



Healthcare Industry Update

Tuesday, April 17th, 2018



THE ORIGIN RX

State of the Union

This past Friday the 13th was anything but unlucky for US-based pot growers. Cannabis stocks on both sides of the border lit up on the news of President Trump's agreement to support congressional efforts to protect states that have legalized marijuana.

At the source of the White House's change of heart was a fellow Republican, Senator Cory Gardner of Colorado. Gardner got his knickers in a twist at the start of 2018, when Attorney General Jeff Sessions revoked an Obama administration policy directing federal prosecutors not to interfere with cannabis companies operating legally under state law. At that time, Sessions referred to the repeal as "a return to the rule of law."

Despite federal challenges under the new administration, more than 90% of states have legalized marijuana use on some level. Medical cannabis is legal in 29 states, with 17 others having restrictive laws around the psychoactive/THC component but allowing access to CBD-rich products. Gardner's home state of Colorado is one of 9 states plus Washington DC having legalized adult recreational marijuana use; plus it's been decriminalized in 18 more states.

Gardner retaliated to federal interference in his state's marijuana industry by blocking justice department nominees. Trump responded to the standoff by providing assurances that the federal government would not interfere with states' marijuana industry and that he would champion new legislation allowing states to set their own cannabis laws.

We expect Canadian stock exchanges to reverse any objections they had to Canadian companies doing business in the US, once they have certainty around the new federal policy.

Meanwhile the FDA is soliciting feedback on the status of cannabis, its medical benefits, and potential risks for abuse by April 23, following a request by the World Health Organization ("WHO"). The FDA currently categorizes cannabis as a controlled Schedule I substance under the Controlled Substances Act (CSA). This effectively views cannabis as an illegal substance on a federal level in the U.S. Many organizations have human clinical studies underway evaluating the potential of the drug and its components for medical as well as health & wellness uses.

The U.S. Department of Health and Human Services (HHS) said it will not provide any recommendations on the "status of international control" for cannabis, or the other related substances. "Instead, HHS will defer such consideration until WHO has made official recommendations to the Commission on Narcotic Drugs, which are expected to be made in mid-2018," the document from the FDA indicated.

To date, the FDA has approved three cannabinoid-based medicines derived from isolated synthetics: Marinol, Syndros, and Cesame. Stay tuned for the FDA review of GW Pharma's Epidiolex, a proprietary oral solution of pure plant-derived CBD, under investigation for treatment of seizures associated with two rare and difficult-to-treat conditions of childhood-onset epilepsy. The NDA has been accepted with a PDUFA date (goal for completion of the FDA review) of June 27, 2018. An FDA advisory committee meeting is scheduled for April 19, when there will be a vote on whether to recommend approval based on a review of safety and efficacy data. We're keeping an eye out for pending regulatory and administrative details as they emerge.

CATHY STEINER, PRINCIPAL





BIGGEST MOVERS

Recent News¹

Markets have stagnated in the first half of April, with the TSX decreasing 0.6% and the Nasdaq increasing 0.6%. 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:

