published in 2020 looked at the change in MPTFs in Canada in 2018 versus 12 years ago in 2006[19]. The study defined multidisciplinary pain clinics as a clinic staffed with professionals from a minimum of three different disciplines (including at least one medical specialty) and whose services were integrated within the facility. Of the 131 eligible clinics identified across Canada; 104 completed the study questionnaire.

In this study, few changes were observed in the distribution of MPTFs across Canada; accessing MPTFs continues to be as challenging for Canadians who live with chronic pain, as it was 12 years ago. Wait times remain at a median of 5.5 months and as long as 4.3 years. Most of the facilities are concentrated in large urban cities. Prince Edward Island and the Territories still have no MPTFs.

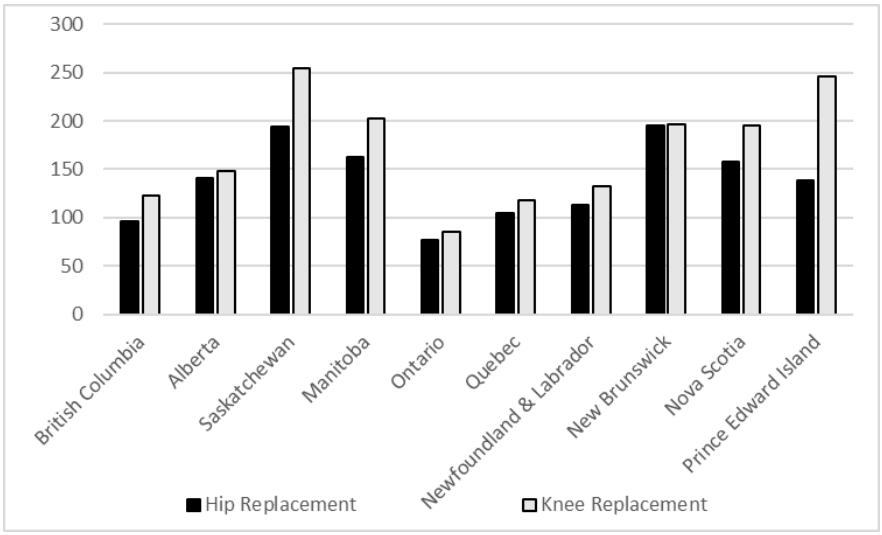
According to the Canadian Institute for Health Information (CIHI), 30% of patients requiring a hip or knee replacement or cataract surgery did not have their procedures done within the recommended wait times. Wait times for hip and knee replacement surgeries range from 255 (Saskatchewan) to 77 days (Ontario) dependent upon the type of surgery and province in which it is being performed (Figure 10).

We are assuming that these wait times are indicative of the time that elapses between the recommendation by the orthopedic surgeon that the surgery be undertaken and the actual surgery being completed. Despite performing more surgeries, many provinces have seen increases in wait times for these procedures across Canada since 2017.

[18] Kathy Reid, Managing the chronic pain crisis in Canada – the nursing perspective.

[19] Manon Choinière, Philip Peng, Ian Gilron, Norman Buckley, Owen Williamson, Audree Janelle-Montcalm, Krista Baerg, Aline Boulanger, Tania Di Renna, Gordon Allen Finley, Howard Intrater, Brenda Lau, John Pereira, Accessing care in multidisciplinary pain treatment facilities continues to be a challenge in Canada, BMJ Journals, Volume 45, Issue 12, October 6, 2020 http://orcid.org/0000-0001-5192-7285

Figure 10: Median wait (in days) for orthopedic surgery, by Province, 2019



Source: Canadian Institute for Health Information. Wait Times for Priority Procedures in Canada — Data Table. Ottawa, ON: CIHI; 2021.

COVID has caused backlogs in surgeries leaving patients suffering from pain as many operating rooms remain empty. In a study, it was estimated that between March and June of 2020, a backlog of approximately 150,000 surgeries was created in Ontario alone that will take 84 weeks or 588 days to clear.[20] Even before COVID, the wait time in Ontario for orthopedic surgery was 213 days.[21] We are assuming that this statistics includes the wait time for the first appointment with an orthopedic surgeon that, according to Health Quality Ontario, can take between 44 and 99 days, dependent upon the priority assigned to the patient.

Financial Barriers

Despite the biopsychosocial model being the gold standard for treating pain, the services shown to be effective, such as psychotherapy and physiotherapy, are not provided for in the public system, making access difficult for many who do not have private insurance and must pay out of pocket.

We as Canadians refer to our medical system as “universal”; however, the only services that are universal across all provinces are those associated directly with physicians, including nerve injections and diagnostics. Physician services are fully funded by provincial/territorial public health care plans while other health services that are part of a biopsychosocial model, are either not covered or only partially covered, depending on the province in which the service is being provided.

Referencing Figure 11 below, as compared to Ontario, some of the west coast provinces, namely BC and Saskatchewan, seem more likely to allocate budget supporting the biopsychosocial model or the multi-modal (versus a mono-modal) model of treatment for chronic pain which includes services that address not only the physical aspects of chronic pain but also the psychological and social aspects.

[20] Jonathan Wang MASc, Saba Vahid PhD, Maria Eberg MSc, Shannon Milroy MSc, John Milkovich, Frances C. Wright MD MEd, Amber Hunter MBA, Ryan Kalladeen HBA, Claudia Zanchetta RN MN(ACNP), Harindra C. Wijeysundera MD PhD, Jonathan Irish MD MSc n, “Clearing the surgical backlog caused by COVID-19 in Ontario: a time series modelling study”, CMAJ 2020. doi: 10.1503/cmaj.201521; early-released September1, 2020.
[21] Randall Denley, *Ontario finally has a plan for surgical backlogs: It needs a better one*, National Post, August 13 2020.

Figure 11: Provincially paid medical/health services

Provincially Paid Medical/Health Services											
	Doctor *	**Pod-iatry**	**Rx**	**Chiro-paractic**	**Physical Therapy**	**Chronic Disease Prevention and Mngmt**	**Acu-puncture**	**Massage Therapy**	**Naturo-pathy**	**Mental Health Service**	**Occupational Therapy**
BC	Y	P		P	P		P	P	P		
AB	Y	P								PO	
SK	Y		14		Y					Y	Y
MB	Y			7							
ON	Y	P	25								
QC	Y										
NL	Y										
NB	Y		NI								
NS	Y									Y	
PE	Y	L	L			Y				Y	
YT	Y										
NT	Y		Y		Y						Y
NU	Y		Y		Y						Y
*	Including nerve injections and diagnostics										
Y	Covered										
P	Partially Covered										
PO	Psychiatric Only										
L	Covered for Low Income										
NI	Covered for those without insurance										
7	Seven visits per year										
25	Covered for those under the age of 25 and over the age of 64										
14	Covered for those under the age of 14 and over the age of 64										

Source: Provincial/Territorial websites

Pharmaceuticals are the most used treatment for pain at 91% of individuals with chronic pain. Of these, 69% have used over-the-counter medication and/or 65% have used prescribed medication (Figure 12). Cannabis has been reported by 74% of the patients who have tried it (34%), to be effective at controlling their pain; this is the highest reported level of effectiveness of all physical or medicinal treatments methods.

Around 17% of Canadians experiencing long-term pain avoid the use of opioids while 25% curtail the use of them.

Four in five people suffering from chronic pain have tried other therapies such as physical therapy, yoga, meditation, surgery, medical devices and others.

