



Healthcare Industry Update

Thursday, October 4th, 2018



THE ORIGIN RX

Are the floodgates about to open?

In two weeks, recreational cannabis will be legal. So, what will happen on October 17th?

According to a September survey of 1,700 current cannabis users by Lift & Co, 58% of Canadians didn't know where they would be able to buy cannabis once it's legal. The most confusion was in Manitoba, where 73% of respondents didn't know, compared to the least confusion in Atlantic Canada, where only 44% were in the dark.

This survey tells me a couple of things.

1: Most current cannabis users are probably quite satisfied with their retailer, and aren't likely to switch over to another, call it "more legal" retailer. I'm guessing they won't care until there's a store around the corner, kind of like Starbucks. Or Shoppers Drug Mart. Convenience is important, right?

2: Legal cannabis appeals mainly to Canadians who don't currently use cannabis, and where quality, consistency, new consumption formats and plain old curiosity will drive consumption.

So, where can you buy legal cannabis come October 17th? Province-by-province, the answer is some combination of online, government-run stores, and private stores. You can Google it for details. Ontario, where more than half of Canada's licensed producers are located, has yet to finalize the details of retail sales of recreational cannabis. Proposed regulations suggest launching a private retail model April 2019. For give-or-take 6 months until then, online sales from the Ontario Cannabis Store will be the only legal way to purchase recreational cannabis. According to a report by the CD Howe Institute, the Toronto area alone had more than 75 delivery services and more than 50 dispensary storefronts. That means bricks & mortar stores will be a critical piece to drive cannabis consumption.

None of this will change medical cannabis sales. It will continue to be available from a federally licensed producer online. According to StatsCan, at June 30th, there were about 331K registered medical cannabis users in Canada, of which 143K were in Ontario.

Can reality live up to expectations? It's a tall order. Firstly, how much demand can we expect? Estimates range from about 450,000 Kg to more than 2x that number. I've got to believe it will take some time to build the market but hard to say how long that will take; word of mouth, education and access/convenience will play a part. Second, how much supply will be available? Will there be a shortfall? Also hard to say, because there is no data reporting how much inventory LPs have aggregated in their vaults. Third, can we reasonably expect the supply chain to run smoothly from coast to coast? Is that a rhetorical question?

Meanwhile, I'm hearing lots of interest in something to help with an ache or pain or bout of insomnia, or to unwind with at the end of a stressful day, with fewer calories than a glass of wine. There are some promising products being launched in a couple of weeks...

CATHY STEINER, PRINCIPAL





BIGGEST MOVERS

Recent News¹

Markets have been relatively flat in the last two weeks with the TSX decreasing 2.0% and the NASDAQ increasing by 1.8%. 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:

