



Healthcare Industry Update

Thursday, August 2nd, 2018



THE ORIGIN RX

Every now and again we turn our attention to a healthcare subject other than cannabis, and digital healthcare has our attention today. Tech solutions are changing the way we think about healthcare providing benefits such as reducing costs and improving outcomes of patient care, enhancing user engagement, making medicine easier for healthcare providers, and prescription software products.

When talking about technology it's hard to find a company that uses tech better than Amazon, able to quickly deliver just about anything anywhere. In fact, my latest order was on my doorstep less than 24 hours later. So given Amazon's strength in supply chain management, logistics and fulfillment, their move into healthcare may threaten traditional B2B and B2C healthcare suppliers. Amazon recently acquired Pillpack, a pharmacy that delivers medications in pre-sorted dose packaging, coordinates refills and renewals, and ensures shipments are sent on time. Targeting those who take multiple daily prescriptions, Pillpack is expected to make Amazon Prime more popular among seniors. Amazon paid about \$1B, representing roughly 10x Pillpack's revenue of \$100M. It's a drop in the bucket when you look at Amazon's Q2/2018 revs of \$53B, but it puts up a clear stake in healthcare.

In Canada, there are barriers to entry for an online pharmacy like Pillpack. For example, the Ontario College of Pharmacists issues certificates of accreditation to "bricks and mortar" pharmacies, not stand-alone virtual or online pharmacies. A pharmacy website that indicates it's based in Ontario must be operated by an accredited Ontario pharmacy, overseen by a pharmacist licensed in Ontario. We'll see if provincial pharmacy regulators will soften their stance as cost containment priorities drive the implementation of new models of service and product delivery, like is happening in other areas of healthcare such as virtual doctors for example. Or will online pharmacies like Pillpack have to adapt their business model in Canada?

New healthcare models are leading to the emergence of prescription software products in the US, which is getting attention from pharma companies. Pear Therapeutics was the first company to receive FDA approval for an Rx digital therapeutic - its reSET software was cleared in 2017 as a prescribed digital therapeutic to treat substance use disorder. reSET provides cognitive behavioral therapy to patients through mobile and desktop applications. Sandoz, a division of Novartis, invested in Pear earlier this year and is helping with the commercial launch of reSET and potentially a version to treat opioid use disorder, which has yet to be filed.

In another example of a pharma-tech partnership, Sanofi led a VC round of \$17M for Click Therapeutics, which develops and commercializes software as prescription medical treatments for people with unmet medical needs. Clickotine is a smoking cessation program, available in the US through a wide variety of payers, providers, and employers. Click's lead prescription program is entering into a phase III FDA registration trial for the treatment of Major Depressive Disorder in adults.

In Canadian digital healthcare, League Inc. completed a significant \$62M financing led by the Weston family, controlling shareholders of George Weston and Loblaw (which owns Shoppers Drug Mart), as well as Telus' venture arm (Telus is Canada's largest healthcare IT provider). These investors join a who's who list of previous investors including OMERS, Infinite Potential Group (Mike Lazaridis' company, co-founder of BlackBerry), RBC, Real Ventures and BDC. League has hundreds of clients in Canada and the US, including Unilever Canada, Shopify and Facebook. In partnership with conventional underwriters, League provides flexible, customized plans that let employees choose reimbursement beyond health and dental, to include services such as osteopathy, gym memberships, yoga classes, art therapy and food delivery. League's online platform handles reimbursements, so employees can buy goods and services from select vendors using their benefits accounts. With League, clients can offer employees competitive health benefits packages. It's an exciting tool to enhance employee engagement, particularly among the growing contingent of millennials in the work force, given their tendency to prioritize work-life balance and benefits more than their parents did.

Over the years we have observed exciting innovations seem to happen at the cross-section of industries, and we'll continue to watch the overlap of tech with pharma as well as retail & distribution.