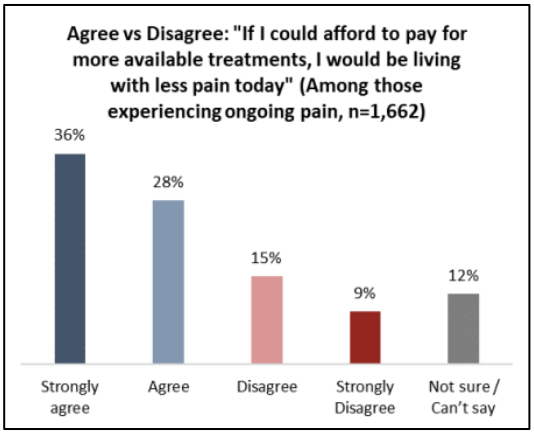
Figure 12: Chronic pain treatment options and usage

	Among those experiencing ongoing pain, by Pain Experience			
	Total (n=1,662)	Minimally Affected (n=582)	Moderately Affected (n=576)	Severely Affected (n=503)
NET: Pharmaceutical	91%	89%	92%	94%
Prescribed pain medications	65%	59%	59%	77%
Over-the-counter pain medications	69%	64%	68%	76%
Cannabis (prescribed or not)	34%	24%	39%	39%
NET: Medical Treatments	29%	28%	21%	38%
Surgery	16%	15%	12%	22%
Other medical interventions	10%	8%	6%	17%
Medical devices	8%	6%	8%	10%
NET: Other physical treatments	79%	77%	80%	82%
Exercise/Therapeutic movement/Yoga	58%	58%	58%	57%
Other lifestyle (diet/habits)	32%	23%	35%	40%
Physical therapy/Physiotherapy	45%	42%	42%	51%
Manual therapy (a type of physical therapy involving muscle/joint manipulation/treatment)	44%	41%	41%	51%
Other physical treatment(s)	10%	4%	7%	19%
NET: Non-physical or psychological treatment	24%	17%	22%	34%
Counseling/therapy	13%	12%	10%	17%
Support groups	4%	1%	2%	10%
Meditation	16%	13%	12%	24%
Hypnosis	1%	*%	1%	1%
Other psychological treatment(s)	3%	*%	7%	2%

Source: Angus Reid Institute, Chronic Pain Cost: access to treatment pose significant barriers for those suffering the most, 2019

Pain sufferers say that if they could afford it, they would use other treatment modalities more frequently such as manual and physical therapy and believe that it would improve their quality of life (Figure 13). Although health insurance coverage helps with the access to and popularity of treatments other than pharmaceuticals; 49% of chronic pain sufferers say that they pay for most, if not all, of their pain treatments out-of-pocket.[22]

Figure 13: Willingness to access other chronic pain treatments



Source: Angus Reid Institute, Chronic Pain Cost: access to treatment pose significant barriers for those suffering the most, 2019

[22] The Angus Reid Institute, *Canadians in Chronic Pain*

The cost of delayed treatment

In a report authored by The Canadian STOP-PAIN Project in 2010 estimated that the cost to individuals waiting for pain treatment at a multidisciplinary (multi-modal) pain treatment facility in Canada is $17,544 per year.[23]

Canada's current level of investment into chronic pain is inadequate.

In an article titled *Research Funding for pain in Canada* written in 2009, the total CIHR funding for pain research in the past five years was $3.8bn, representing approximately 1.1% of CIHR funding. Only two randomized controlled trials examining treatments for chronic pain have been funded since 1999 (over a 10-year period).

With respect to total spending on research and development in the health field, only 0.25% of health research funding goes to pain research.

Considering the overall burden of pain in Canada, pain research is underfunded. In this report the annual direct costs of pain was pegged at an estimate of $6.02bn. This compares to $2.5bn per year in 1998 for the cost of direct health care for cancer. The total amount of research funding for cancer in 2008 was $390m.

Using these figures, the proportion of research funding to direct health care costs is approximately 41 times higher for cancer than for chronic pain. Even allowing for increases in the amount of direct health care resources expended on cancer, and allowing for a difference in valuing mortality in cancer and pain, it is clear that pain research is comparatively underfunded.[24]

The fragmented market for chronic pain treatment in Canada

We view the primary healthcare market as very fragmented with a myriad of medical clinics spread across Canada, and the majority of these clinics are owned and operated by physicians. A lack of professional management and other associated infrastructure limits their ability to grow beyond a single location or small, regional network of clinics.

Federal

Referring to the same study that highlighted long wait times (19), only 222 Canadian clinics could be considered multidisciplinary pain clinics of which only 131 met the qualifications of being staffed with professionals from a minimum of three different disciplines (including at least one medical specialty) and whose services were integrated within the facility. There were 104 respondents (Figure 14).

[23] Guerriere. D., et al..The Canadian STOP-PAIN Project-Part 2: What is the cost of pain for patients on the waitlists of multidisciplinary pain treatments facilities? Can I Anesth. 2010, 57:p. 549-558.

[24] Mary E Lynch MD FRCP1, Donald Schopflocher PhD2, Paul Taenzer PhD3, Caitlin Sinclair BSc1, Research funding for pain in Canada, Pain Res Manage 2009;14(2):113-115.

Figure 14: Provincial distribution of multidisciplinary pain treatment facilities (MPTFs)

	2005-2006 (N)	2017-2018 (N)	2017-2018 per population	2017-2018 urban area (n, %)
BC	7	13	1/381K	13 (100)
AB	12	18	1/238K	16 (89)
SK	13	3	1/385K	3 (100)
MB	1	4	1/336K	4 (100)
ON	35	25	1/568K	24 (96)
QC	26	28	1/298K	27 (96)
NL	1	1	1/154K	1 (100)
NB	3	5	1/136K	4 (80)
NS	4	7	1/152K	3 (43)
PE	0	0	1/527K	N/A
TERR	0	0	0/123K	
Canada	**102**	**104**	**1/354K**	**95 (91)**

Source: Manon Choinere, Philip Peng et al, Accessing care in multidisciplinary pain treatment facilities continues to be a challenge in Canada

Ontario

NeuPath has identified more than 60 chronic pain management clinics in Ontario alone, many of which are single-location clinics without broad programs or scaling efficiencies.

In support of this data, McMaster University compiled an updated list in March of 2019 that listed 67 pain clinics in Ontario. In contrast, The Toronto Star, identified 99 pain clinics in Ontario.[25] The difference in the McMaster University numbers versus the Toronto Star's estimate of pain clinics may be that McMaster lists only clinics it considers to be multidisciplinary.

The size of the pain treatment market

According to Prescient & Strategic Intelligence, the global chronic pain treatment market was valued at $77.8bn in 2019, with North America being the largest market by region, and is forecasted to grow at a compounded annual growth rate of 6.5% during the forecast period of 2020–2030 to $151.7.[26]

North America is the largest pain treatment market by region, due to the high prevalence of chronic diseases, the large number of chronic pain clinics, aging population and increasing awareness of chronic pain issues leading to a high adoption of non-opioid pain management options.[27]

Recent developments in the chronic pain market shows increased access to better data regarding chronic pain. The implications are that chronic pain is in the process of beginning to receive formal recognition from insurers, which in turn implies there will be increased coverage over time.

[25] Theresa Boyle and Jesse McLean, *'That's an injection mill', Ontario's top-billing pain doctors capitalize on province's rules, running up the public's tab for chronic pain management*, Toronto Star, September 28, 2020

[26] Prescient & Strategic Intelligence, *Global Chronic Pain Treatment Market*, https://www.psmarketresearch.com/market-analysis/chronic-pain-treatment-market#:~:text=Chronic%20Pain%20Treatment%20Market%20Overview,period%20(2020%E2%80%932030), September 2020

[27] Prescient & Strategic Intelligence, *Global Chronic Pain Treatment Market*

The World Health Organization - Chronic Pain, a Disease in Its Own Right

In May of 2019, the World Health Organization (WHO) classified chronic pain as a disease in its own right. The WHO adopted the new edition of International Classification of Disease codes (ICD-11). ICD is a standard diagnostic tool created by the WHO, for monitoring the incidence and prevalence of diseases and related conditions. ICD-11 will be the first version to include chronic pain. The chronic pain classification was developed by the Task Force of the International Association for Pain (IASP) and is based on the current scientific evidence and the biopsychosocial model.

