

## PERSPECTIVE



# Close the knowledge gap

Nations with cannabis programmes should respond to a lack of research. Canada can be a leader, say **Jonathan Page** and **Mark Ware**.

When it comes to medical cannabis, Canada is both a leader and a laggard. Policy-wise, Canada is ahead of many other countries, having had federal regulations that allow patients to access herbal cannabis (dried leaves and flowers) with a doctor's authorization since 2001. Based on this early entry into medical cannabis, one would expect Canada to be at the forefront of research. Alas, this is not the case. As the number of patients accessing cannabis-based therapies has increased, research has not expanded. The opportunity to inform medical cannabis policy is slipping away.

The Canadian medical cannabis system continues to grow and evolve. The government, through Health Canada, has created a system to license producers to grow and distribute quality-controlled cannabis. Under this system, the patient population reached almost 24,000 in mid-2015, and around 4,000 doctors have prescribed cannabis. One would think that long-standing federal regulations and a large number of patients would mean that cannabis research is underway at many institutions in Canada. However, in the 14 years since the implementation of the first patient access programme, there have been only two federally funded clinical studies — a 2010 report that examined the use of smoked herbal cannabis to treat neuropathic pain<sup>1</sup> and a multicentre cohort study exploring one-year safety data<sup>2</sup>. These studies were funded by Health Canada's Medical Marihuana Research Program, which was scrapped in 2006 as part of federal budget cuts. To our knowledge, no university laboratory in Canada has been licensed to grow cannabis for research purposes. The regulations that give patients access make no specific allowances for research.

Patients, doctors and producers have all expressed frustration with the regulations. Groups such as the Canadian Medical Association have made repeated calls for clinical trials and evidenced-based treatment guidelines. Physicians bemoan the lack of clinical data and the fact that herbal cannabis is not an approved drug; some also harbour suspicions that patients are seeking medical cannabis merely as a front for recreational use. Some cities are seeing a growth in the number of unlicensed dispensaries. And despite years of regulated access to the dried plant, access to cannabis extracts has only recently been mandated through a Supreme Court decision. Such uncertainties are not conducive to a well-functioning national medical cannabis programme that supports research and education.

Major gaps in knowledge persist. Fundamentally, the evidence base for the clinical use of herbal cannabis is thin. Although a recent systematic review<sup>3</sup> found evidence for its use in treating chronic pain and spasticity, other claims were less well supported — creating a shaky foundation on which to base a treatment. Myriad other basic questions remain: for example, what are the pharmacological effects of diverse cannabis metabolites such as the non-psychoactive cannabidiol and volatile terpenoids? And we don't know whether individual strains of cannabis have different therapeutic properties<sup>4</sup>.

Why has there been so little progress? The Canadian government has not set medical cannabis as a public health priority, and so has provided insufficient research funding. At the same time, it has missed the opportunity to establish a national drug safety programme around medical cannabis. With a few exceptions, such as a newly initiated clinical trial focused on osteoarthritis, the private sector has yet to pick up the slack — partly due to a lack of patentable intellectual property. Research conducted by pharmacologists, chemists and plant biologists is an important complement to clinical investigations. However, pre-clinical cannabis research in Canada is impaired by delays and difficulties in obtaining research licences. To clear this logjam, funding should be channelled through a peer-reviewed cannabis research programme that can issue fast-track approvals for research licenses. These challenges are not unique to Canada. The same questions are being asked around the globe where national (such as Israel, the Netherlands and

Uruguay) and regional (various US states) medical cannabis-access regulations already exist or are being implemented. Ideally, these other governments will learn from Canada's experiences.

We call for a global initiative to identify and prioritize research needs around medical cannabis, alongside support to implement the research. At the United Nations level, we need a policy change to allow biomedical researchers access to cannabis and related materials, with the expectation that such liberalization will trickle down to national and regional programmes. To stimulate investment and enthusiasm for research, national medical cannabis offices need to be adequately resourced and given guidelines for streamlined and transparent review processes. Although public investment in cannabis research is important, harnessing funds from the burgeoning private

sector that is profiting from the sale of herbal cannabis could support many high-quality projects. The US state of Colorado provides an excellent model for just such an approach.

Promoting and facilitating research on cannabis is not an implicit acceptance of its medical value. Rather, it is a crucial response to an issue of global importance. The science of medical cannabis desperately needs to get out in front of the policy. It would be unforgivable if ten years from now we are still lamenting the lack of research despite widespread access to medical cannabis and a profit-hungry industry. ■

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