

## Q&amp;A

# Is cannabis a “gateway drug”?

## Context

In the context of cannabis legalization, public health practitioners may encounter the question of whether cannabis is a “gateway drug” (i.e., its use leads to the use of other substances) in their work in school health and other settings. This Q&A is intended to provide practitioners with current evidence and to enable public health practice. It is beyond the scope of this Q&A to address the health effects of cannabis for youth overall.

## Key Messages

- The gateway hypothesis overall has not been proven, and specifically, there is no conclusive evidence that cannabis use causally leads to the use of other substances.
- Most people do not begin using other drugs following the use of cannabis; however, frequent or early use of cannabis may also be associated with subsequent use of other drugs.
- It is possible that people who ultimately use other substances may start with substances that are more easily available such as cannabis, tobacco or alcohol.
- Initial and subsequent substance use may involve complex relationships with other factors, such as adverse childhood experiences or social influences.

## What is the gateway hypothesis?

- Kandel and Faust published original work in the 1970’s that described a sequence in substance use initiation in a longitudinal study of secondary school students in New York State, progressing from alcohol use to tobacco use, followed by cannabis and subsequently other substance use.<sup>1</sup>
- The authors initially cautioned that this finding should not be considered causal, but later suggested that some substances are a “gateway” to others.<sup>1</sup> This became known as the “gateway hypothesis”.<sup>1</sup>
- Overall, there remain important gaps in understanding patterns of how the use of some substances may occur before others.<sup>2</sup>

# What is the evidence on cannabis as a gateway drug?

## Animal studies

- Overall, animal studies are mixed regarding evidence of a gateway effect.<sup>3</sup>

## Epidemiology

- Observational studies may demonstrate associations, but these do not necessarily reflect causal relationships.
- Epidemiologic studies have observed a similar sequencing pattern of substance use initiation among youth cohorts, for example in the United States and New Zealand.<sup>1,4</sup> Among people who ever used cannabis in the United States, 44.7% had ever used another illicit drug.<sup>5</sup>
- Regarding initiation of use, use before age 18 compared with later initiation has been associated with the use of other substances (sedatives, opioids, and hallucinogens).<sup>6</sup> Also, frequency of use before age 17 shows a dose-response relationship with other substance use.<sup>7</sup>
- A recent longitudinal study of youth substance use trends in the United States from 1976 to 2016 found that cannabis is replacing alcohol and tobacco as the first substance used, but did not analyse subsequent drug use.<sup>8</sup> However, adolescents that attempted cigarette smoking remained at an increased risk of subsequent cannabis use.<sup>8</sup>
- Research in Vancouver, Canada examined the association between cannabis use and initiation of injection drug use among 481 street-involved youth involved in a prospective cohort study. In a model adjusted for other individual characteristics and drug use patterns, the authors found that daily cannabis use was protective against injection initiation.<sup>9</sup>

## Confounders

- Some studies have described the role of confounding factors that may contribute to the relationship between cannabis use and other substance use. Examples include peer influence and co-morbidities such as mental health.<sup>1,5</sup>

## How can we understand the relationship with other substance use?

- While it is evident that cannabis use may be associated with other substance use, experts believe that several relationships are involved among social, genetic and environmental factors, which makes understanding the gateway hypothesis complex.<sup>9</sup> These may include adverse childhood experiences or social influences among those who use substances.

- For example, early life experiences can shape the brain's reward and motivation system, such as parental neglect or experiencing violence (e.g., bullying), leading to an increased risk of substance use.<sup>10</sup> Additionally, factors that support resilience may reduce substance use.<sup>10,11</sup>
- Overall, it is unclear whether cannabis use, including frequency or early initiation, causally leads to the use of other substances. While cannabis use may precede other substance use, the relationship likely involves multiple other factors, including social conditions.

## Which organizations have information available on the gateway issue?

- [Canadian Centre on Substance Use and Addiction: The effects of cannabis use during adolescence](#)
- [National Institute on Drug Abuse: Is marijuana a gateway drug?](#)

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