CATHY STEINER, PRINCIPAL





BIGGEST MOVERS

Recent News¹

Markets have been down the last two weeks with the TSX decreasing 0.5% and the NASDAQ decreasing by 2.3%. It's been a mixed bag in healthcare subsectors, which follow in this report. A selection of the largest share price movers in the healthcare space during the recent period is included below:

- **Reata Pharmaceuticals, Inc.** (NasdaqGM:RETA +58%): Reata pharmaceuticals, a clinical-stage biopharmaceutical company, experienced an increase in share due to the announcement of positive results from two Phase 2 studies of bardoxolone methyl (bardoxolone) in patients with chronic kidney disease (CKD). The studies showed; statistically significant improvement in kidney function maintained in Alport syndrome patients after 48 weeks of treatment, statistically significant retained benefit of 4.1 ml/min in Alport syndrome patients following 48 weeks of treatment and 4 weeks of drug withdrawal, and statistically significant improvement in kidney function observed in autosomal dominant polycystic kidney disease patients after 12 weeks of treatment
- **LifePoint Health, Inc.** (NasdaqGS:LPNT +30%): LifePoint Health, a leading healthcare company, saw its share price increase due to the announcement of a merger with **RCCH HealthCare Partners**, an affiliate of **Apollo Global Management**. LifePoint shareholders will receive US\$65.00 per share in cash for each share of LifePoint common stock they own, resulting in a LifePoint enterprise value of approximately US\$5.6 billion, including US\$2.9 billion of net debt and minority interest. The purchase price represents a premium of ~36% to LifePoint's previous day's closing share price
- **Coherus Biosciences, Inc.** (NasdaqGM:CHRS +24%): Coherus Biosciences, a leading biosimilar company that develops and commercializes high-quality therapeutics for major regulated markets, saw positive share performance primarily due to the announcement that the **Committee for Medicinal Products for Human Use** of the **European Medicines Agency** has adopted a positive opinion for the marketing authorization of UDENYCA, a pegfilgrastim biosimilar candidate
- **Emerald Health Therapeutics, Inc.** (TSXV:EMH +12%): Emerald Health, a licensed producer of cannabis, saw an increase in share price primarily due to two announcements. The first announcement was that it signed a memorandum of understanding with the **British Columbia Liquor Distribution Branch** to supply high-quality cannabis products to the medicinal and recreational markets in the province. Secondly it announced that its 50/50 joint venture with **Village Farms**, for large-scale, low-cost, high-quality cannabis production had received its cannabis sales license from **Health Canada**
- **Fate Therapeutics, Inc.** (NasdaqGM:FATE -19%): Fate Therapeutics, a clinical-stage biopharmaceutical company, experienced a recent share price decline due to the announcement that **Purcell Julie & Lefkowitz LLP** had commenced a class action law firm dedicated to representing shareholders nationwide by investigating a potential breach of fiduciary duty claim involving the board of directors of Fate Therapeutics
- **Mersana Therapeutics, Inc.** (NasdaqGS:MRSN -28%): Mersana Therapeutics, a clinical-stage biopharmaceutical company focused on discovering and developing a pipeline of antibody drug conjugates, saw a share price decrease primarily due to the announcement that the **U.S. Food and Drug Administration** placed the Phase 1 study of XMT-1522 on partial clinical hold. While the partial clinical hold remains in effect, no new patients will be enrolled in the study, though current study participants in its ongoing dose levels will continue to receive drug and otherwise participate in the trial consistent with its protocol