- **MannKind Corporation** (NasdaqGM:MNKD +64%): MannKind is a biopharmaceutical company focusing on the development and commercialization of inhaled therapeutic products for diabetes and pulmonary arterial hypertension. Recent share price appreciation was largely due to the a worldwide exclusive licensing and collaboration agreement with **United Therapeutics Corp.**, to develop and commercialize a dry powder formulation of Treprostinil, in clinical trials for treatment of pulmonary arterial hypertension. Mannkind also announced that the Affrezza safety and pharmacokinetic study is open for enrollment to a second cohort of pediatric patients
- **Tocagen Inc.** (NasdaqGS:TOCA +58%): Tocagen is a clinical-stage cancer-selective gene therapy company that focuses on delivering therapeutic genes into the DNA of cancer cells for patients with recurrent high grade glioma, or HGG. Recent share price appreciation was due to an announcement that Tocagen has completed the planned enrollment of 380 patients in the global Toca 5 pivotal Phase 3 trial three months ahead of schedule
- **Liberty Health Sciences Inc.** (CNSX:LHS +53%): Liberty Health Sciences is a producer and distributor of medical cannabis in the State of Florida. Recent share price appreciation was due to an announcement that Liberty has entered into an exclusive partnership with **AdaViv Inc.** to improve cannabis production
- **Vital Therapies, Inc.** (NasdaqGS:VTL -97%): Vital Therapies is a biotherapeutic company that focuses on developing and commercializing cell-based therapy for the treatment of acute forms of liver failure. Recent share price decline is due to the announcement that topline results of VTL-308 failed to meet the primary endpoint of a significant improvement in overall survival through at least 91 days
- **GTx Inc.** (NasdaqCM:GTXI -94%): GTx is a biopharmaceutical company that develops and commercializes treatments for stress urinary incontinence (SUI) and prostate cancer. Recent share price decline is due to the results released from the ASTRID trial evaluating enobosarm, a treatment for conditions such as muscle wasting and osteoporosis, in post-menopausal women with SUI, which failed to show statistical significance relative to placebo
- **Geron Corporation** (NasdaqGS:GERN -70%): Geron is biopharmaceutical company that supports clinical stage development of imetelstat for all human therapeutic users. Recent share price decline is due to an announcement that Janssen Biotech has terminated the 2014 Imetelstat Collaboration and License Agreement with Geron
- **TG Therapeutics Inc.** (NasdaqCM:TGTX -56%): TG Therapeutics is a biopharmaceutical company that focuses on acquisition, development and commercialization of treatments for B-cell malignancies and autoimmune diseases. Recent share price decline is due to the new developments in its Phase 3 clinical trial of UNITY-CLL, which evaluates the combination of ublituximad and umbralisib in patients with chronic lymphocytic leukemia (CLL). TG was advised by the Drug Safety Monitoring Board that it could not conduct interim analysis on studies since data collected were not sufficiently matured