These chronic pain codes have the potential to provide better and updated data for improving overall patient and health care. The data obtained from these newly added codes should provide a better understanding of the complexity of chronic pain and allow the design of clinical algorithms to track patient care outcomes.

Additionally, the classification of chronic primary pain as a disease should lead to governments to take a new interest in pain and how their health systems assess and treat it. The WHO ICD revisions are usually followed by governments and taken into consideration when re-assessing their health systems and which services to fund.

The new chronic pain codes included in ICD-11 should also facilitate enhanced insurance reimbursement for a variety of chronic pain treatments accommodating new procedures as well as new technologies. With creation of these diagnostic codes, it will be much easier to track data relating to the actual cost of chronic pain to the medical system and to society as a whole. We anticipate increased attention brought to the prevalence and cost, thus increased funding to the treatment and research of chronic pain.

Speaking of the new classification by the WHO and chronic pain codes, Rolf-Detlef Treede, Vice-Dean for Research at the Medical Faculty Mannheim of Heidelberg University in Germany and former President of the International Association for the Study of Pain (IASP) said, "This will have major implications for health care. We should see chronic pain finally getting the recognition it deserves."

Formation of the Canadian Task Force

The Canadian Pain Task Force was formed in March of 2019 with a three year mandate to provide advice to Health Canada regarding evidence and best practices for the prevention and management of chronic pain. Two of its three mandated papers have already been delivered to whom it reports, the Associate Assistant Deputy Minister of the Controlled Substances and Cannabis Branch of Health Canada. The Task Force has been assigned the following responsibilities:

- Assess how chronic pain is currently addressed in Canada,
- Identify best and leading practices, potential areas for improvement and elements of an improved approach to prevention and management of chronic pain in Canada, and
- Provide priority actions to ensure that people in Canada dealing with chronic pain are recognized and supported and that pain is understood, prevented and effectively treated across Canada.

Sport medicine

Sports medicine is not a medical specialty in itself. A sports medicine physician is a physician who has completed a residency plus elected to receive specialized training in sports medicine. Within Canada, a CASEM Diploma in Sport and Exercise Medicine is the accepted credential for a Sports Medicine physician. Some, but

not all, sports medicine healthcare providers have surgical training, usually as orthopedic surgeons. Other medical specialists that may work in the sports medicine field are: physical therapists, certified athletic trainers, nutritionists amongst others.

Some of the reasons that may cause an individual to seek out a sports medicine specialist are:

- Ankle Sprain
- Fracture
- Knee and Shoulder Injury
- Tendonitis
- Exercise-induced Asthma
- Heat Illness
- Concussion
- Eating Disorder
- Cartilage Injury
- Advice on nutrition, supplements, exercise and injury prevention

The Market Size of Sports Medicine.

Worldwide

The sports medicine market is expected to grow from US$5.5bn in 2020 to US$7.2bn by 2025, at a CAGR of 5.7% during the forecast period. Growth in the sports medicine market is primarily driven by factors such the increasing incidences of sports injuries, continuous influx of new products & treatment modalities, developments in the field of regenerative medicine, and rising demand for minimally invasive surgeries.[28]

North America

The size of the North American sports medicine market is US$2.53bn in 2020 and is estimated to be growing at CAGR of 7.6% to reach US$3.65bn by 2025.[29]

"Factors such as the rising popularity of sports and physical activity, increasing awareness regarding the prevention & treatment of sports injuries, and growing investments in sports medicine are driving the North American sports medicine market."[30]

Concussion

A concussion is a traumatic brain injury caused by a blow to the head or jolt to the body. A concussion can result in temporary changes in a person's normal functioning, especially in areas of attention and balance. Common symptoms include double vision or visual changes, confusion, being dazed, dizziness, headache, vomiting, and memory loss for what happened before or after the injury.

[28] MarketsandMarkets, Sports Medicine Market by Product (Body Reconstruction, Body Support & Recovery), Application (Knee Injuries, Shoulder Injuries, Foot & Ankle Injuries), End User (Hospitals, Physiotherapy Centers & Clinics) - Analysis & Global Forecast to 2025, https://www.marketsandmarkets.com/Market-Reports/sports-medicine-devices-market-751.html

[29] Market Data Forecast, North America Sports Medicine Market Research Report – Segmented By Product, By Application & By Country (United States, Canada and Rest of North America) - Industry Analysis, Size, Share, Growth, Trends, Forecast (2020 to 2025), Market Data Forecast, February 2020, https://www.marketdataforecast.com/market-reports/north-america-sports-medicine-market

[30] MarketsandMarkets, Sports Medicine Market by Product (Body Reconstruction, Body Support & Recovery), Application (Knee Injuries, Shoulder Injuries, Foot & Ankle Injuries), End User (Hospitals, Physiotherapy Centers & Clinics) - Analysis & Global Forecast to 2025

The Size of the Concussion Market

Worldwide

"The global concussion market size was valued at US$6.8bn in 2019 and is expected to expand at a compound annual growth rate (CAGR) of 3.6% from 2020 to 2027. The rising number of road accidents and sports injuries, coupled with the growing vulnerable aging population, are major factors driving the market. In addition, increasing research activities on concussion diagnosis and treatment as well as the adoption of technologically advanced products are few other factors contributing to market growth."[31]

Canada

There are 200,000 concussions annually in Canada.[32] Sports-related concussion is "among the most complex injuries in sports medicine to diagnose, assess and manage."[33] The number of concussions in Canada seem to be increasing as evidenced by the number of emergency department visits for brain injuries in Ontario and Alberta, which have increased 28% over the last 5 years. Of all the brain injuries in Ontario and Alberta, 26% were sports related.[34]

Workplace Health Services

According to NeuPath in its 2020 Management's Discussion and Analysis (MD&A), spending on employee benefit group life and health plans in Canada was estimated to be $46.1bn in 2019 with $21.9bn spent on medical benefits. Deloitte found that employers reaped a significant return on investment by offering mental health programs to employees.[35] Similar benefits could be garnered by offering programs around chronic pain, thus reducing absenteeism and increasing work productivity. Where there are positive returns to be made, we would expect commensurate investment.

NeuPath growth strategy

NeuPath has a stated strategy to grow organically and by acquisition. Apart from increasing capacity clinic utilization, other organic strategies include building out surgical units and leveraging digital health technology.

Organic

NeuPath intends to grow its two brands organically by increasing the capacity utilization of each of these clinics which, as at the 12 month period ended December 2020, was at 54% vs 56% in 2019. Capacity was negatively

[31] Grand View Research, Concussion Market Size. Share & Trends, Analysis Report By Assessment & Treatment (Diagnosis, Treatment). By Region (North America, Europe, AsiaPacific, Latin America, Middle East & Africa), And Segment Forecasts 2020-2027, September 2020, https://www.grandviewresearch.com/industry-analysis/concussion-market

[32] SCSC, Evidence, 20 February 2019, 1855 (Dr. Charles Tator, Director, Canadian Concussion Centre – University Health Network)

[33] McCrory et al., Consensus statement on concussion in sport—the 5th international conference on concussion in sport held in Berlin, October 2016 (2017) p.839

[34] Canadian Institute for Health Information, Heads-Up on Sports-Related Brain Injuries, https://www.cihi.ca/en/heads-up-on-sport-related-brain-injuries

[35] Deloitte Insights, *The ROI in workplace mental health programs: Good for people, good for business A blueprint for workplace mental health programs,* , 2019

impacted in 2020 by COVID-19 and the temporary closure of a medical clinic due to a flood in Q3/20. At this level of capacity utilization, NeuPath provides care to approximately 11,000 patients annually.

Acquisitions

NeuPath will look to opportunistically buy established clinics or smaller single-location pain management and sports medicine clinics. The Company plans to focus its acquisition plans primarily in Alberta and British Columbia.