Note 1: For the period July 17th to August 2nd, 2018

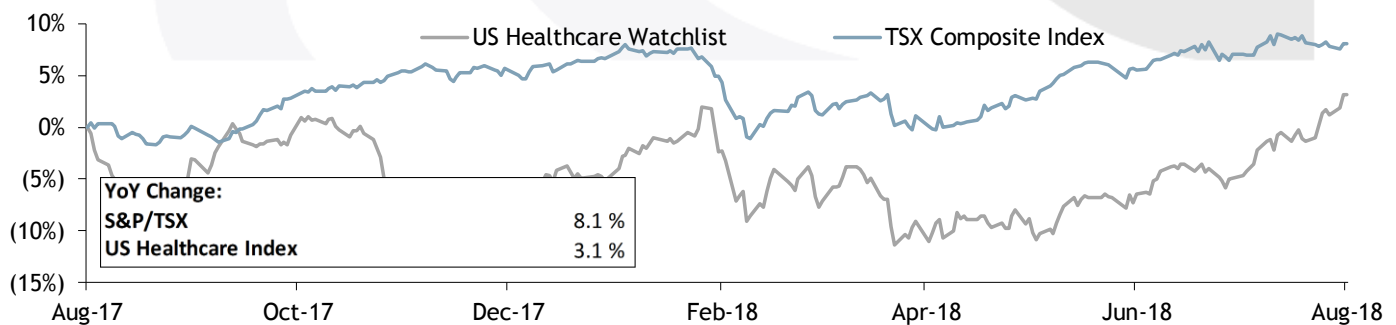


US HEALTHCARE WATCHLIST

News Scan¹

- The US Healthcare Watchlist Index gained approximately 3.1% over the last twelve months, while the TSX Composite Index gained 8.1% over the same period. Some events making news this month:
- On July 31st, **Bayer** announced that it had agreed to sell its established prescription dermatology brands to Denmark's **Leo Pharma**, as Bayer focuses on integrating seed maker **Monsanto** and on bolstering its drug development pipeline. The portfolio to be sold includes prescription skin creams against acne, fungal skin infections and rosacea, as well as some steroidal creams with 2017 revenues of more than US\$328 million. The terms of the transaction were not disclosed
- On July 30th, **Johnson & Johnson Consumer Inc.** announced that it had entered into a definitive agreement to acquire **Zarbee's, Inc.**, a privately held company that is a leader in naturally-based healthcare products for an undisclosed amount. Johnson & Johnson stated that this was done to bring a more comprehensive set of products to consumers within its core base
- On July 27th, **Institutional Shareholder Services Inc.** (ISS), a shareholder advisory firm whose recommendations are followed by major mutual funds, recommended that **Rite Aid Corp** investors should vote down the US\$24 billion merger with **Albertsons Companies**. ISS stated that it did not appear that Rite Aid shareholders would receive fair ownership interest in the combined company, a concern heightened by potential conflicts of interest during the negotiation process
- On July 24th, **PTC Therapeutics** announced that it had reached an agreement to acquire **Agilis Biotherapeutics, Inc**, a biotechnology company advancing an innovative gene therapy platform for rare monogenic diseases that affect the central nervous system, for US\$200 million in cash and stock, plus potential future consideration of up to US\$595 million based on certain milestones
- On July 24th, **Eli Lilly and Co** announced that it would spin off its **Elanco Animal Health** business and take it public. It announced that it will offer less than 20% of Elanco stock in the initial public offering. Following the IPO, the company stated that it plans to divest its remaining ownership through a tax-efficient transaction
- On July 24th, **Pfizer Inc.** announced that it will increase its commitment to U.S. manufacturing with a US\$465 million investment to build one of the most technically advanced sterile injectable pharmaceutical production facilities in the world in Portage, Michigan. It stated that this U.S. investment will strengthen Pfizer's capability to produce and supply critical, life-saving injectable medicines for patients around the world
 - On July 20th, **Pfizer Inc.** announced that it had received approval from the **U.S. Food and Drug Administration** for Nivestym, which is a biosimilar to **Amgen's** Neupogen. Amgen reported US\$549 million in Neupogen sales in 2017
 - On July 18th, **Pfizer Inc.** and **Eli Lilly and Co.** announced that their experimental osteoarthritis drug that they had jointly developed had achieved its main goal of lowering pain in a late stage trial and they stated that this drug could be potentially offered as a safer alternative to opioids

Relative Performance Index



Note 1: For the period July 17th to August 2nd, 2018

US Healthcare Watchlist Constituents: Johnson & Johnson, Pfizer Inc., Roche Holding AG, Novartis AG, Merck & Co., Inc., AbbVie Inc., Amgen Inc., Medtronic plc, Gilead Sciences, Inc., Bayer AG, Abbott Laboratories, Bristol-Myers Squibb, GlaxoSmithKline plc, Eli Lilly and Company, AstraZeneca PLC, Celgene Corporation, Allergan plc, Boston Scientific Corporation, Mylan N.V., Teva Pharmaceutical Industries, Mallinckrodt Public Limited Company, Endo International plc