Note 1: For the period August 31st to September 28th, 2018

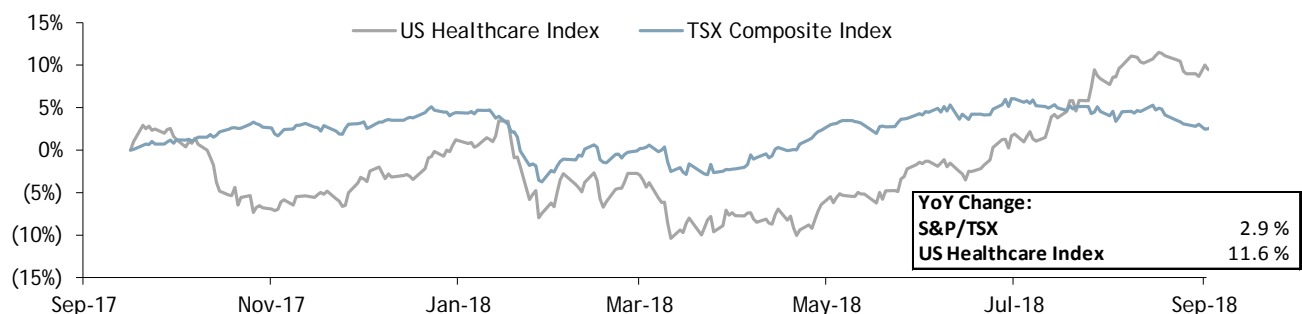


US HEALTHCARE WATCHLIST

News Scan¹

- The US Healthcare Watchlist Index gained approximately 7.4% over the last twelve months, while the TSX Composite Index gained 2.9% over the same period. Some events making news this month:
- On September 27th, **Eli Lilly & Co** received FDA approval for its Emgality injection, a preventative treatment for adults with severe migraines. Eli Lilly joins alongside Amgen and Novartis as one of three migraine drugs to receive FDA approval recently, all with identical list price of US\$6,900 per year. This treatment is expected to help approximately 39 million Americans who suffer from severe migraine headaches, according to the Migraine Research Foundation
- On September 27th, **Aetna Inc.** announced it has agreed to sell its Medicare Part D prescription business to a subsidiary of **WellCare Health Plans Inc.** in light of its merger with **CVS Health**. The merger is rumoured to receive approval for anti-trust concerns, and is expected to close early fourth quarter
- On September 28th, **Roche** announced it has acquired **Tusk Therapeutics Ltd.**, a privately-held immune-oncology company, for €70 million, plus an additional contingent payment of up to €585 million based on achievements of certain predetermined milestones. Tusk has spun out a portion of their remaining portfolio of immune-oncology targets under Black Belt Therapeutics
- On September 26th, **Eton Pharmaceuticals** filed a prospectus for an IPO. Eton expects to raise 20.7 million shares of common stock and 2.48 million shares of common stock underlying underwriter warrant
- On September 25th, **Novartis** announced more than 2,000 job cuts as part of their global restructuring plan, where most will fall in Switzerland in production and business services. Novartis plans to focus its efforts on making their medicinal products more “personalized and specific” according to Chief Executive Vasant Narasimhan. Recent cost cutting efforts are geared towards meeting earning targets and battling against expiring patents
- On September 25th, **Tris Pharma** announcement its acquisition of **NextWave Pharmaceuticals**, a subsidiary of **Pfizer** which develops two key treatments for Attention Deficit Hyperactivity Disorder (ADHD). The acquisition is expected to expand Tris’ portfolio of products to treat patients with ADHD and expand its commercial footprint globally
- On September 24th, **Gilead Sciences** announced it plans to launch an authorized generic version of Eplclusa and Harvoni through its newly established subsidiary Asequa Therapeutics. The two generics which treat chronic hepatitis C virus will launch at a list price of US\$24,000 and will be available in January 2019
- On September 20th, **Amgen** and the County of Los Angeles announced an agreement to become founding sponsors for **BioLA**, a newly formed innovation hub focused on advancing life science and global health. BioLA is expected to create jobs, drive economic development and improve the County’s public healthcare system
- On September 14th, **Allergan** announced it will acquire **Bonti**, a privately held clinical-stage biotechnology company focused on development and commercialization of neurotoxin programs for aesthetic and therapeutic application, for US\$195 million with additional contingent milestone payments. Allergan expects the acquisition to expand their medical aesthetics product offering

Relative Performance Index



Note 1: For the period September 28th, 2017 to September 28th, 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

