16-CC-02

Committee: Cross Cutting

Title: Recommendations for strengthening surveillance and research of marijuana and health outcomes in the United States

I. Statement of the Problem:

The legalization of recreational marijuana in a state results in intensive, cross-disciplinary interest in all facets of marijuana use and marijuana policy. This heightened interest has revealed shortcomings in public health practice and scientific knowledge with respect to marijuana use and related health outcomes. Below are four key areas that address current public health issues that states with legalized recreational or medical marijuana are facing:

1. Lack of funding for research and surveillance activities surrounding marijuana use.

2. Lack of standard methods and coordination of data collection in states and jurisdictions that have embarked on enhanced marijuana surveillance related to legalization.

3. Lack of uniform guidance for data analysis and reporting.

4. Lack of research on marijuana-related health outcomes.

Background:

As of March 2016, recreational marijuana has become legal in Alaska, Colorado, Oregon and Washington and the District of Columbia (1).

Following legalization, a variety of stakeholders have requested detailed information on marijuana use patterns and the public health burden of marijuana use. As more states consider legalizing recreational marijuana, public health practitioners need to develop standardized surveillance activities and informed prevention strategies to identify, monitor, and prevent harms associated with marijuana use.

1. Lack of funding for marijuana-related surveillance activities and research.

Marijuana possession, sale, and distribution is illegal under federal law, creating significant challenges for states to access federal funding for marijuana-related surveillance and research activities. Public health agencies need direct access to local data to better inform actions and interventions to identify and prevent adverse outcomes associated with marijuana. Although some federal agencies collect limited data on marijuana use in the United States, the available information in its current format is insufficient for public health practitioners in states where legalization has occurred or is imminent. For example, the most widely used state-based behavioral surveillance system for adults, the Behavioral Risk Factor Surveillance System (BRFSS), does not include marijuana questions on the core survey leaving states to seek their own funds to add additional state-based questions. There is also a strong need to monitor youth marijuana use at the state and local levels. CDC's Youth Risk Behavior Survey (YRBS) collects marijuana prevalence information, but not all 50 states participate in this survey. Surveillance activities around marijuana use also need to include activities beyond prevalence, frequency, and age of initiation. Colorado's Retail Marijuana Public Health

Advisory Committee made the following suggestions regarding the types of questions that should be included in marijuana surveillance activities: initiation and factors associated with marijuana initiation; perception of harm of marijuana use; marijuana use patterns and associated perceptions of harm to the general population, to youth, and to pregnant and breastfeeding women; impaired driving and associated perceptions of risk. Additional information should also include where and how youth are obtaining marijuana (2). Resources are needed for state and local health departments to engage in these surveillance activities.

2. **Lack of standardized methods, questionnaire questions, and cross-jurisdictional coordination among states and jurisdictions doing enhanced marijuana surveillance with surveys.**

The consumption of marijuana is multimodal and continues to diversify (e.g., vaping, dabbing, eating/drinking) which may make historical survey questions about marijuana use less useful over time. Existing marijuana surveillance efforts in states where marijuana has already been legalized lack comparability because of differences in how questions are worded and which methodologies are used. For example, Washington State has collected information on the prevalence of marijuana use through their state BRFSS since 2009 (3) and through their state Healthy Youth Survey (HYS; the equivalent to CDC's YRBS) since 2002 (4). Colorado began adding marijuana BRFSS questions in 2014 (5). Currently, both states are working together to harmonize the wording of survey questions and response options in order to make state-to-state comparisons. Moreover, the CSTE Marijuana Subcommittee has developed a set of model survey questions for BRFSS, YRBS, and PRAMS surveys. More work is needed on this front to address the range of marijuana surveillance priorities described above.

3. **Lack of uniform guidance for indicators, measurement, and data analysis of marijuana use and related health outcomes.**

Related to surveillance activities, there is a need to develop a portfolio of standardized indicators and methods for data analysis that can be adopted by states and localities to consistently monitor and report marijuana use and related health outcomes. Lacking are definitions of how to describe the patterns of marijuana use – such as by frequency, prevalence, potency, dose or amount – akin to what is established for other comparable substances (6,7). For example, there is no consistency in defining a "heavy" marijuana user or in quantifying exposure. Additionally, there are little to no criteria for how to attribute a variety of health outcomes to marijuana use (or not) from emergency department visits, hospitalizations (both psychiatric and non-psychiatric) and mortality data. Guidelines for interpreting marijuana-related ICD-10 codes need to be developed and applied uniformly in order to maximize the usefulness of these alternative surveillance systems in tracking marijuana-related risk and outcomes.

Colorado's Retail Marijuana Public Health Advisory Committee (2) suggested monitoring and reporting the following health outcomes:

- *Marijuana-attributable hospitalizations and emergency department visits - a few examples include: accidental pediatric ingestion of marijuana, or falls among older adults.*
- *Adverse birth outcomes among mothers who use marijuana.*
- *Cannabinoid hyperemesis syndrome or cyclic vomiting among marijuana users.*
- *Traffic-related fatalities and impaired driving attributed to marijuana.*
- *Adverse interactions with between marijuana and other substances.*
- *Marijuana-attributable deaths.*
- *Marijuana addiction treatment rates and prevalence of cannabis use disorder.*

Most of these examples are developmental, and exemplify the need to create a standard, agreed-upon list for states and localities to monitor and report marijuana-associated health outcomes. Additionally, monitoring is warranted for marijuana addiction treatment rates and prevalence of cannabis use disorder among adolescents and adults, and surveillance of occupational exposure and health effects.