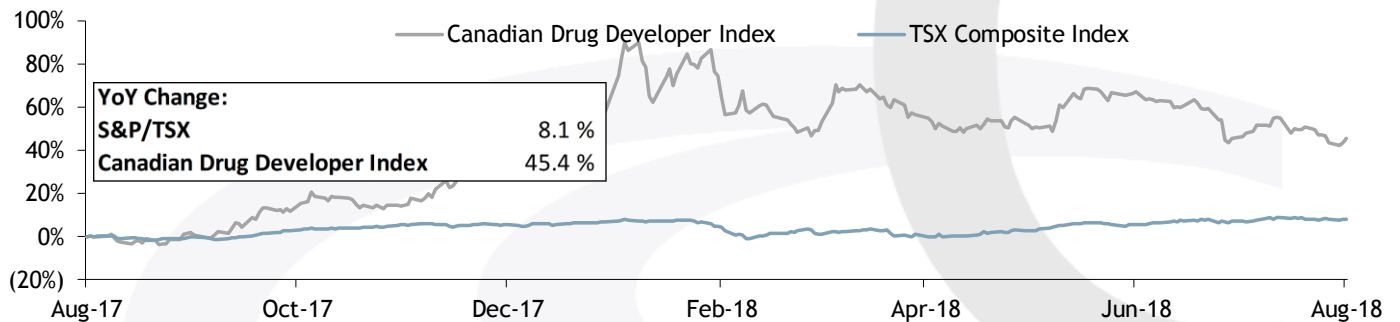


CANADIAN DRUG DEVELOPERS

News Scan¹

- Last twelve-month performance of the Canadian Drug Developers Index was an impressive 45.4%, significantly outperforming the TSX Composite Index which only gained 8.1% over the same period. In the news this month:
- On July 31st, **Resverlogix Corp.**, an epigenetics company that develops small molecule therapeutics for bromodomain and extra-terminal (BET) inhibition, announced that it intends to pursue a listing of its common shares in the United States. It stated that it is initiating preparation for a U.S. listing in light of several anticipated positive developments in the company
- On July 26th, **Tetra Bio-Pharma Inc.**, a leader in cannabinoid-based drug discovery and development, announced that it received two meeting granted letters from the **United States Food and Drug Administration**, for Type B and C meetings, to discuss requirements for obtaining marketing approval under the 505(b)(2) regulatory pathway for its dronabinol AdVersa mucoadhesive product, PPP002
 - On July 16th, **Tetra Bio-Pharma Inc** announced a co-development agreement with **Storz & Bickel**. The agreement will include the use of a specialized medical device known as the mighty medic, a portable herbal vaporizer for cannabis use, in combination with its PPP001 prescription drug and a future proprietary cannabinoid formulation. This will be used to treat Fibromyalgia, which affects about 2% of the adult population in the US
- On July 19th, **Tetra Natural Health, Inc.**, a division of **Tetra Bio-Pharma Inc.**, announced that it will be commercializing a hemp energy drink containing hemp, that received a temporary marketing authorization by **Health Canada**. Tetra stated that it intends to launch this product ahead of legalization on Oct 17th as it begins to position itself as a player in the natural health product market
- On July 19th, **BELLUS Health**, a biopharmaceutical development company, announced that it secured patent protection in all major pharmaceutical markets for its leading drug candidate, BLU-5937, an oral treatment for chronic cough patients

Relative Performance Index



For the period July 17th to August 2nd, 2018

Canadian Drug Developers Constituents: ProMetic Life Sciences Inc., Clementia Pharmaceuticals Inc., Aurinia Pharmaceuticals Inc., Arbutus Biopharma Corporation, Resverlogix Corp., Aquinox Pharmaceuticals Inc., Zymeworks Inc., ImmunoVaccine Inc., InMed Pharmaceuticals Inc., Sierra Oncology, Inc., Tetra Bio-Pharma Inc., Oncolytics Biotech Inc., Cardiome Pharma Corp., Acerus Pharmaceuticals Corporation, ProMIS Neurosciences Inc., Aeterna Zentaris Inc., Trillium Therapeutics Inc.