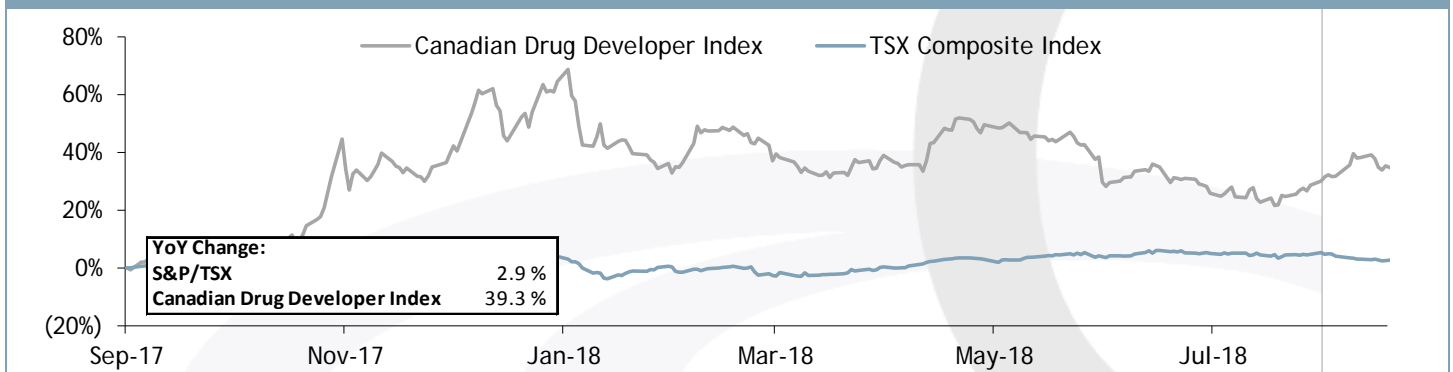


CANADIAN DRUG DEVELOPERS

News Scan¹

- Last twelve-month performance of the Canadian Drug Developers Index was an impressive 39.3%, significantly outperforming the TSX Composite Index which only gained 2.9% over the same period. In the news this month:
- On September 28th, **Oncolytics Biotech** announced that it has entered into a stock purchase agreement for up to US\$26 million with **Lincoln Park Capital**. The capital provides Oncolytics with financial flexibility needed to continue conducting clinical research programs as the company approaches key milestones
- On September 26th, **Clementia Pharmaceuticals** announced updated Phase 2 data on palovarotene to treat fibrodysplasia ossificans progressiva (FOP), an ultra-rare bone condition. The 12-week trial indicated consistent treatment effects in both adult and pediatric patients. The company expects to continue trials to show the full potential of palovarotene
- On September 25th, **Aurinia Pharmaceuticals** announced that it has completed enrollment for the Aurora Phase 3 trial. Significant interest in the trial reinforces the need for new treatment options for patients with lupus nephritis
- On September 27th, **ImmunoVaccine Inc.** provided an update on its research to explore the novel mechanism of action of its DPX-RSV vaccine for respiratory syncytial virus (RSV). The data highlighted the effects of two potential approaches to preventing RSV. IMV's vaccine yielded strong antigen-specific immune responses and had a protective effect on disease pathology
- On September 25th, **InMed Pharmaceuticals** filed a patent application for the treatment of pain with cannabinoids. The company is researching the potential of non-THC cannabinoids to treat pain as an alternative to opioids

Relative Performance Index



Note 1: For the period September 28th, 2017 to September 28th, 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.