- **AveXis, Inc.** (NasdaqGS:AVXS, **+67%**): AveXis is a clinical-stage gene therapy company developing and commercializing treatments for patients suffering from rare and life-threatening neurological genetic diseases in the United States. Strong recent share performance was driven by the announcement that the company will be acquired by Novartis at a significant premium for US\$218 per share
- **Pulse Biosciences, Inc.** (NasdaqCM:PLSE, **+45%**): Pulse Biosciences is a clinical-stage medical technology company developing therapeutic tissue treatment platforms based on its proprietary nano-pulse stimulation (NPS) technology. Shares performed well of late after the company revealed positive results from a study of its treatment for skin lesions. The results showed that 82% of treated lesions were rated as clear or mostly clear after treatment from the company's NPS technology after 106 days
- **AXIM Biotechnologies, Inc.** (OTCPK:AXIM **+36%**): AXIM Biotechnologies researches, develops and produces nutraceutical and cosmetic, and genetically controlled botanical products, and also engages in the extraction and purification of cannabinoids technologies. Strong share performance was driven by the announcement that the company entered into a Memo of Understanding with a leading Korean specialty pharmaceutical company for the commercialization of two of AXIM's cannabinoid-based proprietary pharmaceutical applications, CanChew+ and MedChew, in South Korea
- **Clovis Oncology, Inc.** (NasdaqGS:CLVS, **+12%**): Clovis Oncology is a biopharmaceutical company focused on acquiring, developing, and commercializing anti-cancer agents in the United States, Europe, and internationally. Strong recent performance has been driven by the announcement that the FDA approved the company's Rubraca tablets for the maintenance treatment of adult patients with recurrent epithelial ovarian, fallopian tube, or primary peritoneal cancer
- **Novavax, Inc.** (NasdaqGS:NVAX, **-16%**): Novavax is a clinical-stage biotechnology company focused on the discovery, development, and commercialization of recombinant nanoparticle vaccines and adjuvants. The recent share price decline was driven by the company's follow-on equity offering, that was issued at a discount of \$0.099 per share at the time of the offer
- **Incyte Corporation** (NasdaqGS:INCY, **-18%**): Incyte is a biopharmaceutical company focused on the discovery, development, and commercialization of proprietary therapeutics in the United States. Share prices recently fell after the company announced its Phase 3 ECHO-301 study did not meet the primary endpoint of improving progression-free survival in the overall population compared to KEYTRUDA monotherapy