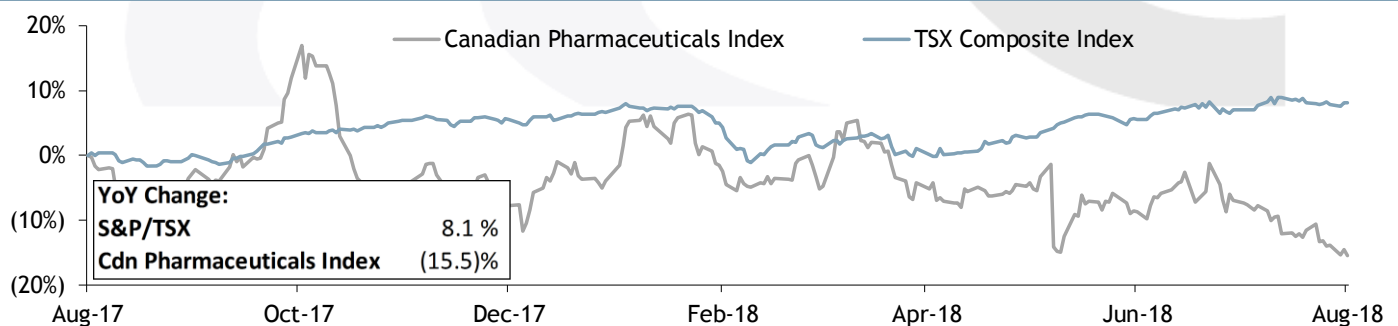


CANADIAN PHARMACEUTICALS

News Scan¹

- The Canadian Pharmaceuticals Index experienced a decline of approximately 15.4% over the last twelve months, while the TSX Composite Index gained 8.1% over the same period. Recent news highlights include:
- On July 31st, **Knight Therapeutics Inc.**, a Canadian specialty pharmaceutical company, and **TherapeuticsMD, Inc.**, an innovative women's healthcare company, announced that they have entered into a licensing agreement that grants Knight the rights to commercialize TX-004HR and TX-001HR in Canada and Israel. TX-004HR is TherapeuticsMD's FDA-approved product for the treatment of moderate-to-severe dyspareunia, a symptom of vulvar and vaginal atrophy, due to menopause. TX-001HR is TherapeuticsMD's investigational bio-identical hormone therapy combination of estradiol and progesterone in a single, oral soft gel for the treatment of moderate-to-severe vasomotor symptoms due to menopause. In return for the licensing rights Knight has agreed to invest C\$20 million in TherapeuticsMD common stock concurrently with closing of the first public offering. It will also pay TherapeuticsMD a milestone fee upon first regulatory approval in Canada and sales milestone and royalty fees based upon certain aggregate annual sales in Canada and Israel
- On July 31st, **Theratechnologies Inc.**, a specialty pharmaceutical company addressing medical needs to promote healthy living and an improved quality of life among HIV patients, announced that the committee for medicinal products for human use of the **European Medicines Agency** will review the application for marketing authorization of the Trogarzo injection under the accelerated assessment procedure
 - On July 25th, **Theratechnologies Inc.** announced that Trogarzo injections are now included in the most recent version of the treatment guidelines issued by the International Antiviral Society-USA Panel, which were published in the latest edition of the Journal of the American Medical Association
- On July 23rd, **Midatech Pharma PLC**, an international specialty pharmaceutical company focused on developing and commercializing products in oncology and immunotherapy, announced that its US subsidiary, **Midatech Pharma US Inc.**, signed a co-promotion agreement with an affiliate of **Bausch Health Companies Inc.**, that provides Midatech with the exclusive rights to promote Bausch Health's supersaturated calcium product NeutraSal in the oncology market in the US. In exchange for its promotional efforts, Midatech will receive a percentage of the net sales of NeutraSal resulting from prescriptions generated at oncology practices throughout the United States. The financial terms of the agreement were not disclosed
- On July 19th, **Concordia International Corp.**, an international specialty pharmaceutical company focused on becoming a leader in European specialty off-patent medicines, announced that it had been delisted from the **NASDAQ** due to it not maintaining the minimum stock price of US\$1
- On July 16th, **Bausch Health Companies Inc.**, a global pharmaceuticals company, announced that it will begin trading under the "BHC" ticker on the New York Stock Exchange and Toronto Stock Exchange at the commencement of trading July 16, 2018

Relative Performance Index



For the period July 17th to August 2nd, 2018

Canadian Pharmaceuticals Constituents: Bausch Health Companies Inc., Knight Therapeutics Inc., Concordia International Corp., Aralez Pharmaceuticals Inc., Theratechnologies Inc., Zomedica Pharmaceuticals Corp.