The focus on Alberta and British Columbia is due to the differences in the west coast provinces with respect to healthcare; the more west one moves across Canada, the more receptive the attitudes towards private health care. Additionally, as previously illustrated in Figure 11, the further west we move, the more generous public funding for non-drug pain therapies which support NeuPath's multimodal approach to chronic pain, sports medicine and concussion treatments.

Neupath has the business infrastructure, experienced management team and standardized systems and procedures required to operate and rapidly integrate new clinics into its existing corporate structure. NeuPath believes that it can be a leader in the consolidation of what seems to be the chronic pain treatment, the sports medicine and concussion treatment markets which are poised for much more attention, funding and growth.

Surgical Units

The recently acquired HealthPointe clinic comes with two partially-owned surgical rooms. NeuPath is working to receive approval to undertake surgical procedures at this clinic and is also building surgical rooms in three other of its clinics.

It is not new for privately paid surgeries to be offered in Canada. CareRx Corporation, previously Centric Health, used to be Canada's largest independent surgical provider with five facilities across four provinces (Ontario, British Columbia, Alberta and Manitoba). It completed private paid non-insured surgeries and diagnostics, government outsourcing of insured surgeries and diagnostics and other procedures funded by third-party payors including Workers Compensation.

CareRx sold its surgical unit that was generating approximately $46m in revenue and $6.7m in EBITDA (14.6% margin) for $35m to Kensington Capital Partners which rolled the surgical centres into a new vehicle called Clearpoint Health Network Inc. Arguably, this was a somewhat distressed sale as CareRx was under some financial distress at the time and needed to reduce its leverage as quickly as possible. Under less stress, these assets may have sold at higher multiples. An addition of surgical units to NeuPath's network of clinics could improve its margins and add to its revenue and profitability growth.

As outlined earlier in this report, there are extensive wait times for orthopedic surgeries across Canada that have been exacerbated by COVID 19. Some provincial governments have already alluded to a willingness to outsource some surgeries to private clinics in an effort reduce the historically high backlog and wait times.

Additionally, NeuPath management states that insurers are sometimes willing to pay privately for surgeries that alleviate chronic pain as this can be less expensive than funding the loss of productivity through short-term disability while employees suffering from chronic pain wait in these very long queues.

Apart from the 2 surgical units that came with the HealthPointe acquisition, NeuPath is building 2 fluoroscopy suites in Ontario to further penetrate this market.

Digital Engagement Platform for Chronic Pain – accelerate onboarding

NeuPath used insights from its medical specialists, patients and its contract research organization to build its digital health solution for chronic pain. This remote pain management app will utilize a more holistic, patient-centered approach to chronic pain management by including education and tools around sleep, exercise, diet, and behavior modification in addition to traditional pharmacotherapy approaches for managing chronic pain. This technology will serve to maintain touchpoints with clients between actual visits to its clinics and to provide an offering to communities that do not have ready access to chronic pain medical services.

Moving forward, NeuPath could further commercialize this digital engagement platform driving growth in revenue and profitability. As context, Livongo (formerly LVGO-Q), built a similar digital engagement platform for the self-management of first diabetes, then hypertension, weight management and behavioural health. Livongo was acquired by Teledoc. The acquisition of Livongo by Teledoc can be used as a case study for the opportunity that NeuPath's digital platform may provide.

The acquisition by Teledoc valued Livongo at $18.5bn or 37x next year's revenues. Livongo had, at that time, 410,000 plus patients over 1,300 clients. Livongo's business model was to have employers pay for the service on behalf of its employees. At the time of the acquisition, Livongo had client growth of over 75%, revenue growth of over 125% and a client retention rate of 94%. In the presentation deck prepared by Teledoc and Livongo addressing the benefits of the merger, it is suggested that the use of Livongo by diabetes patients saved $1,908 per year in gross medical savings.

In a 2017 study published in the Journal of the American Medical Association, chronic pain patients who received telehealth services in addition to in-person care were twice as likely to report 30% less pain after three months. This proprietary telehealth offering could serve to differentiate NeuPath clinics while providing them a competitive advantage to patient acquisition and retention and could greatly add to the future value of the Company once commercialized as evidenced by the takeout valuation of Livongo.

NeuPath's wholly owned subsidiary CompreMed that offers workplace health services and independent medical assessments to disability insurers and employers, could be an excellent vehicle with which to offer NeuPath's digital health capabilities to employers and insurers.

Offering a digital engagement platform to employees to help them self-manage their chronic pain as Livongo does with diabetes could be a logical step. Employers and insurance companies offering employees a tool to assist them in managing their chronic pain, thus reducing lost productivity, seems like a win-win.

Deloitte, in a study on mental health programs offered by a group of Canadian companies, found that the annual return on investment (ROI), based on $1 invested, on these programs was $1.62 among the seven companies that provided at least three years' worth of data. Companies whose programs had been in place for

three or more years had a median annual ROI of CA$2.18.[36] There has been of late, a significant focus on mental health and well-being and understandably so; however, chronic pain is the number one cause of disability and disease burden globally.[37]

Given that the services of chiropractors, physiotherapists, nutritionists, psychologists and other health care providers that contribute to the well-being of chronic pain sufferers are often not covered by provincial health plans, it may become incumbent upon employers and insurers to provide more assistance with chronic pain management, reducing their respective costs of short and long-term disability and other productivity issues related to this most debilitating disease.

In conclusion, with potential lost productivity due to chronic pain of $48.3bn[38] and a potential ROI of at least CA$2.18, it would be a logical decision for companies to offer a digital platform to help employees manage chronic pain.

Risks

Taking Advantage of OHIP's Generous Coverage of Nerve Injections

In an investigation conducted by The Toronto Star reporters, Theresa Boyle and Jesse McLean, the use of nerve block injections in chronic pain management in Ontario has been "skyrocketing." Ontario's tax-funded public health care plan (OHIP) has paid out more than $420m for nerve blocks since 2011. Refer to Figure 6 for additional context.

Any two of Ontario's three top-billing pain doctors bill more for nerve block injections than does every pain doctor combined in the whole province of British Columbia.

In 2017-18, one doctor billed OHIP for nearly 40,000 nerve block injections at a cost to OHIP of $2.2m. There are now 384 doctors eligible to practice in Ontario's pain clinics up from 62 five years ago. And yet, according to Theresa Boyle and Jesse McLean, there doesn't seem to be much evidence that regular repeat injections are effective (The American Society of Interventional Pain Physicians recommend injections only once every three months).

Currently OHIP will pay for eight nerve block injections per patient per day without a limit on the frequency of visits per year.[39]

In 2018, the Province tried to restrict the number of nerve blocks to a limit of 4 per patient visits with a maximum of 4 visits per year redirecting the $50m annually in savings to higher quality care. A large part of the

[36] Deloitte Insights, The ROI in workplace mental health programs: Good for people, good for business A blueprint for workplace mental health programs, 2019

[37] Sarah E.E. Mills, Karen P. Nicolson, and Blair H. Smith "Chronic Pain: a review of its epidemiology and associated factors in population-based studies" BR J Anaesth.2019 Aug; 123(2): e273-e283. Published online 2019 May 10.doi: 10.1016/j.bja.2019.03.023

[38] Deloitte, The cost of pain in Australia

[39] Theresa Boyle and Jesse McLean, 'That's an injection mill', Ontario's top-billing pain doctors capitalize on province's rules, running up the public's tab for chronic pain management.

issue is that funding for clinics that offer alternative services such as physiotherapists, psychologists, and social workers is inadequate.

Impact on NeuPath

Ontario pain clinics argue that changes would put them out of business and leave patients without an effective treatment. If the Province does choose to restrict the funding for nerve block injections, there could potentially be a drop in revenue for NeuPath's Ontario clinics until those revenue are replaced by alternative, potentially "higher quality" treatments. NeuPath is cushioning itself against this possibility by focusing on consolidating clinics in the western portion of Canada where the use of nerve injections are less prevalent, more public funding exists for the higher quality treatments such as physiotherapy, psychologists and social workers and where there is more of an appetite for private health care.