Note 1: For the period March 29th to April 13th, 2018

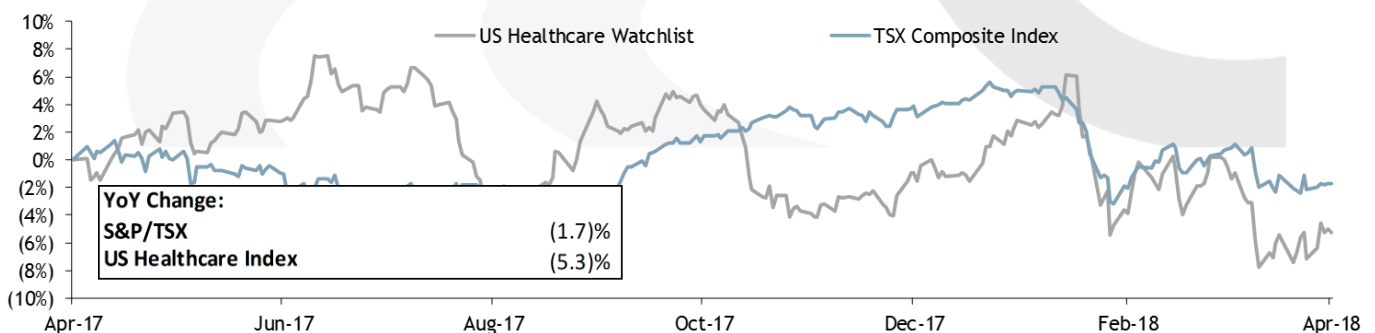


US HEALTHCARE WATCHLIST

News Scan¹

- The US Healthcare Watchlist index lost approximately 5% over the last twelve months, while the TSX Composite Index lost 1.7% over the same period. Some events making news this month:
- On Apr. 11th, **Alexion Pharmaceuticals** announced it will acquire **Wilson Therapeutics**, a Sweden-based biopharmaceutical company, for approximately US\$855 million, in order to strengthen its lineup of rare disease drug treatments. The US group is acquiring the business through a cash tender offer worth 232 Swedish crowns per share, a premium of 70% compared to the share closing price on April 10th. Wilson will give the company access to new therapies to treat unusual copper-mediated disorders and marks a first step by the new executive team in overhauling Alexion's medicine cabinet
- On Apr. 10th, **Analogic Corp.** announced it has agreed to be bought by private equity firm **Altaris Capital Partners LLC** for approximately US\$1.1 billion in cash. The offer price of \$84 per share is at a discount of 12% to the company's April 10th close, but a 25% premium to the closing price of \$67.45 on June 7, 2017, the day after the company announced its plans to put itself up for sale
- On Apr. 9th, **Novartis** announced it will acquire **AveXis Inc.**, a clinical-stage gene therapy company, for approximately US\$8.7 billion. The offer represents an 88% premium to AveXis' April 6th closing price. Novartis plans a smooth transition of AveXis operations and the integration of AveXis' talented and dedicated employees into the Novartis organization to continue the mission of bringing AVXS-101, AveXis' proprietary gene therapy currently in development, to patients worldwide
- On Apr. 3rd, reports indicated **Pfizer Inc.** was in talks with **Proctor & Gamble Co.** for the sale of its consumer health business, although the companies were far apart on a price for the business. Pfizer said it is evaluating potential strategic options for the unit and expects to make a decision in 2018. **GlaxoSmithKline**, **Reckitt Benckiser** and **Johnson & Johnson** have all exited from the bidding process, endangering an auction Pfizer hoped would bring in as much as US\$20 billion
- On Apr. 6th, **Roche Holdings** closed the previously announced acquisition of the remaining 87.4% of **Flatiron Health Inc.** for US\$1.9 billion, following on from an existing equity stake of 12.6%. Flatiron, backed by Alphabet Inc, utilizes data on individual cancer cases to help doctors select optimal approaches for their patients. Roche expects Flatiron's algorithms to improve not only its research and trials, but also support its arguments during head-to-head price talks with payers as new combinations of its therapies hit the market

Relative Performance Index



Note 1: For the period March 29th to April 13th, 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

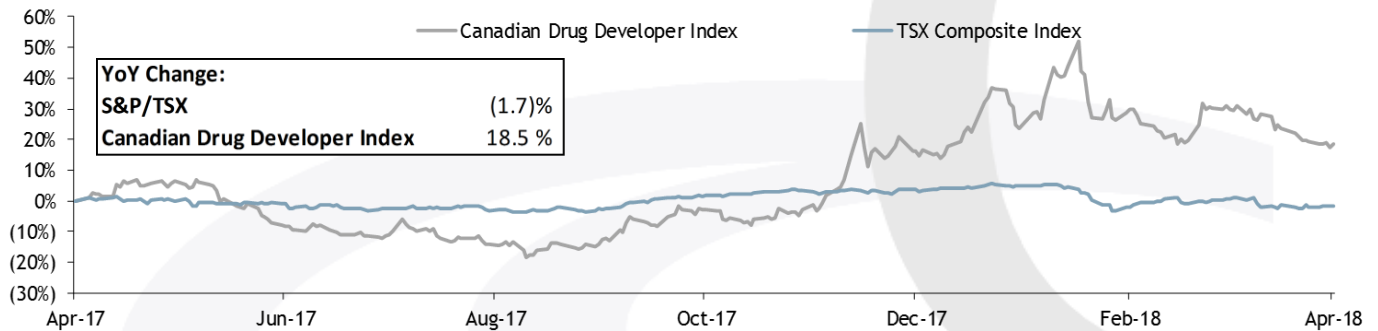


CANADIAN DRUG DEVELOPERS

News Scan¹

- Last twelve-month performance of the Canadian Drug Developer index was an impressive 18.5%, significantly outperforming the TSX Composite Index which lost 1.7% over the same period. In the news this month:
- On Apr. 13th, **Acerus Pharmaceuticals Corporation** announced the signing of an agreement granting **Producto Científicos, S.A. de C.V.** (Carnot Laboratories) the exclusive right to market NATESTO in 19 Central and Latin American countries including Mexico, Argentina and Columbia. Under the terms of the agreement, Acerus will receive an upfront fee and regulatory milestone payments upon Carnot Laboratorios receiving marketing approval in the territories
- On Apr. 12th, **ProMetic Life Sciences Inc.** announced positive clinical activity observed in Alström syndrome (AS) patients treated with PBI-4050 in the ongoing Phase 2 open label clinical trial being conducted in the UK. The clinical study, which has enrolled 12 patients, demonstrated improved liver function and reduced fibrosis in fat tissues as evidenced from fat biopsies in patients treated with PBI-4050
- On Apr. 11th, **Resverlogix Corp.** announced it entered into a commitment letter with **Third Eye Capital** for a senior secured loan for gross proceeds of C\$30 million. The loan will have a term of 12 months and bear interest at 10% per annum. The company also issued 1,800,000 common shares at a price of C\$1.78 per share for gross proceeds of C\$3.2 million in a private placement. Resverlogix plans to use the proceeds to advance the completion of the company's critical Phase 3 BETonMACE trial