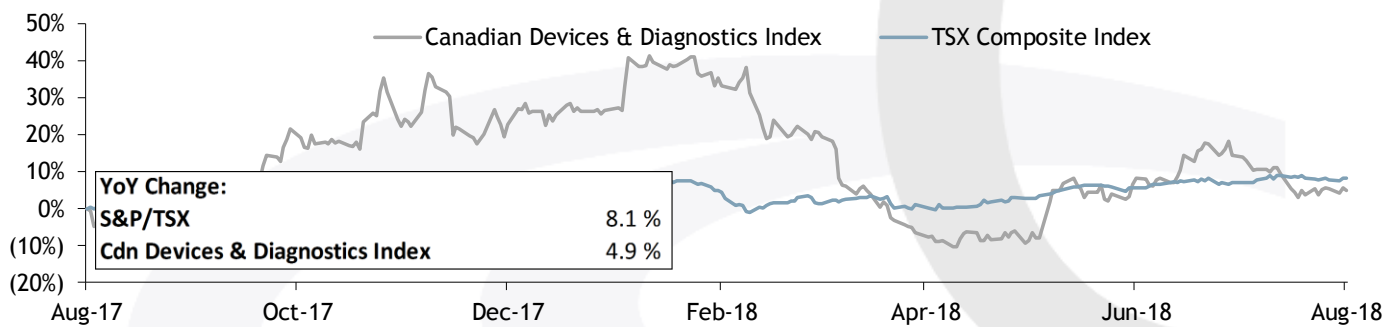


CANADIAN DEVICES & DIAGNOSTICS

News Scan¹

- The Canadian Devices & Diagnostics Index gained approximately 4.9% over the last twelve months, lagging the TSX Composite Index which gained 8.1% over the same period. Newsmakers for July 2018:
- On August 1st, **TSO3 Inc.**, an innovator in sterilization technology for medical devices, announced that it and a fund of which Courage Capital Management LLC, is the investment advisor, have entered into a binding US\$20 million debt financing. This financing was done to fund commercialization initiatives for its STERIZONE VP4 Sterilizer, the only terminal sterilization method that is FDA cleared to sterilize multi-channeled flexible endoscopes of up to 3.5 meters in length, such as certain colonoscopes, gastroscopes and duodenoscopes
- On July 26th, **CRH Medical Corporation** announced that it had completed an accretive transaction whereby it acquired a 51% interest in a gastroenterology anesthesia practice in Washington State for an undisclosed amount. Lake Washington is CRH's first monitored anesthesia care program to be completed. The program was announced on March 15, 2017 with **Puget Sound Gastroenterology** (PSG). CRH developed PSG's program and retained an option to acquire a 51% interest in the new anesthesia practice
- On July 19th, **Hamilton Thorne Ltd.**, a leading provider of precision instruments, consumables, software and services to the assisted reproductive technologies and developmental biology research markets, announced that it had completed the acquisition of the Zandair line of air purification equipment and related consumables and services business from **Zander Scientific, Inc** for C\$640,000 in cash
- On July 18th, **Adaptiiv**, a medical technology company, announced that it received 510(k) clearance from the US **FDA** to market 3D Bolus Software, a software solution that enables the creation of customized personal medical devices using 3D printing, used primarily in the treatment of cancer

Relative Performance Index



For the period July 17th to August 2nd, 2018

Canadian Devices and Diagnostics Constituents: CRH Medical Corporation, TSO3 Inc., Titan Medical Inc., Opsens Inc., Neovasc Inc., ChroMedX Corp., Profound Medical Corp., Covalon Technologies Ltd., Spectral Medical Inc., Hamilton Thorne Ltd.