Financial Analysis

Due to NeuPath's limited financial history, our review period comprises F2019 and F2020. Given NeuPath has a December year-end, we use fiscal years and calendar years interchangeably.

NeuPath reports revenues in two segments:

- **Clinic revenue** –medical services provided through NeuPath's operating subsidiaries,
- **Non-clinic revenue** – physician staffing, provision of physicians for provincial correctional institutions, federal correctional institutions, and hospital health departments across Canada; and from contract research services provided to pharmaceutical companies and clinical research organizations.

Figure 15: NeuPath quarterly revenues and costs ($000s)

December year-end	Q1/19	Q2/19	Q3/19	Q4/19	2019	Q1/20	Q2/20	Q3/20	Q4/20	2020
Clinic revenue	10,243	12,150	11,967	12,234	**46,594**	10,792	10,452	11,434	12,243	**44,921**
Non-clinic revenue	678	855	702	809	**3,044**	810	770	571	567	**2,718**
Revenue	**10,921**	**13,005**	**12,669**	**13,043**	**49,638**	**11,602**	**11,222**	**12,005**	**12,810**	**47,639**
Growth						6.2%	-13.7%	-5.2%	-1.8%	-4.0%
Cost of goods sold	(8,803)	(10,359)	(10,179)	(10,340)	(39,681)	(9,371)	(8,833)	(9,424)	(10,292)	(37,920)
Gross profit	2,118	2,646	2,490	2,703	9,957	2,231	2,389	2,581	2,518	9,719
Operating expenses	(2,401)	(2,819)	(2,457)	(2,941)	(10,618)	(2,364)	(2,455)	(2,539)	(3,181)	(10,539)
Operating income/(loss)	**(283)**	**(173)**	**33**	**(238)**	**(661)**	**(133)**	**(66)**	**42**	**(663)**	**(820)**

Source: Company reports, KRC Insights

During F2020, the largest variable impacting revenues was COVID-19. As a result of COVID-19, NeuPath temporarily closed three clinics from late March to early May (see Q2/20 in Figure 15) and also limited the number of patients in clinics to ensure all safety protocols were adhered to. Consequently, in 2020, capacity utilization decreased to 54% vs 56% for 2019.

In 2020, gross margins improved to 20.4% from 20.1% in 2019. The benefit from cutting costs and Canadian Emergency Wage Subsidy (CEWS) offset the negative impact of lower revenues.

Total operating expenses were maintained at $10.5m in 2020 vs $10.6m in 2019 after including $0.3m CEWS benefit in 2020.

In summary, despite the impact of COVID, NeuPath's revenues declined only 4.0% in F2020. The company was able to offset some of the lost revenues with cost reductions and CEWS benefits resulting in only a marginal decline in profitability.

Capital structure

NeuPath is well capitalized (Figure 16) to fund ongoing operations and potential acquisitions:

Figure 16: NeuPath total capital employed at 31/12/20 ($000s)

	31/12/20
Share capital	32,825
Warrants	12,910
Contributed surplus	430
Deficit	-18,541
Total equity	27,624
Total debt	12,675
Total capital employed	40,299

Source: Company reports, KRC Insights

The long term debt of $4.3m (Figure 17) comprises two facilities with Royal Bank of Canada:

- Facility #1 ($3.0m) was renewed in February 2021 for another 12 months, and
- Facility #2 ($1.2m) matures in September 2023.

Figure 17: NeuPath total debt at 31/12/20 ($000s)

	Current	Non-current	Total
Long term debt	3,091	1,238	4,329
Lease liability	1,127	3,545	4,672
Due to related parties		3,674	3,674
Total debt	4,218	8,457	12,675

Source: Company reports, KRC Insights

The $3.7m owing to related parties is due to Bloom Burton & Co. Inc. (BBCI), a 2% shareholder of the company. It is non-interest bearing, unsecured and due upon demand. BBCI has agreed not to call the loan prior to 31/12/21.

Of the $10.8m of cash on hand at 31/12/20, $3.2m was used for the HealthPointe acquisition leaving $7.6m to fund future acquisitions.

Forecasts

Revenues

NeuPath's clinic revenues depend upon patient occupancy levels, the medical and ancillary services provided by the physicians/related professionals and the charges or payment rates for such services. In F2020, OHIP reimbursements comprised 93% of revenues.

The three largest variables in our revenue forecasts includes:

- Capacity utilization (increasing to 59% for 2021E and 62% in 2022E). Apart from the benefit from marketing strategies employed by the company to improve throughput, post-COVID recovery is the primary driver of increased utilization. Management indicated that as the recovery gained strength and now recently faltered, it can see the correlation between lockdowns and patient intake. This implies that with vaccination gaining momentum, especially in Ontario, we should see a sequential recovery in revenues through the balance of 2021.
- Addition of fluoroscopy suites (2 suites at non-HealthPointe locations)
- Addition of the HealthPointe (effective 8/2/21)

Figure 18: NeuPath revenue growth

December year-end	2019	2020	2021E	2022E
Capacity utilization	56%	54%	59%	62%
Clinic revenue	46,594	44,921	59,745	62,732
		-3.6%	33.0%	5.0%
Non-clinic revenue	**3,044**	**2,718**	**2,772**	**2,828**
		-10.7%	2.0%	2.0%
Revenue	**49,638**	**47,639**	**62,517**	**65,560**
Total revenue growth	-	-4.0%	31.2%	4.9%

Source: KRC Insights

Management recently hired a marketing person to improve throughput at the clinics. We view "full" capacity at ~80% which implies that our 62% capacity utilization forecast for 2022E leaves ample room to grow revenues within the existing clinic network.

Gross margins

Gross margins have remained stable during the review period (Figure 19).

Figure 19: NeuPath historical and forecast gross margins

Year	Gross margin	Explanation
2019	20.1%	
2020	20.4%	Slight increase a function of COVID-related cost management and CEWS benefits.
2021E	21.0%	Increased capacity utilization, addition of higher margin fluoroscopy suites,
2022E	22.0%	Increased capacity utilization at both clinics and fluoroscopy suites

Source: Company reports, KRC Insights

We expect that gross margins will improve going forward as capacity utilization recovers post-COVID, and contributions from the addition of higher margin fluoroscopy suites at non-HealthPointe facilities.

Expenses

Total operating expenses includes General & Administrative, Occupancy costs (facilities leases), and Depreciation and amortization (Figure 20). These expenses remained stable during the review period.

Figure 20: NeuPath total costs ($000s)

December year-end	2019	2020	2021E	2022E
Total operating expenses	10,618	10,539	12,503	12,162

Source: Company reports, KRC Insights

Total expenses will increase in 2021E due to the HealthPointe acquisition, but are forecast to decline in 2022E due to lower Depreciation and amortization costs as Intangible Assets are now fully depreciated (4 -year straight line).

EBITDA

Due to increased revenues, improving capacity utilization, stable cost base, we expect that EBITDA will improve from $2.1m (4.4% margin) in 2020, to $3.1m (5.0% margin) in 2021E and $4.3m (6.5% margin) in 2022E.