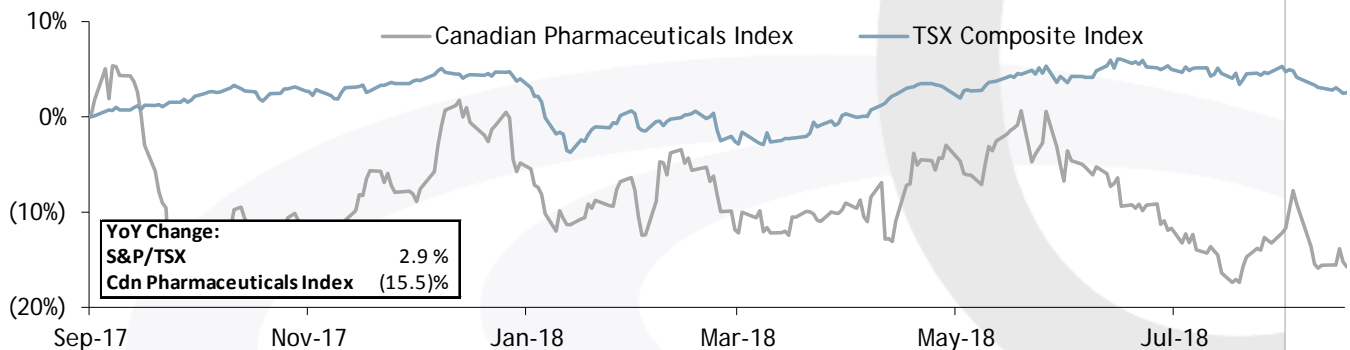


CANADIAN PHARMACEUTICALS

News Scan¹

- The Canadian Pharmaceuticals Index experienced a decline of approximately (15.5%) over the last twelve months, while the TSX Composite Index gained 2.9% over the same period. Recent news highlights include:
- On September 27th, **Dova Pharmaceuticals**, a company focused on commercializing drug candidates for diseases with unmet needs, and **Salix Pharmaceuticals**, a subsidiary of **Bausch Health Companies Inc.**, announced that they have entered into an exclusive agreement to co-promote Dova's Doptelet, a treatment for adult patients with chronic liver disease
 - On September 26th, Bausch announced that it will redeem \$125 million of its outstanding 7.50% senior notes due in 2021. The company intends to use cash on hand to fund the redemption of the notes
- On September 24th, **Knight Therapeutics** and **Jaguar Health** announced that they have entered into a distribution, license and supply agreement that grants Knight the exclusive right to commercialize Mytesi, a product used for symptomatic relief of noninfectious diarrhea by patients with HIV/AIDS, in Canada and Israel. As part of the agreement, Jaguar may receive payments from Knight, up to an aggregate amount of up to US\$18 million throughout the 15-year term
- On September 19th, **Aralez Pharmaceuticals** announced that it has entered into a definitive "Stalking Horse" purchase agreement for substantially all assets in a transaction valued at US\$240 million. The company intends to sell its Canadian operations to **Nuvo Pharmaceuticals** and its Toprol franchise to funds managed by **Deerfield Management**. Nuvo and Deerfield have agreed to serve as "stalking horse" bidders throughout the restructuring process
- On September 18th, **Canbridge Sciences**, a Montreal-based pharmaceutical and medical devices company, announced that it has entered into a multi-year agreement with **Axcelon Dermacare** for the exclusive distribution of Nanoderm in Canada. The deal provides Canbridge with a unique and cost-effective technology for the treatment of burns and chronic ulcers

Relative Performance Index



Note 1: For the period September 28th, 2017 to September 28th, 2018

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

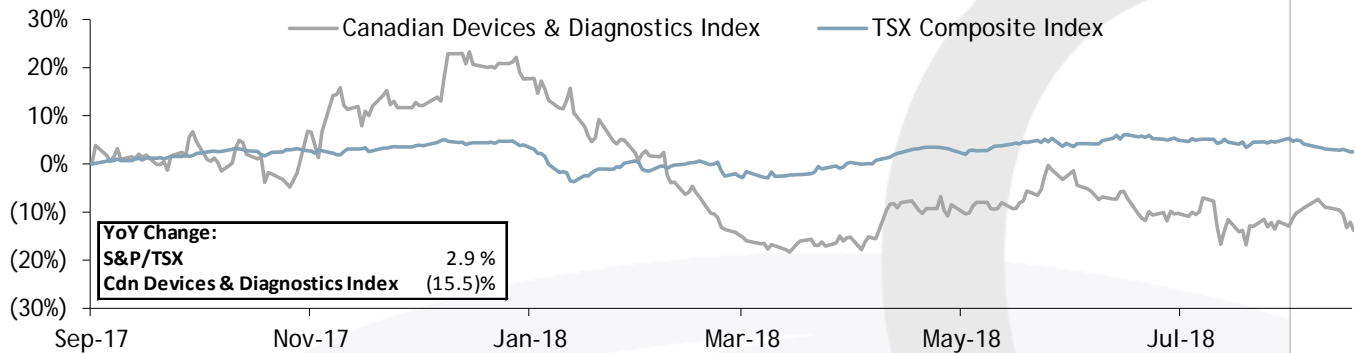


CANADIAN DEVICES & DIAGNOSTICS

News Scan¹

- The Canadian Devices & Diagnostics Index lost approximately (15.5%) over the last twelve months, lagging the TSX Composite Index which gained 2.9% over the same period. Newsmakers for September 2018:
- On September 20th, **Covalon Technologies** announced that it has entered into a definitive agreement to acquire **AquaGuard**, a Seattle-based division of medical technologies company **Cenorin**, for C\$16.1 million, with additional potential consideration of up to \$1.2 million. AquaGuard's products provide patients with moisture protection for wound, surgical, and vascular access. AquaGuard's sales team and specialized product are expected to provide access to distribution channels at key hospitals and group purchasing organizations across the US
- On September 20th, **Opsens** announced that it has developed a product that allows the diagnosis of coronary heart blockages while the heart is at rest. The company plans to begin commercialization at the end of 2018. The device will allow Opsens to enter the FFR market which is currently estimated to be worth US\$500 million

