

**Introduction of a Marijuana Screening Tool into Primary Care: A Quality Improvement
Project**

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Executive Summary

Main Points

- The legalization of recreational marijuana has made its use acceptable and promoted the perception that it is safe (Gunderson et al., 2020)
- Products are marketed toward adolescents, and the concentration of tetrahydrocannabinol (THC), the primary psychoactive chemical in marijuana, is as high as 95%, compared to 3% in the 1980s (National Institutes of Health, 2022)
- Adolescent use of marijuana has a unique set of risks due to the development of the prefrontal cortex during this time (Kwan et al., 2020)
- Adolescent marijuana use has the potential to cause a public health crisis
- Screening is an effective way to help mitigate these adverse consequences, and adolescent healthcare providers are uniquely positioned to get this done
- The introduction of a screening tool into a busy suburban pediatric practice screened over 400 patients, offering the potential for timely education and intervention
- The education and tools offered to healthcare providers during this project increased their comfort in addressing adolescent marijuana use, satisfaction with the resources to screen, educate, refer, and comfort utilizing the motivational interviewing (MI) technique

Background and Purpose

Teens today are more likely to use marijuana than smoke cigarettes (Ladegard et al., 2020). Legalization of recreational THC is associated with up to 63% higher adolescent first-use rates when compared to states where it is illegal (Partnership to End Addiction, 2021). THC use under the age of 21 leads to higher rates of addiction. The legalization of marijuana has led to the

perception that it is harmless. However, research reports that the impact of marijuana on the developing brain leads to permanent changes that are not reversed once the use of THC is stopped (Kwan et al., 2020). Marijuana use in adolescence has also been shown to cause increased rates of high school drop-out, mental illness, hyperemesis, suicidal ideation, sleep problems, heart disease, and infertility (CDC, 2021; Gobbi et al., 2019; Ladegard et al., 2020; Pergolizzi et al., 2019; Tuvel et al., 2023; Umapathi et al., 2021). The project site had no formal screening tool to assess adolescent marijuana use. This led to missed opportunities for healthcare providers to identify, educate, and offer intervention to this vulnerable population.

The American Association of Pediatrics recommends universal drug screening for all adolescent patients (Kulak & Griswold, 2019; Ladegard et al., 2020). One of the Healthy People 2030 objectives is to decrease teenage marijuana use, demonstrating national awareness of the increasing problem of adolescent THC use (USDHHS, n.d.). This quality improvement project introduced the modified Car, Rest, Alone, Forget, Family, Trouble, and School (CRAFT-S) marijuana screening tool together with the Screen tools, Brief Intervention, and Referral to Treatment (SBIRT) process to eight pediatric medical providers in a busy suburban practice to determine if it helped providers with their comfort and ability to address adolescent THC use (Center for Adolescent Behavioral Health Research, n.d.; D'Amico et al., 2019; Sterling et al., 2019; Sterling et al., 2022).

The first aim of the project was to evaluate and compare the provider's pre-and post-intervention concerns regarding marijuana use among their patients, their frequency of screening for marijuana, their comfort in addressing marijuana use/abuse in their patient population, their comfort using MI, and their satisfaction with the tools they have available to assist them in intervening when necessary. The second aim was to implement the CRAFT-S screening tool at

the project site, potentially becoming a practice change and improving the quality of care offered at the clinic.

Methodology

- Three Plan Do Study Act (PDSA) quality improvement cycles were used (AHRQ, 2024)
- Project overview, timeline, intervention, and MI techniques were introduced at a provider meeting at the start of implementation
- At the start and completion of the intervention, surveys were completed by the eight medical providers, which included six 5-point Likert scale questions looking at the areas of interest
- Additional questions on the post-intervention survey assessed the satisfaction with the QI project and the likelihood that the providers would continue to use the screening tool
- The pre- and post-intervention survey averages were compared
- The Wilcoxon Signed Rank Test analysis was used to determine statistically significant change in the Likert scale scores pre-and post-intervention for the eight medical providers
- CRAFFT-S was given to patients aged 11 to 19 who presented to the clinic for well care
- The patient completed the tool and gave it to the healthcare provider to score, and proper education and intervention were initiated when appropriate
- The success of implementing the screening tool was measured by the total number of screening tools collected during the 15-week intervention period.

Results

- All the average scores on the post-intervention Likert scale surveys increased

- The provider's comfort screening and addressing adolescent marijuana use was statistically increased
- The provider's satisfaction with resources for intervention statistically increased
- The provider's comfort with MI techniques was also statistically increased
- The other areas increased post-intervention but were not statistically significant
- Providers were pleased with the project and felt it positively changed their practice
- Over 400 screening tools were completed during the 15-week implementation period
- The screening tool and educational handouts were permanently adopted into the office as a practice change

Facilitators

- All providers were willing to participate and completed both the pre-and post-intervention surveys
- The front staff assured that all the eligible patients presenting for well care received the CRAFFT-S screening tool
- The developers of the original CRAFFT screening tool were supportive of the modifications of the screening tool to evaluate exclusively for marijuana
- The creators of the original tool graciously permitted the modified tool to be reproduced for the QI project.