Relative Performance Index



Note 1: For the period March 29th to April 13th, 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.

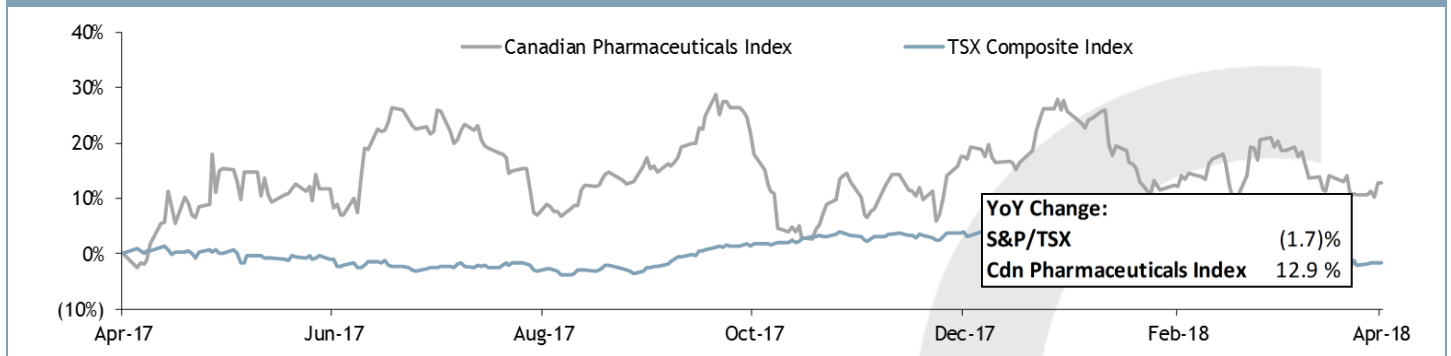


CANADIAN PHARMACEUTICALS

News Scan¹

- The Canadian Pharmaceutical index gained approximately 13% over the last twelve months, beating the TSX Composite Index which lost 1.7% over the same period. News for Canadian-listed pharmaceutical companies in April 2018:
- On Mar. 30th, **Zomedica Pharmaceuticals Corp.**, a development stage veterinary diagnostic and pharmaceutical company, filed a shelf registration in the amount of C\$169.2 million. Zomedica is registering 77,225,205 common shares from selling shareholders including Rowe Family Gst Trust, Radical Capital Ltd., and Wickfield Properties LLC

Relative Performance Index



Note 1: For the period March 29th to April 13th, 2018

Canadian Pharmaceuticals Constituents: Valeant Pharmaceuticals International, Inc., Knight Therapeutics Inc., Concordia International Corp., Aralez Pharmaceuticals Inc., Theratechnologies Inc., Zomedica Pharmaceuticals Corp.