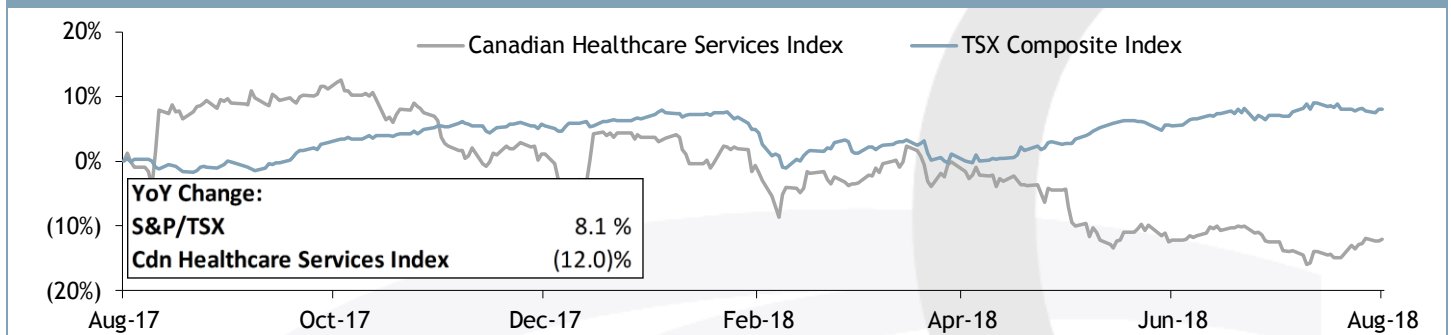


CANADIAN HEALTHCARE SERVICES

News Scan¹

- Last twelve-month performance of the Canadian Healthcare Services Index decreased 12.0%, while the TSX Composite Index increased 8.1% over the same period. In July, the following occurred in the Canadian healthcare services space:
- On August 1st, **Akumin Inc.** announced that it has entered into a definitive agreement to acquire a freestanding, fixed-site outpatient diagnostic imaging business located in Florida. The acquisition is expected to add ~US\$27.5 million of revenue based on the last twelve months of the period ended March 31, 2018. Closing of the transaction is expected to occur in this fiscal quarter and remains subject to customary conditions as well as a financing condition
- On July 26th, **Extendicare Inc.**, a leading provider of care and services for seniors throughout Canada, announced that Tim Lukenda will be stepping down from his position as President and CEO, and Director of the Company, by December 31, 2018. It announced that it has established a search committee of the board and has engaged a leading search firm to conduct a search for a new CEO
- On July 16th, **Agility Health, Inc.**, a leading provider of orthotics, prosthetics and foot care services in Canada, announced that it is undertaking a non-brokered private placement offering of a maximum of 30,000,000 units at a price of C\$0.05 per unit, for gross proceeds up to a maximum of C\$1,500,000. Agility health stated that the net proceeds from the private placement will be used for general working capital purposes

Relative Performance Index



For the period July 17th, to August 2nd, 2018

Canadian Healthcare Services Constituents: *Sienna Senior Living Inc., Extendicare Inc., Medical Facilities Corporation, Akumin Inc, Centric Health Corporation*