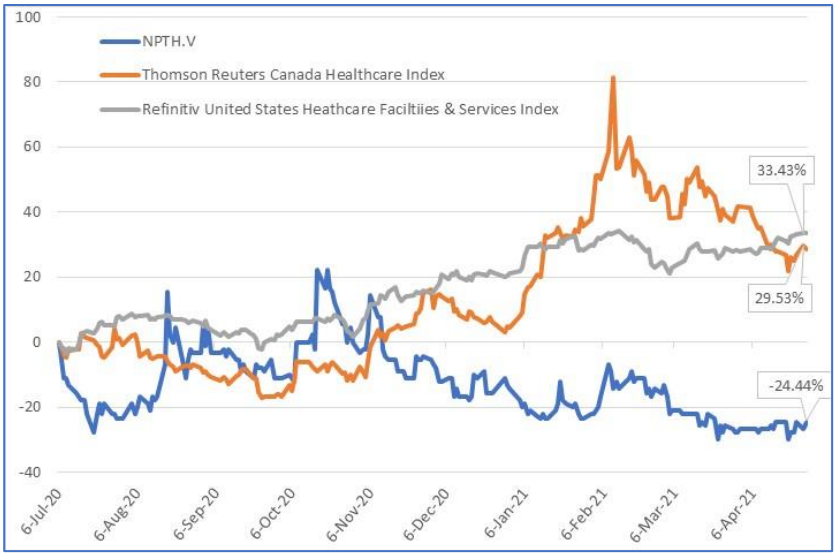
However, as mentioned above, we are only assuming 62% capacity utilization in 2022E. At full capacity (80%), NeuPath has the potential to more than double EBITDA, by generating ~$9.1m (10.9% margin). Based on a linear relationship between capacity utilization and EBITDA, our analysis shows that every 1% increase in capacity utilization generates ~$270k in additional EBITDA. Put another way, every 4% increase in capacity utilization generates just over $1.0m in additional EBITDA.

Valuation

To provide an overview of NeuPath's share price trend since its initial listing on 6/7/20, we compare the NeuPath share price to two indices (Figure 21):

- Thomson Reuters Canada Healthcare Index, and
- Refinitiv United States Heathcare Facilities & Services Index.

Figure 21: NeuPath share price vs Healthcare Index (Canada) and Healthcare Facilities and Services Index (US) (pricing at 26/4/21)

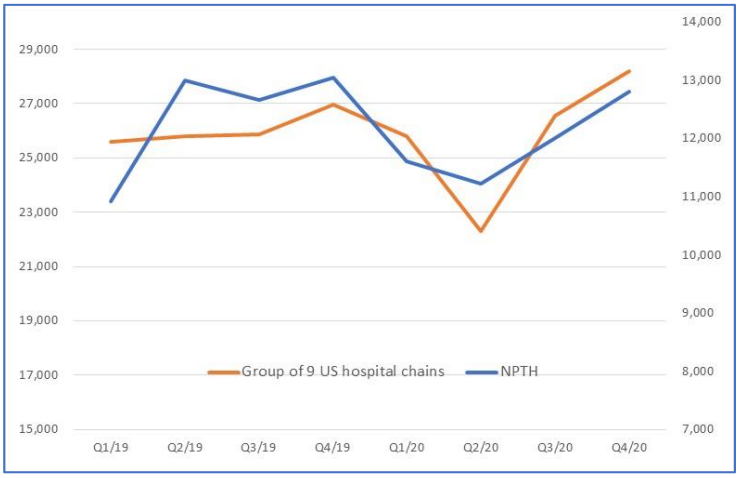


Source: Refinitiv Eikon, KRC Insights

Despite weathering the COVID downturn well, the NeuPath share price has under performed relative to these indices. As a reference point as to how well NeuPath weathered this dynamic, we measured the extent of NeuPath's revenue decline vs the decline experienced by nine major US hospital groups (Figure 22). Refer to Appendix II for a list and description of these companies.

While there are obvious differences between Neupath and US hospitals, we would argue that essential services provided by hospitals would recover faster than that of non-essential services provided by NeuPath. However, that was not the case, revenues recovered almost at the same rate, underscoring the resiliency/relevance of NeuPath's services.

Figure 22: NeuPath revenue trend vs 9 US hospital groups

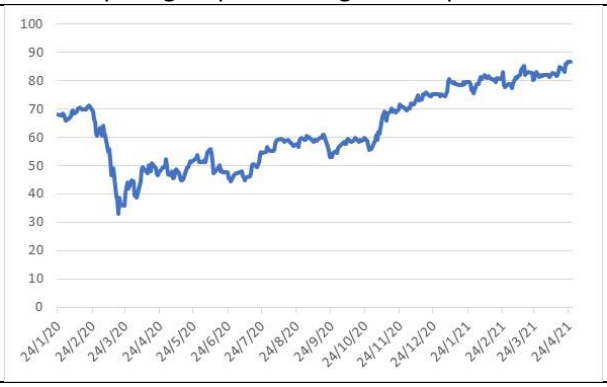
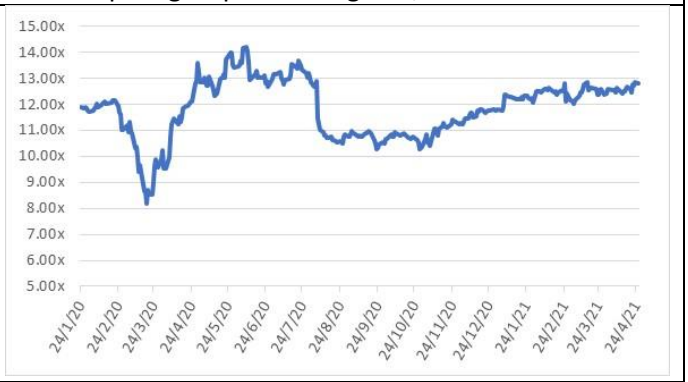


Source: Refinitiv Eikon, KRC Insights

This recovery in revenues and outlook is being reflected in their share prices and valuations (Figure 23). Share prices (and hence valuations) declined into March 2020 as the impact of COVID was priced in by the capital

markets. Now, share prices (as measured by the average for the group) are higher than prior to the onset of COVID, while valuations (enterprise value/next 12-month EBITDA) are essentially back to pre-COVID levels, implying levels of profitability are higher for this group now than prior to the onset of COVID. In fact, this group's next twelve month's EBITDA is 4.3% higher in 27/4/21 than on 31/2/20 implying a full recovery from COVID slow down.

Figure 23: 9 US-based hospital groups – Average share prices (proxy index) and average EV/Fwd EBITDA

9 US hospital groups – average share prices	9 US hospital groups – Average EV/Fwd EBITDA
	

Source: Refinitiv Eikon, KRC Insights

As this pertains to NeuPath, its share price has not undergone the same recovery despite its revenues recovering in line with that of the US hospital group. In addition, that means that the benefits of the recently announced HealthPointe acquisition (6% EBITDA margin) are also not being priced in. We believe that investors will see further acquisitions in the not-too-distant future.

Closer to home, NeuPath has a limited number of direct-/semi-direct comparable companies in Canada. However, only one is a direct comparable, MCI Onehealth Technologies Inc. (DRDR-T) (Figure 24), it generates 89% of its revenues from Ontario Health Insurance Plan (OHIP) and Alberta Health Care Insurance Plan (AHCIP). NeuPath generates 78.2% of its revenues from OHIP.

There are other TSX-listed clinic groups, but their operations are US-based and include: Medical Facilities Corp. (DR-T), Greenbrook TMS Inc. (GTMS-T) and Akumin Inc. (AKU-T).

Figure 24: NeuPath comparable company valuation (pricing at 27/4/21)

					EBITDA		Revenues		Rev	EV/EBITDA		EV/Revenues	
	Symbol	Price	Mkt Cap	EV	2020A	2022E	2020A	2022E	Growth	2020A	2022E	2020A	2022E
NeuPath Health Inc	**NPTH.V**	**0.68**	**30.6**	**35.7**	**2.0**	**4.3**	**47.6**	**65.6**	**37.6%**	**18.06x**	**8.37x**	**0.75x**	**0.54x**
MCI Onehealth Technologies Inc	DRDR.TO	3.00	139.5	154.3	(1.1)	1.4	47.9	57.9	20.8%	nmf	111.93x	3.22x	2.67x

Source: Refinitiv Eikon, KRC Insights

Part of the valuation difference between NeuPath and DRDR potentially relates DRDR's business model – DRDR has a focus on technology. In its 2020 Annual Information Form (p15), DRDR characterized its growth potential as follows:

Over the next 24 months, the Company plans to grow its revenue through the deployment of technology products and services under development, expanded private healthcare services and acquisitions of technology

and geographically strategic clinics. By combining data analytics, patient and physician facing technologies such as telehealth, virtual care and healthcare expertise, the Company believes it can improve the quality, consistency and efficiency of services provided at its primary care clinics.

