

# Medical Cannabis Reduces Opioid Use in the Tilray Observational Patient Study

Philippe Lucas, PhD(c) speaks to conference attendees at Columbia University in New York City

**N**EW YORK, NY—Patients who initiate medical cannabis significantly decrease their use of opioids as well as other prescription medications at 6 months, according to data from TOPS (Tilray Observational Patient Study), presented at the inaugural meeting of Medical Cannabis: The Science. The Risks, held at Columbia University in November.<sup>1</sup>

TOPS is the largest national longitudinal study of medical cannabis patients to date in Canada. The study enrolled more than 2100 participants at 21 clinics. In addition to opioids, the use of non-opioid pain medications, antidepressants, antiepileptic drugs, benzodiazepines, and sleep aids/muscle relaxants significantly decreased after 6 months of medical cannabis use.

“Cannabis may be playing a role in reducing the personal public health and safety impacts of opioids, benzodiazepines, and other substances,” said lead investigator Philippe Lucas, PhD(c), who is Vice President of Global Patient Research and Access at Tilray in Nanaimo, BC, Canada.

## Patient Demographics

The final data set presented by Dr. Lucas is based on 1145 adult patients (57.5% women; mean age 51.2 years) who completed at least one post-baseline visit by October 15, 2018. Most of the patients (~55%) graduated from college or achieved a higher degree, and most (56%) were married or living as married.

“It was really encouraging as a cannabis researcher to see that this was a study with a mostly female population,” Dr. Lucas said. “In 15 years of doing research on medical cannabis, this is the first study I’ve ever been part of that had more women than men participating in it,” he said, adding that women are the fastest rising demographic of medical cannabis users.

“There are a lot of conditions with a higher prevalence in

**Table. Primary Symptoms Cited by Medical Cannabis Users in TOPS**

Symptoms	n (%)
Chronic pain	915 (79.9)
Insomnia	384 (33.5)
Anxiety	327 (28.6)
Depression	219 (19.1)
Stress	219 (19.1)
Headache	166 (14.5)
Spasms	118 (10.3)
Appetite loss	105 (9.2)
Nausea	95 (8.3)
Gastrointestinal issues	60 (5.2)

TOPS, Tilray Observational Patient Study.

Source: Lucas P.<sup>1</sup>



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— Philippe Lucas, PhD(c)

women, such as fibromyalgia, lupus, multiple sclerosis, headaches, migraines, anxiety, and depression that don’t respond very well to many traditional pharmaceutical drugs, but do seem to respond well to medical cannabis,” Dr. Lucas told attendees.

## Cannabis Use Patterns

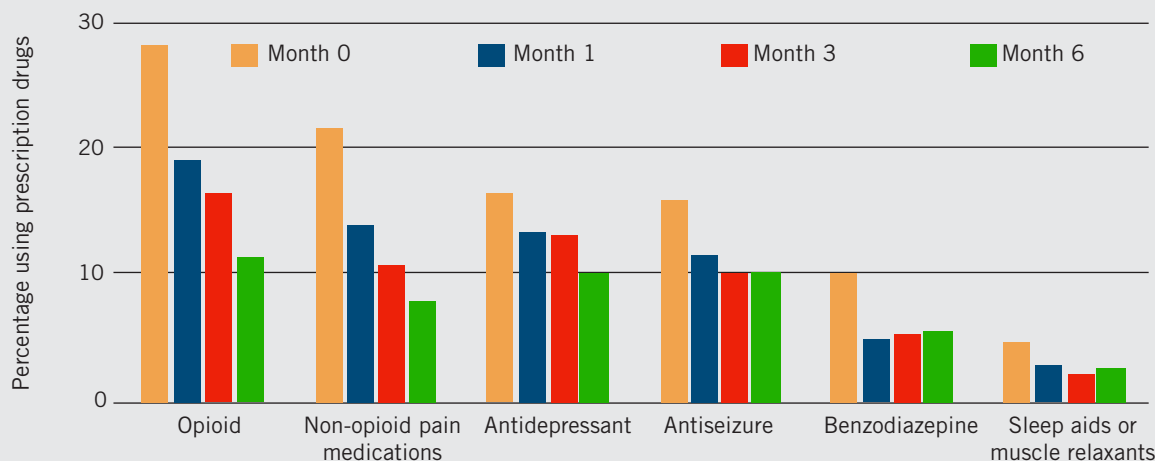
Chronic pain topped the list of symptoms reported by medical cannabis users in this study (80%), followed by insomnia (34%), anxiety (29%), depression (19%), stress (19%), and headache (15%; Table). Of 10 of the primary symptoms cited by patients, 6 were either pain or mental health disorders, Dr. Lucas said, noting the reciprocal relationship between these conditions.