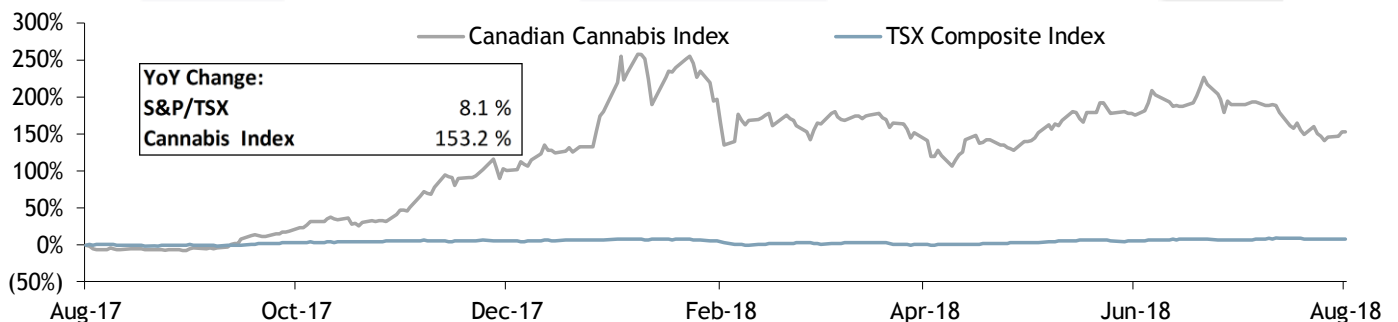


CANNABIS

News Scan¹

- The ACMPR has licensed 114 cannabis producers. Last twelve-month performance of the Cannabis index was approximately 153.2%, dwarfing the 8.1% gain of the TSX Composite Index over the same period. Highlights of cannabis news for July 2018:
- On August 1st, **Molson Coors Brewing Co.** announced that it is partnering with **Hydrothecary Corporation** to form a new joint venture to pursue opportunities to develop non-alcoholic, cannabis-infused beverages for the Canadian market following legalization. Molson will own 57.5% of the JV, while Hydrothecary would own the other 42.5%. As part of the transaction, Hydrothecary will also issue share-purchase warrants to Molson
- On July 30th, **ABcann Global Corporation** announced that it had entered into a definitive agreement to acquire 100% of the issued and outstanding share capital of **Canna Farms Limited**, a premium cannabis company in British Columbia, for -C\$133 million, comprised of C\$22 million in cash and 92.5 million ABcann shares. This transaction gives ABcann 57,000 kilograms of funded annual domestic production capacity and C\$110 million in cash to fund the execution of an aggressive growth strategy
- On July 30th, **Emerald Health Therapeutics** and **Village Farms International** announced that their 50/50 joint venture for large-scale, low-cost, high-quality cannabis production, **Pure Sunfarms**, received its cannabis sales license from **Health Canada** for its 1.1 million square foot greenhouse facility
- On July 26th, **Emblem Corp.** announced that it had signed a non-binding letter of intent to acquire all of the issued and outstanding securities in **Natura Naturals Inc.**, a licensed cultivator of medical cannabis, for C\$25 million in cash, C\$12.5 million in mortgage financing and 26,102,941 common shares of Emblem for a total of C\$76 million. Natura brings 32 proprietary cannabis strains to Emblem’s existing library, significantly increasing Emblem’s intellectual property
- On July 25th, **Aurora Cannabis** announced the closing of the previously announced C\$3.2 billion acquisition of **MedReleaf** after it was approved by its shareholder on July 18th
- On July 24th, **MedReleaf** announced that it had acquired **MED Colombia SAS**, a cannabis company with licences in Colombia, for a total consideration of €2.75 million in cash. This acquisition provides MedReleaf with a library of cannabis genetics and the ability to produce low-cost, high-quality raw materials to serve its global supply chain as well as the domestic Colombian medical cannabis market
- On July 24th, **FSD Pharma**, a licensed producer of cannabis, announced that its strategic partner **Cannara Biotech Inc.** closed a C\$17.7 million common share equity financing. Proceeds from the financing will go towards development of Cannara’s 625,000 sq. ft indoor facility
- On July 23rd, **Acreage Holdings**, one of the United States’ largest vertically integrated multi-state cannabis operators, announced that it has successfully closed its Series E funding round and have raised US\$119 million of capital and concurrently completed the rollup of control positions in several U.S. states. Proceeds from the financing will help Acreage prepare the company for its impending public listing on the **Canadian Securities Exchange** in the fall
- On July 18th, **Tilray Inc.** raised US\$153 million in its initial public offering; US\$111 million from US investors and an additional C\$56 million in Canada and elsewhere. The BC-based cannabis grower priced 9 million shares at US\$17 per share and will be listed on the Nasdaq

Relative Performance Index



For the period July 17th to August 2nd, 2018

Cannabis Index Constituents: Canopy Growth, Aurora Cannabis, Aphria, MedReleaf, CannTrust Holdings, CanniMed Therapeutic, Cannabis Wheaton Income, OrganiGram Holdings, The Supreme Cannabis Company, The Hydrothecary



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