In this regard, DRDR saw its telehealth virtual care patient base ramping from "very small" to over 260,000 visits during 2020[40]. DRDR is looking to build on this momentum, and has branded itself as "technology enabled, primary care." It sees primary care having evolved into a hybrid model which leverages both in person and virtual care solutions which are highly complementary.

We mention this within the context of NeuPath developing its own technology app, which is still in the formative stage, but we understand that it is an area of focus for NeuPath, and we expect to see increased emphasis on technology development by the company.

At the operational level, NeuPath is the larger company by reference to revenues and has weathered the COVID-related slowdown better than DRDR while its operating margins are slightly lower than DRDR's if we exclude Other income (rental income) from DRDR's operating metrics (Figure 25).

Figure 25: NeuPath vs DRDR - 2020 results

Metric	NPTH	DRDR	Comment
Revenues ($000s)	47,637	38,573	NeuPath generates 23.3% more revenues than DRDR
Revenue growth (2020 over 2019)	-4.0%	-16.7%	DRDR's revenues decline exceeded NeuPath's due to one clinic being closed since the onset of COVID. Both companies experienced COVID-related reduced patient throughput. However, DRDR's 20.5% decline in Public Insured Health was ameliorated by a 140% increase of Corporate Health revenues to $3.4m.
Operating margin	-1.7%	-1.4%	Materially similar as DRDR reports Other income separately
Adjusted EBITDA ($000s)	1,975	4,343[41]	Difference is principally due to DRDR's $1.9m in Other income which comprises mainly of sublease rental income.
Adjusted EBITDA margin	4.2%	11.3%	Excluding rental income of $1.9m, DRDR's comparable operating EBITDA margin is 6.3%.
Total assets ($000s)	46,120	22,358	Major differences contributing to NeuPath's higher asset base includes: cash ($10.9m vs $0.9m), goodwill ($19.0m vs $0m) and Property & Equip ($2.9m vs $13.6m).
Shareholder's equity ($000s)	27,624	237	After year-end, DRDR raised $30m by way of its IPO. Shares commenced trading on the TSX 6/1/21.

Source: Respective company filings, KRC Insights

Mature, operating hospital groups are trading at 11.69x EV/F2022 EBITDA, or 1.78x EV/F2022 Revenues[42]. This implies a F2022 EBITDA margin of 15.4%, significantly higher than NeuPath (or DRDR) currently or forecast (Our 2022E EBITDA margin is 6.5%).

Drivers for NeuPath's increased margin include:

- Higher capacity utilization, and

[40] DRDR press release 18/1/21

[41] Reported 2020 Operating income and EBITDA was adjusted to add back listing expenses ($638k) and one-time bonuses ($1,501k) to make disclosure consistent with NeuPath.

[42] Based on Refinitiv Eikon forecasts for this group of 9 companies at 27/4/21.

- Increased emphasis on non-OHIP revenues.

Based on its current OHIP-based business, our calculations show that NeuPath, at full capacity (defined as 80%), has the potential to generate $9.1m (~11% EBITDA margin), a more than doubling from current levels.

Given NeuPath's larger revenue base, superior ability with managing the COVID-related slow down and generating similar operating margins to DRDR (excluding DRDR's Other Income), NeuPath should trade in line with DRDR. However, a discount is required to account for DRDR being further advanced on the technology front and to account for its Other income (rental income) which provides a buffer to operating EBITDA. We believe that a 30% discount is appropriate (Figure 26).

Figure 26: NeuPath valuation

		Revenues
Estimates (2022E)	$000s	65,560
Multiple	x	2.7x
	$000s	174,838
Add: Cash 2022E	$000s	9,078
Less: Debt 2022E	$000s	6,535
Implied market cap	$000s	177,383
Add: Technology potential		5,000
Equity valuation		182,383
FD # shares	000s	70,869
Value/share	$	2.57
Discount		30%
Value/share (rounded)		**1.80**

Source: KRC Insights

We provide a notional $5.0m value for its technology under development and expect to update our view when NeuPath's technology strategy exhibits evidence of traction.

We derive a $1.80 target price for NeuPath using an EV/Sales approach and adding a notional $5.0m out of recognition for its technology development to date.

Figure 27: NeuPath historical and forecast income statement ($000s)

December year-end	$000's	2019	2020	2021E	2022E
Clinic revenue		46,594	**44,921**	**59,745**	**62,732**
			-3.6%	33.0%	5.0%
Non-clinic revenue		3,044	**2,718**	**2,772**	**2,828**
			-10.7%	2.0%	2.0%
Revenue		**49,638**	**47,639**	**62,517**	**65,560**
Total revenue growth		-	-4.0%	31.2%	4.9%
Cost of goods sold		**(39,681)**	**(37,920)**	**(49,389)**	**(51,137)**
Gross Profit		9,957	9,719	13,129	14,423
General & Admin expenses		(6,770)	(6,731)	(8,440)	(8,588)
Occupancy costs		(1,397)	(1,309)	(1,563)	(1,573)
Depreciation & Amort.		(2,451)	(2,499)	(2,500)	(2,000)
Total operating expenses		(10,618)	(10,539)	(12,503)	(12,162)
Operating (Loss)/income		(661)	(820)	626	2,261
Interest expense		(1,937)	(1,468)	(802)	(722)
Interest income		55	46		
Other		(2,114)	(2,258)		
Other income			45		
Fair value adjustments		(738)	(405)		
Net (loss)/income for period		(5,395)	(4,860)	(176)	1,540
Current tax expense		85	(198)		
Net (loss)/income		**(5,310)**	**(5,058)**	**(176)**	**1,540**
EPS - Basic		**($ 0.34)**	**($ 0.21)**	**($ 0.00)**	**$ 0.03**
EPS - FD		**($ 0.34)**	**($ 0.21)**	**($ 0.00)**	**$ 0.02**
Period-end no. shares - Basic		16,557	41,843	45,068	45,068
- FD		19,452	72,823	70,869	70,869
Weighted avr. no. shares - Basic		15,643	24,498	45,068	45,068
- FD		18,538	52,058	70,869	70,869
		2019	**2020**	**2021E**	**2022E**
Gross profit	%	20.1	20.4	21.0	22.0
Operating margin	%	(1.3)	(1.7)	1.0	3.4
EBITDA	$000's	1,898	1,975	3,126	4,261
EBITDA margin	%	3.8	4.1	5.0	6.5
Effective tax rate	%	1.6	(4.1)	--	--
Net margin	%	(10.7)	(10.6)	(0.3)	2.3

Source: Company reports, KRC Insights

Appendix I: Selected Press Releases (as a public entity)

25/6/20: NeuPath Health Inc. (formerly, Klinik Health Ventures Corp.) announces completion of Qualifying Transaction.

6/7/20: Trading resumed as NPTH-V (formerly KHV.P).

5/10/20: NeuPath Health to Expand Digital Health Capabilities (working with Pivot Design Group).

13/11/20: Closed previously announced $12m bought deal financing.

8/12/21: Acquired HealthPointe Medical Centres.