In contrast to the theory that patients may need increasingly higher doses of cannabis to maintain efficacy over time, the findings did not show a significant increase in cannabis use among those using flower cannabis from baseline to 6 months (6.2 and 6.9 g, respectively).

“In fact, it is not unusual to hear from patients who have been using medical cannabis for 10 or 15 years that their current dosage levels are actually lower than what they started out on,” Dr. Lucas said. “What you do hear from patients is they develop a tolerance to the adverse effects of cannabis, including dizziness, disorientation, and even impairment associated with THC [delta-9-tetrahydrocannabinol].”

In terms of formulation, high cannabidiol (CBD) was preferred by 52% of patients, and oral ingestion by capsules or drops was preferred by 51%. These findings mark a notable change in medical cannabis use patterns over the past decade, Dr. Lucas told attendees.

“If we were holding this conference 5 years ago, we would really be talking about the inhalation of high THC products,” Dr. Lucas said. “Now, we are talking about the oral ingestion of CBD products, and this marks a big shift in the way that we look, talk about, and consider medical cannabis.”



**Figure.** Percentage of patients initiating medical cannabis who used prescription drugs at baseline to 6-month follow-up in the Tilray Observational Patient Study.

Source: Lucas P.<sup>1</sup>

Patient preference for orally ingested CBD as opposed to inhaled high THC was largely mediated by age, with 50% of patients 18 to 25 years of age preferring high THC strains; whereas 80% of patients 55 years and older preferred high CBD strains ( $P < 0.001$ ). Although more research is needed to understand the mechanisms behind these age-related preferences, the differences may be related to impairment concerns among older adults or that certain conditions affecting older patients (eg, osteoarthritis) may benefit from CBD rather than THC, Dr. Lucas said.

### Decreased Use of Opioids

Statistically significant reductions in the percentage of patients using all major drug classes included in the analysis were found at 6 months (Figure). The mean cost of medication reduction decreased by 87%—from a mean of \$106 to \$18 per month between baseline and 6 months.

The percentage of patients taking opioids decreased from 28% at baseline to 11% at 6 months ( $P < 0.05$ ). This significant reduction in opioid use was found regardless of whether patients were cannabis naive or non-naive at baseline (see page 25 for more information). Additionally, the mean dose of opioid use decreased by 78%—from 152 to 32 morphine milligram equivalents per day at 6 months. These findings are based on prescription drug questionnaires completed by the patients' health care providers, to minimize recall bias among patients.

The findings suggest that patients commonly substitute medical cannabis for other opioids and other pharmaceuticals, Dr. Lucas concluded. "It is hard to look at data like this without thinking that medical cannabis can and is playing a role in reducing the personal and the public health impacts of opioids on individuals in society," Dr. Lucas said.

The TOPS findings confirm previous research showing that state implementation of medical cannabis laws is associated with a 5.88% lower rate of opioid prescribing among Medicaid enrollees.<sup>2</sup> Additionally, research links daily (at least) cannabis use

with a 21% greater odds of retention in opioid agonist treatment (methadone or buprenorphine/naloxone-based) than patients with less-than-daily cannabis use.<sup>3</sup> Furthermore, a study using Medicaid State Drug Utilization Data from Washington DC and 8 states that legalized recreational marijuana found that legalization was associated with a 32% reduction in number of opioid prescriptions, a 30% reduction in total doses, and a 31% reduction in spending on Schedule III opioids.<sup>4</sup>

### Quality-of-Life Improvements Found

"At the same time as we saw these reductions in prescription drug use, we saw statistically significant improvements in all 4 facets of the World Health Organization Quality of Life Short Form," Dr. Lucas said. The greatest changes were reported in physical health (26.4% increase), and psychological health (14.4% increase).

"In many ways, it is kind of a simple formula," Dr. Lucas explained. "You've got this patient population mostly affected by pain and mental health. You introduce medical cannabis in their course of treatment, and you get an associated reduction in prescription drug use overall and an associated improvement in QoL."

### Reference

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2. Wen H, Hockenberry JM. Association of medical and adult-use marijuana laws with opioid prescribing for medicaid enrollees. *JAMA Intern Med.* 2018;178(5):673-679.
3. Socías ME, Wood E, Lake S, et al. High-intensity cannabis use is associated with retention in opioid agonist treatment: a longitudinal analysis. *Addiction.* 2018;113(12):2250-2258.
4. Shi Y, Liang D, Bao Y, An R, Wallace MS, Grant I. Recreational marijuana legalization and prescription opioids received by Medicaid enrollees. *Drug Alcohol Depend.* 2019;194:13-19.

Dr. Lucas is Vice President, Global Patient Research and Access for Tilray, the sponsor of the Tilray Observational Patient Study (TOPS).