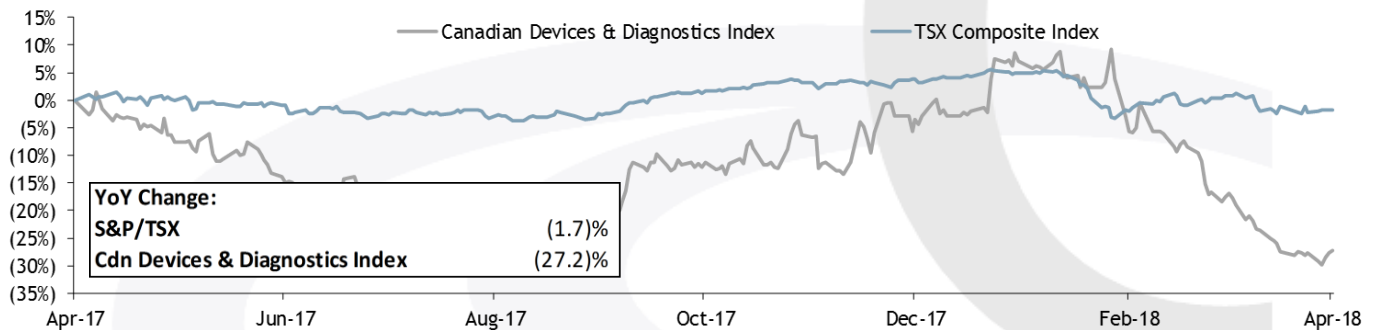


CANADIAN DEVICES & DIAGNOSTICS

News Scan¹

- The Canadian Devices & Diagnostics index lost approximately 27% over the last twelve months, lagging the TSX Composite Index which lost 1.7% over the same period. Newsmakers for April 2018:
- On April 10th, **Titan Medical Inc.**, a medical device company focused on the design, development and commercialization of a robotic surgical system for application in minimally invasive surgery, announced the closing of an offering to issue 33,799,961 units for gross proceeds of C\$10.1 million. Each Unit was issued at a price of \$0.30 apiece and comprises one common share plus one warrant exercisable at a price of \$0.35 until expiry on April 10, 2023. The net proceeds of the offering will be used to fund continued development work in connection with the Company's SPORT Surgical System, as well as for working capital and other general corporate purposes
- On Mar. 29th, **Titan Medical Inc.** and **Mimic Technologies Inc.**, a market leader in robotic simulation, announced the collaboration and successful demonstration of a first set of simulation modules for use with Titan's SPORT Surgical System surgeon workstation. The successful demonstration of these simulation modules is the first step in the development of a comprehensive surgeon training curriculum for the SPORT Surgical System
- On Apr. 3rd, **Opsens Inc.**, a healthcare equipment company focused on fiber optic sensors for interventional cardiology, announced that the integration of Opsens' technology, within the Impella Cardiac Pump marketed by its client **Abiomed, Inc.** was approved by the US FDA. This news follows the US\$6 million cooperation and development agreement signed between the two companies in April 2014. As part of the agreement, Opsens had granted Abiomed an exclusive worldwide license to include its miniature pressure sensor in circulatory assist devices

Relative Performance Index



Note 1: For the period March 29th to April 13th, 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.