Limitations

- Teens completed the tool in the room with parents, and this may have skewed responses
- Increased workload for the front staff to reproduce and distribute screening tools during times of staff shortages

- This was a small group of providers who were all the same ethnicity
- Some providers completed the Likert scale survey after the initial education session, which may have skewed the responses

Implications and Future Projects

- Future projects could follow the patients to see if the SBIRT modified patient behavior
- Consideration for making the screening tool available as a QR code so patients can answer in private and submit responses without parental involvement
- Increased provider awareness could lead to local and national lobbying at regional and national levels
- Awareness of the dangers of THC/marijuana use in adolescents could help providers be effective patient advocates

Conclusion

- Over 400 patients were screened during the 15-week implementation period
- This QI project led to practice change to improve the quality of care provided to patients
- Providers felt more comfortable addressing marijuana use with their patients
- Providers were happier with tools available to address the problem
- Providers felt more comfortable using the MI techniques after the intervention
- SBIRT allows providers to quickly and effectively address marijuana use once it is identified
- More states are likely to allow recreational marijuana use, and medical providers are uniquely positioned to educate patients and families so they can make informed decisions about THC use

References

Agency for Healthcare Research and Quality (AHRQ). (2024, March). *Plan-do-study-act*

worksheet, directions, and examples. <https://www.ahrq.gov/health->

Center for Adolescent Behavioral Health Research. (n.d.). *About the CRAFFT*. CRAFFT.

<https://crafft.org/about-the-crafft/>

Centers for Disease Control and Prevention. (2021, October). *Marijuana: What*

we know. National Center for Injury Prevention and Control.

D’Amico, E. J., Parast, L. P., Osilla, K. C., Sellam, R., Meredith, L. S., Shadel, W. G. & Stein,

B. D. (2019). Understanding which teenagers benefit most from a brief primary care

substance use intervention. *Pediatrics*, 144(2). <https://doi.org/10.1542/peds.2018-3014>

Gobbi, G., Atkin, T., Zytynski, T., Wang, S., Askari, S., Boruff, J., Ware, M., Marmorstein, N.,

Cipriani, A., Dendukuri, N., & Mayo, N. (2019). Association of Cannabis Use in

Adolescence and Risk of Depression, Anxiety, and Suicidality in Young Adulthood: A

Systematic Review and Meta-analysis. *JAMA Psychiatry*, 76(4), 426–434.

<https://doi.org/10.1001/jamapsychiatry.2018.4500>

Gunderson, L. M., Sebastian, R. R., Willging, C. E., & Ramos, M. M. (2020). Ambivalence in

how to address adolescent marijuana use: Implications for counseling. *Children and*

Youth Services Review, 118. <https://doi.org/10.1016/j.chldyouth.2020.105367>

Kulak, J. A. & Griswold, K. S. (2019). Adolescent substance use and misuse: Recognition and

Management. *American Family Physician*, 99(11). 689-696.

Kwan, L. Y., Eaton, D. L., Andersen, S. L., Dow-Edwards, D., Levin, E. D., Talpos, J., Vorhees,

C. V., & Li, A. A. (2020). This is your teen brain on drugs: In search of biological factors

- unique to dependence toxicity in adolescence. *Neurotoxicology and Teratology*, 81.
<https://doi.org/10.1016/j.ntt.2020.106916>
- Ladegard, K., Thurstone, C., & Rylander, M. (2020). Marijuana legalization and youth.
Pediatrics, 145(s2). <https://doi.org/10.1542/peds.2019-2056D>
- National Institutes of Health. (2022, November 23). *Cannabis Marijuana Potency*. National
Institute on Drug Abuse. [https://nida.nih.gov/research-topics/marijuana/cannabis-
marijuana-potency](https://nida.nih.gov/research-topics/marijuana/cannabis-marijuana-potency)
- Partnership to End Addiction. (2021, February). *Marijuana: What you need to know to help
protect children, teens, and young adults*. [http://drugfree.org/article/marijuana-what-you-
need-to-know](http://drugfree.org/article/marijuana-what-you-need-to-know)
- Pergolizzi, J. V. LeQuang, J. A., & Bisney, J. F. (2019). Cannabinoid hyperemesis. *Medical
Cannabis and Cannabinoids*, 1(2), 73-95. <https://doi.org/10.1159/000494992>
- Sterling, S., Kline-Simon, A. H., Jones, A., Hartman, L., Saba, K., Weisner, C. & Parthasarathy,
S. (2019). Health care use over 3 years after adolescent SBIRT. *Pediatrics*, 143(5),
<https://doi.org/10.1542/peds.2018-2803>
- Sterling, S., Parthasarathy, S., Jones, A., Weisner, C., Metz, V., Hartman, L., Saba, K., & Kline-
Simon, A. H. (2022). Young adult substance use and healthcare use associated with
screening, brief intervention and referral to treatment in pediatric primary care. *Journal of
Adolescent Health*, 71,S15-S23. <https://doi.org/10.1016/j.jadohealth.2021.11.033>
- Tuvel, A., Winiger, E. A. & Ross, J. M. (2023). *A review of the effects of cannabis use on
physical health*. *Child and Adolescent Psychiatric Clinics of North America*, 32(1).

<https://doi.org/10.1016/j.chc.2022.07.005>

Umapathi, K. K., Thavamani, A., Dhanpalreddy, H. & Nguyen, H. H. (2021). Prevalence of cardiac arrhythmias in cannabis use disorder related hospitalizations in teenagers from 2003 to 2016 in the United States. *Europace*, 34, 1302-1309.

<https://doi.org/10.1093/europace/euab033>

U.S Department of Health and Human Services (USDHHS). (n.d.) Healthy People 2030:

Building a healthier future for all. Office of Disease Prevention and Health Promotion (OASH). <https://health.gov/healthypeople/objectives-and-data/browse-objectives/drug-and-alcohol-use/reduce-proportion-adolescents-who-used-marijuana-past-month-su-06>