Relative Performance Index



Note 1: For the period September 28th, 2017 to September 28th, 2018

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

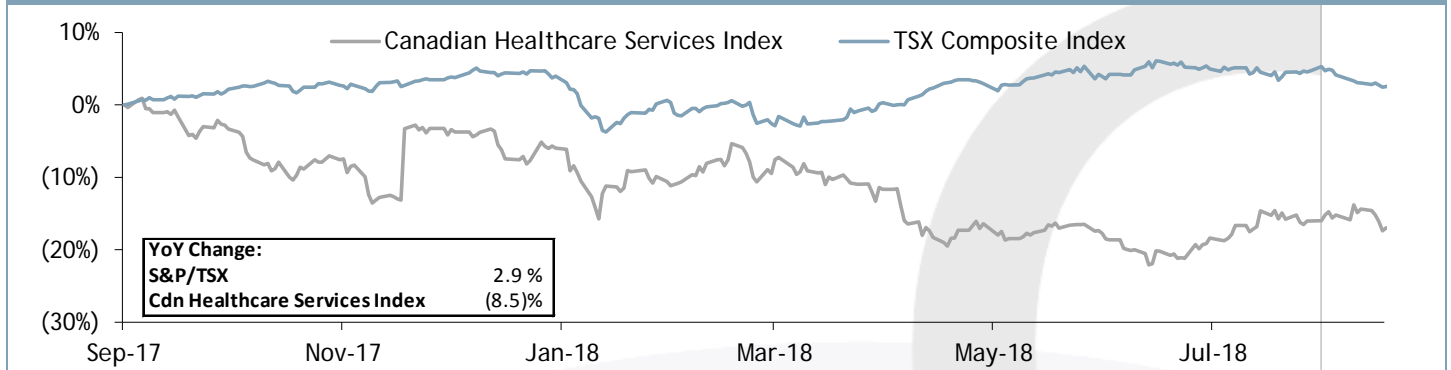


CANADIAN HEALTHCARE SERVICES

News Scan¹

- Last twelve-month performance of the Canadian Healthcare Services Index decreased (8.5%), while the TSX Composite Index increased 2.9% over the same period. In August, the following occurred in the Canadian healthcare services space:
- On September 18th, **Revera Inc.**, an owner and operator of senior living facilities in Canada, announced that it is opening a state-of-the-art retirement residence in Regina. The modern residence hosts 222 suites, including 73 seniors' apartments, 95 independent living suites, 27 assisted living suites, and 27 memory care suites. The residence represents a C\$67 million investment in seniors in Regina
- On September 11th, **Extendicare Inc.**, a Canadian senior care provider, announced that Dr. Michael R. Guerriere has been appointed as CEO effective October 22nd. Dr. Guerriere, a current member of Extendicare's Board of Directors, has a diverse background with over 25 years of experience in medicine, healthcare, and technology