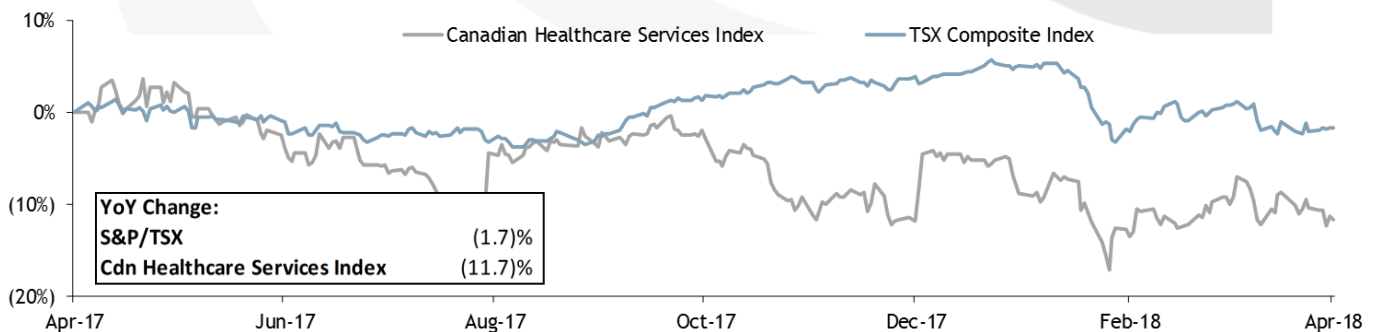


CANADIAN HEALTHCARE SERVICES

News Scan¹

- The Canadian Healthcare Services index experienced a decline of approximately 12% over the last twelve months, lagging the TSX Composite Index which lost 1.7% over the same period. April 2018 news highlights among the group:
- **Sun Life Financial**, a leading international financial services organization providing insurance, wealth and asset management solutions to individual and corporate clients, has been rolling out a virtual care referral network. The network initially includes three innovative companies - **Akira**, **EQ Care**, and **Maple** - which are offered to individual and group clients at a significant discount. Each company delivers online healthcare services including online visits with medical professionals, prescriptions, and convenient hours of operation, often including evenings and weekends
- On Apr. 11th, **Akumin Inc.**, a provider of outpatient diagnostic imaging services in the United States, announced it entered into an agreement with a syndicate of underwriters, pursuant to which the underwriters have agreed to purchase 8,750,000 common shares on a bought deal basis for aggregate gross proceeds of US\$35 million. The company intends to use the net proceeds from the offering to finance the cash consideration portion of the previously disclosed acquisition of certain seven Texas-based diagnostic imaging centers, and to support future growth initiatives
- On Apr. 11th, **Extendicare Inc.**, a senior care service provider in Canada, closed the previously announced acquisition of **Lynde Creek Retirement Community** from the Canadian Baptists on Ontario and Quebec Foundation for approximately C\$34.5 million. The property includes 93 independent and assisted living suites as well as a 113-unit townhome development in Whitby, Ontario. The purchase price represents an implied capitalization rate of 6.3%, and operations are expected to be immediately accretive to the Extendicare's adjusted funds from operations
- On Apr. 5th, **Centric Health Corp.**, a diversified Canadian healthcare services company, announced a collaboration with **Think Research** to digitize Centric's Specialty Pharmacy operations. Think Research's innovative decision support solution will provide healthcare practitioners with real-time information about seniors and help maximize safety and efficiency through its data analytics capabilities. The solution will digitize Centric Health's medication review program, thereby eliminating paperwork duplication during the pharmacy clinical review process and helping to drive cost savings and efficiencies. On Apr. 3rd, **Centric Health Corp.**, announced the appointment of David Murphy as its President and Chief Executive Officer, who joins the company from Cardinal Health. The appointment is effective May 1, 2018
- On Mar. 28th, **Sienna Senior Living Inc.** closed the previously announced acquisition of ten senior housing assets in Ontario for approximately C\$470 million. Sienna assumed approximately C\$88.2 million in existing mortgages. The deal was financed through C\$115 million acquisition term loan and the net proceeds of a private placement in the amount of approximately C\$184 million