4. **Lack of research on marijuana-related health outcomes.**

Data are incomplete or insufficient regarding the long-term health outcomes of chronic marijuana use. Published reports of reduced intelligence or lung disease (8,9), for example, are limited by problems with their study designs or analytic methods, making it difficult to confidently quantify and describe the health effects attributable to marijuana use. The lack of quality data on health outcomes complicates public health efforts to establish relevant surveillance systems and prevention programs.

It is clear to public health professional in states with legalized recreational and medical use that there is an urgent need for more research into marijuana-attributable health outcomes (10). Reaching this goal will require coordination between federal agencies, funding entities, academic institutions and public health to help identify, prioritize, and assure that resources become available to conduct well-designed studies. Another important consideration as a research agenda is to concomitantly address substantial gaps in our understanding of medicinal marijuana use, which has wide ranging implications for many states (11).

II. Statement of the desired action(s) to be taken:
This position statement recommends CDC, SAMHSA, and CSTE convene a Task Force of partners and agencies, federal, tribal, state, and other territories to address the actions listed below:

1. Establish, increase, and advocate for funding to support marijuana-related surveillance and research.
    a. Facilitate funding to increase and improve surveillance and research in states with legalized marijuana use.
    b. Facilitate funding to establish surveillance and gather baseline data in states that anticipate or have pending legislation to legalize marijuana use.
    c. Encourage all states to establish marijuana surveillance, even those that are unlikely to legalize medicinal or recreational use of marijuana in the near future.

2. Support the improvement and standardization of marijuana-related surveillance and data collection and facilitate cross-jurisdictional coordination.
    a. Gather information on established methods, definitions, diagnostic criteria, and lessons learned from states that have legalized recreational marijuana.
    a. Identify a national entity to lead and coordinate efforts to define best practices in marijuana-related surveillance and data collection.
    b. Support efforts by federal, state, and local agencies, and other stakeholders to reach consensus on standard methods for data collection and standardized definitions and indicators for measuring marijuana use and marijuana-related health outcomes.
    c. Prioritize topic areas, such as frequency of use, potency of product used, adolescent use, use during pregnancy or breastfeeding, mental health, driving within hours after use, and unintentional exposure, especially in children.

3. Support the refinement and standardization of definitions of marijuana-related health outcomes, measurement tools, and reporting of findings and results.
    a. Gather information on data analysis methods, key assumptions and limitations in these analyses, lessons learned, and samples of reports and data summaries from states that have legalized recreational marijuana.

   b. Identify a national entity to lead and coordinate efforts to define best practices for identifying marijuana-related health outcomes, data collection, analysis, and reporting.
   c. Support efforts by federal, state, and local agencies, and other stakeholders to reach consensus on data quality standards, data processing and sharing, analytical techniques, important subpopulations warranting focused analysis, and methods and formats for reporting findings and results.
   d. Facilitate development of specific data sharing arrangements, shared analysis, and production of multi-jurisdictional reports.

4. Support expanded and improved research of marijuana initiation, patterns of use, and the potential health effects of use.
   a. Gather results of existing research from entities that have conducted reviews of published marijuana research.
   b. Identify a national entity to lead and coordinate efforts to identify research priorities and key considerations and challenges researchers should address when conducting research.
   c. Support efforts by federal, state, and local agencies and other stakeholders to reach consensus on research topics to be promoted, priority populations, hypothetical models of purported effects, and relevant cofactors to guide study design, and formal guidance on optimal study designs.
   d. Include research on physical and mental health effects of ongoing marijuana use and acute effects such as driving impairment and psychosis, and evaluation of outcomes relative to different patterns of marijuana use and how subgroups of populations may experience different outcomes.
   e. Focus attention to products with high THC concentrations and the resulting increase in cumulative dose by users.
   f. Supports efforts to find a predictive biomarker for impairment due to marijuana use.

III. Public Health Impact:

The primary thrust of this policy statement is not to highlight what we know about marijuana use patterns and health consequences, but rather what we don't know. The public health burden of marijuana is largely unknown or, at best, not well quantified. Proximal adverse outcomes of marijuana use, such as unintentional injury and poisoning are less contentious than distal outcomes, such as permanent decreases in intelligence, but have not been sufficiently studied to adequately integrate their measurement into existing public health surveillance systems. Even population surveillance of marijuana use is developmental, owing a great deal of uncertainty to the infancy of the legal marijuana markets and the evolving nature of marijuana use. Few other public health issues face the same degree of doubt about both the exposure and diseases in question.

Marijuana legalization efforts are expected to continue throughout the country and it is reasonable to assume that many of them will be successful. In addition to raising awareness about the barriers public health agencies have encountered in legalized states, this policy statement is a call to action for:

1) Establishing a consistent and uniform approach nationally for marijuana surveillance
2) Informing a surveillance and research agenda for improving knowledge about marijuana-related health outcomes
3) Quantifying health and economic outcomes attributable to marijuana to determine population impact
4) Identifying health disparities associated with marijuana use, and
5) Identifying effective interventions and programs to prevent harms associated with marijuana use

IV. References

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