Relative Performance Index



Note 1: For the period September 28th, 2017 to September 28th, 2018

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

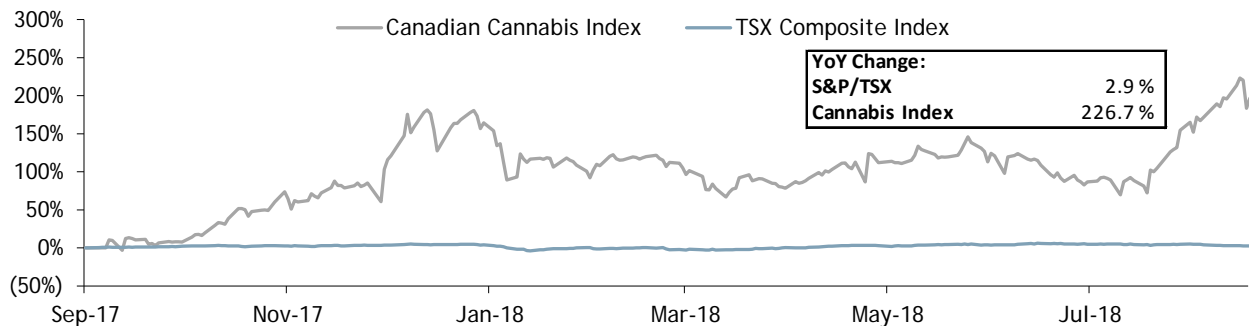


CANNABIS

News Scan¹

- Two weeks to legalization, and the ACMPR has issued 120 licenses. Last twelve-month performance of the Cannabis index was 266.7%, dwarfing the 2.9% gain of the TSX Composite Index over the same period. News highlights:
- On September 27th, **The Supreme Cannabis Company** announced a C\$90 million bought deal financing of convertible debentures, co-led by **GMP Securities** and **BMO Capital Markets**
 - On September 26th, **The Supreme Cannabis Company** announced that its wholly owned subsidiary, **7Acres**, has entered into a supply agreement for dried cannabis with **Tilray Inc.**
- On September 27th, **Aphria** announced that it has closed the acquisition of **LATAM Holdings** from **Scythian Biosciences**. The transaction was funded by the assumption of US\$1 million of existing LATAM Holdings debt with the remaining consideration funded by the issuance of 15,678,310 common shares of Aphria. As a result of the transaction, the company has solidified an important foothold in Latin America and the Caribbean
- On September 26th, **HEXO Corp.** announced plans to establish a Eurozone processing, production, and distribution centre in Greece. The partnership with Greek **Qannabos** will create an enterprise to capitalize on European medical markets
- On September 26th, **Canopy Growth Corporation** announced that the company's shareholders have approved the previously announced C\$5 billion private placement from **Constellation Brands**
 - On September 20th, **Canopy Growth Corporation** and **Organigram Holdings** have announced that, following Organigram's approval as a cannabis supplier, the Companies have signed a two-year supply and distribution agreement in the Province of Newfoundland & Labrador. Organigram is slated to become a key supplier of branded, finished cannabis products to Canopy's Tweed-branded retail operations in Newfoundland and Labrador
- On September 21st, **Shoppers Drug Mart** announced it received Health Canada's approval to be a licensed medical marijuana producer, following its Oct. 2016 application. This opens the door for it to dispense medical cannabis to patients.
- On September 18th, **Aurora Cannabis** announced that it, and its wholly owned subsidiary **MedReleaf**, have entered into additional supply arrangements with the Provinces of Manitoba, Prince Edward Island, and Newfoundland & Labrador as well as an additional agreement with the Yukon Territory. The agreements cover a broad range of products from dried cannabis to oil extracts
- On September 18th, **CannTrust Holdings Inc.** announced that it has completed its first shipment of cannabis oils to Danish joint venture partner **STENOCARE**. With this shipment, CannTrust and STENOCARE are changing the face of medicine in Denmark by offering the first and only medical cannabis oils to be accepted onto the Danish Medicine List by the Danish Medicine Agency
- On September 17th, **Auxly Cannabis Group** has announced that it has completed a non-brokered private placement of unsecured convertible debentures in **Kaneh Bosm Bio Technology Inc.** for C\$5 million. The debentures have a coupon rate of 8% and mature on September 17th, 2021. The strategic investment provides Auxly access to a significant and established portfolio of international cannabis licenses, assets, and distribution networks

Relative Performance Index



Note 1: For the period September 28th, 2017 to September 28th, 2018

Cannabis Index Constituents: Canopy Growth, Aurora Cannabis, Aphria, CannTrust Holding, Auxly Cannabis Group, OrganiGram Holdings, The Supreme Cannabis Company, The Hydrophocary



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