Relative Performance Index



Note 1: For the period March 29th to April 13th, 2018

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

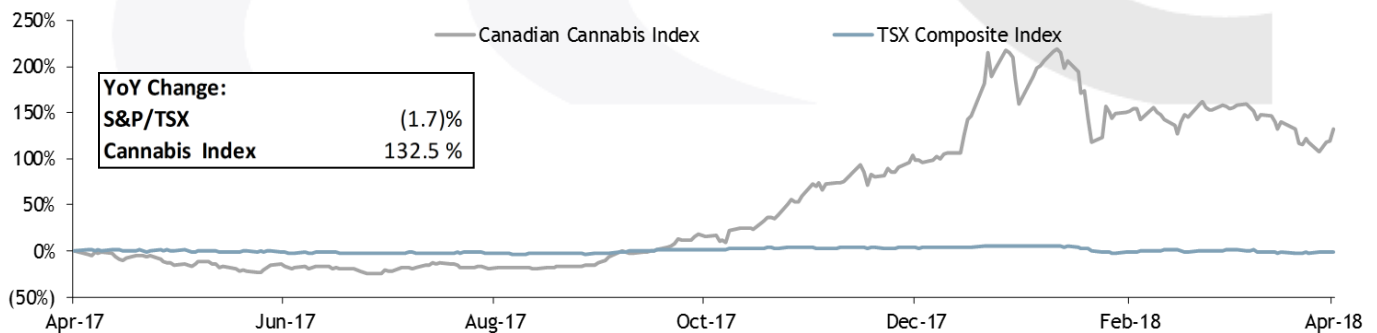


CANNABIS

News Scan¹

- Last twelve-month performance of the Cannabis index was approximately 133%, dwarfing the 1.7% loss of the TSX Composite Index over the same period. Highlights of cannabis news for April 2018:
- **Health Canada** issued licenses #98, #99, #100 and #101 to **BC Tweed Joint Venture** (Cultivation in BC), **High Park Farms Ltd.** (Cultivation in Ontario), **Northern Green Canada Inc.** (Cultivation & Oils production in Ontario) and **Tidal Health Solutions Ltd.** (Cultivation in New Brunswick)
- On Apr. 11th, the **Liquor Control Board of Ontario** and **Ontario Cannabis Store** identified and announced the first four cannabis retail store locations in the province; 3014 Stone Road West, Guelph; 770 Gardiners Road, Kingston; 2480 Gerrard Street East, Toronto; and 570 Harbour Expressway, Thunder Bay
- On Apr. 12th, reports indicated exports of medical cannabis oil from Canada to Germany had a breakout year in 2017, with exports increasing 300% from 2016 levels. Analysts expect this trend to continue as countries legalizing medical cannabis look to imports to meet demand in lieu of domestic cultivation
- On Apr. 11th, **MedReleaf Corp.**, **Canopy Growth Corp.**, **Aphria Inc.**, **The Hydrothecary Corp.**, and **Aurora Cannabis Inc.** announced a supply agreement with the **Société des alcools du Québec**. Each supplier agreement lasts for three years, with the exception of Hydrothecary which has entered into a five-year agreement
- On Apr. 9th, **Cannabis Wheaton Income Corp.** announced it will acquire **Robinson's Cannabis Incorporated** for approximately C\$14.7 million. Robinson's is a late-stage licensed producer applicant based in Kentville, Nova Scotia, with a 27,700 square foot purpose-built cannabis cultivation facility currently under construction. As consideration for Robinson's shares, shareholders are entitled to receive an aggregate of 9,395,968 Cannabis Wheaton common shares
- On Apr. 4th, **Cannabis Wheaton Income Corp.** announced it will acquire **Dosecann Inc.** for approximately C\$38 million, payable in common shares of Cannabis Wheaton. Dosecann is a late-stage Licensed Dealer applicant pursuant to the Narcotic Control Regulations with a purpose-built 42,000 square foot facility located in Charlottetown, Prince Edward Island. The Transaction is expected to close on or about April 30, 2018
- On Apr. 12th, **MedReleaf** closed the previously announced agreement to acquire 1 million square feet of existing greenhouse infrastructure on a 69 acre property in Exeter, Ontario and 95 acres of adjacent land, for approximately C\$26 million
- On Apr. 5th, **Canopy Rivers Corporation**, **Canopy Growth Corporation** and **LiveWell Foods Canada Inc.** announced that the companies have executed a strategic agreement to accelerate the development and commercialization of Livewell's two large scale cannabis facility projects located in Ottawa, ON and Pontiac, QC.
- On Apr. 4th, **CanniMed Therapeutics** announced it entered into a LOI to become a preferred supplier of medical cannabis to **Pharmasave**, one of Canada's leading independent community pharmacies with over 650 locations

Relative Performance Index



Note 1: For the period March 29th to April 13th, 2018

Cannabis Index Constituents: Canopy Growth Corporation, Aurora Cannabis Inc., Aphria Inc., MedReleaf Corp., CannTrust Holdings Inc., CanniMed Therapeutics Inc., Cannabis Wheaton Income Corp., OrganiGram Holdings Inc., The Supreme Cannabis Company, Inc., The Hydrothecary Corporation



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