Appendix II: Company descriptions (US hospital groups)

Hospital groups included in the Thomson Reuters United States Healthcare and Facilities Index

Symbol	Name	Market cap (US$m)
HCA.N	HCA Healthcare Inc	$ 67,576.1
HCA Healthcare, Inc. is one of the leading health care services companies in the United States. At December 31, 2020, it operated 185 hospitals, comprised of 178 general, acute care hospitals; five psychiatric hospitals; and two rehabilitation hospitals. In addition, it operated 121 freestanding surgery centers and 21 freestanding endoscopy centers. Its facilities are located in 20 states and England.		
UHS.N	Universal Health Services Inc	$ 12,409.2
Its principal business is owning and operating, through subsidiaries, acute care hospitals and outpatient facilities and behavioral health care facilities. As of February 25, 2021, it owned and/or operated 360 inpatient facilities and 39 outpatient and other facilities including the following located in 38 states, Washington, D.C., the United Kingdom and Puerto Rico. 55% of net revenues comes from acute care hospitals, outpatient facilities and commercial health insurer, 45% came from behavioral health care facilities and commercial health insurer. Services provided by its hospitals include general and specialty surgery, internal medicine, obstetrics, emergency room care, radiology, oncology, diagnostic care, coronary care, pediatric services, pharmacy services and/or behavioral health services. UHS also provides capital resources as well as a variety of management services to its facilities, including central purchasing, information services, finance and control systems, facilities planning, physician recruitment services, administrative personnel management, marketing and public relations.		
EHC.N	Encompass Health Corp	$ 8,658.0
EHC is a leading provider of post-acute healthcare services, offering both facility-based and home-based patient care through its network of inpatient rehabilitation hospitals, home health agencies, and hospice agencies. As of December 31, 2020, its national footprint spanned 39 states and Puerto Rico and included 137 hospitals and 241 home health and 82 hospice locations.		
THC.N	Tenet Healthcare Corp	$ 5,949.6
THC is a diversified healthcare services company headquartered in Dallas, Texas. Through its subsidiaries, partnerships and joint ventures, including USPI Holding Company, Inc. (“USPI”), at December 31, 2020, it operated an expansive care network that included 65 hospitals and over 550 other healthcare facilities, including ambulatory surgery centers, urgent care centers , imaging centers, surgical hospitals, off-campus emergency departments and micro-hospitals. Also, it operates Conifer Health Solutions, LLC through Conifer Holdings, Inc. subsidiary, which provides revenue cycle management and value-based care services to hospitals, health systems, physician practices, employers and other clients.		
ENSG.O	Ensign Group Inc	$ 4,870.0
ENSG is a holding company with subsidiaries that provide skilled nursing, senior living and rehabilitative services, as well as other ancillary businesses (including mobile diagnostics and medical transportation), in 13 states. The company also acquires, leases and owns healthcare real estate to service the post-acute care continuum through acquisition and investment opportunities in healthcare properties. For the year ended December 31, 2020, it generated approximately 95.2% of revenues from skilled nursing facilities. The remainder of revenues is primarily generated from real estate properties, senior living services and other ancillary services.		
SGRY.O	Surgery Partners Inc	$ 2,962.2
SGRY owns or operates primarily in partnership with physicians, a portfolio of 127 surgical facilities in the United States comprised of 110 ambulatory surgical centers and 17 surgical hospitals (collectively referred to as "surgical facilities") across 30 states, including a majority interest in 84 of the surgical facilities. During 2020, patient services provided in surgical facilities generated approximately 96% of revenues.		

USPH.K	U.S. Physical Therapy Inc	$ 1,506.7
USPH operates through two reportable business segments: The physical therapy operations segment (91% of revenues) and the industrial injury prevention services segment (9% of revenues). Through its subsidiaries, USPH operates outpatient physical therapy clinics that provide pre-and post-operative care for a variety of orthopedic-related disorders and sports-related injuries, treatment for neurological-related injuries and rehabilitation of injured workers. Its strategy is to acquire multi-clinic outpatient physical therapy practices, to develop outpatient physical therapy clinics as satellites in existing partnerships, and to continue to acquire companies that provide industrial injury prevention services. At December 31, 2020, it operated 554 clinics in 39 states, managed 38 physical therapy practices for unrelated physician groups and hospitals.		
CYH.N	Community Health Systems Inc	$ 1,384.0
CYH is a leading operator of general acute care hospitals and outpatient facilities through hospitals that are owned and operated. As of December 31, 2020, it owned or leased 89 hospitals with an aggregate of 14,110 licensed beds, comprised of 87 general acute care hospitals and two stand-alone rehabilitation or psychiatric hospitals. Revenues are generated by providing a broad range of general and specialized hospital healthcare services and outpatient services including general acute care, emergency room, general and specialty surgery, critical care, internal medicine, obstetrics, diagnostic, psychiatric and rehabilitation services. CYH also provides additional out patient services at primary care practices, urgent care centers, free-standing emergency departments, ambulatory surgery centers, imaging and diagnostic centers, retail clinics and via direct-to-consumer virtual health visits. An integral part of providing these services is its network of affiliated physicians at its hospitals and affiliated businesses. At December 31, 2020, CYH employed approximately 1,500 physicians and an additional 800 licensed healthcare practitioners.		
HNGR.N	Hanger Inc	$ 927.4
Hanger, Inc. is a rehabilitative product and service company. The Company delivers orthotic and prosthetic (O&P) patient care, products, services and therapeutic solutions. Patient Care segment (83.1% of revenues) is primarily comprised of Hanger Clinic, which specializes in the design, fabrication, and delivery of custom O&P devices through 704 patient care clinics and 112 satellite locations in 46 states and the District of Columbia. Products & Service (16.9% of revenues) provides distribution of a broad catalog of O&P parts, componentry, and devices to independent O&P providers through the US.		

Source: Refinitiv Eikon, respective 10K filings, KRC Insights

Appendix III: Directors and Officers

Name	Position	Details
Dianne Carmichael(3) Creemore, Ontario	Director (Chair)	Carmichael Worldwide Inc., an advisory services firm (2011 - present) President Payer Markets and Head of Corporate Strategy and M&A, McKesson, a healthcare company (2017 - 2018)
Jolyon Burton Toronto, Ontario	Director	President and Head of Investment Banking, Bloom Burton Securities Inc., a healthcare sector investment banking firm (2009 – Present)
Daniel Chicoine(2) Port Sydney, Ontario	Director	Executive Chairman, Crescita Therapeutics Inc., a commercial dermatology company (April 2018 – Present) Executive Chairman and CEO, Crescita Therapeutics Inc. (2016 – March 2018) Chairman and Co-Chief Executive Officer, Nuvo Research Inc. (2009 – 2016)
Sasha Cucuz(3) North York, Ontario	Director	CEO, Greybrook Securities, Inc., a corporate finance and investment banking firm (2005 - Present)
Dan Legault(2)(3) Toronto, Ontario	Director	President and CEO, Antibe Therapeutics, a biotechnology company (2009 – Present)
Grishanth Ram Mississauga, Ontario	Director	Executive Director, NeuPath (February 2019 to December 2019) CEO, NeuPath (March 2018 – February 2019) Chief Operating Officer, InMedic Creative Medicine, a biotechnology company (2011 –2019)
Joseph Walewicz(2) Westmount, Quebec	Director	CFO, Fibrocor Therapeutics Inc., a biotechnology company (January 2021 – present) Executive Vice President, Business and Corporate Development, Clementia Pharmaceuticals, a biotechnology company (2017 - 2019) Vice Present, Healthcare, Institutional Equity Research at Laurentian Bank Securities, an investment firm (2014 – 2017)
Grant Connelly Burlington, Ontario	CEO	CEO, NeuPath (2019 – Present) General Manager, NeuPath (2018 – 2019) CEO, VroomHealth Inc., services provider in the healthcare industry (2013 - 2018)
Stephen Lemieux Oakville, Ontario	CFO and Corporate Secretary	CFO, NeuPath (2019 – Present) CFO and Secretary, Cipher Pharmaceuticals, a biotechnology company (September 2016 – March 2019) Vice President and CFO, Crescita Therapeutics Inc., a commercial dermatology company (March 2016 – September 2016) Vice President and CFO, Nuvo Pharmaceuticals Inc., a healthcare company (January 2012 – September 2016)

Disclosure

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