IS URINE THC-COOH A PROPER MARKER FOR PROBLEMATIC CANNABIS USE?
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Purpose: Young cannabis users are at increased risk for several mental health issues including dependence, depression and psychosis. THC-COOH (one of the two major metabolites from delta 9-tetrahydrocannabinol) is mostly used as a marker for both cannabis intoxication and abstinence when tested in urine. The present study assesses to which extent urine THC-COOH may help identify problematic cannabis users.

Methods: Data are issued from an observational study where, for methodological purposes, specific groups were recruited based on their tobacco and cannabis profile in the past month. Among a total of 269 participants, 57 cannabis-only users and 72 cannabis and tobacco users completed an anonymous self-administered questionnaire describing their cannabis use in the past month, and most precisely in the past 5 days. The CAST (Cannabis Abuse Screening Test), a well validated questionnaire for both clinical and large epidemiological studies, was used to identify problematic cannabis use. Based on 6 items, participants scoring 2 and above were described as problematic cannabis users (PCU; N=81, mean age 19 years, 64% male) in comparison to non-problematic cannabis users (NPCU; N=48, mean age 19 years, 63% male). All participants also provided a urine sample that was blindly analyzed for THC-COOH among other substances, using gas-chromatography coupled mass-spectrometry. PCU and NPCU were compared on their cannabis use in the past month (at least once a week/less than once a week), number of consumptions in the past 5 days (mean±SE), and urine THC-COOH levels (mean±SE). As a way to determine if urine THC-COOH is a proper marker to identify PCU, we used the receiver operating characteristic (ROC) curve to assess its sensitivity and specificity using various cut-off values.

Results: Smoking cannabis at least once a week was reported more frequently among PCU than NPCU (95% vs. 63%; p<0.001). Using ANOVA, mean cannabis consumption in the past 5 days (11.3±1.0 vs. 4.3±0.7; p<0.001) and mean urine THC-COOH level (291.6±61.4 vs. 82.6±52.7; p=0.021) were higher among PCU than for NPCU. With an optimum cut-off of 21 ng/ml, positive urine THC-COOH displayed a sensitivity of 79% and a specificity of 58% for problematic cannabis use. Using values above 120 ng/ml, its specificity increased to more than 95%.

Conclusions: Even if urine THC-COOH levels were found to be much higher among problematic cannabis users, such method seems poorly performant in identifying them from other regular cannabis users. Nevertheless, individuals presenting with high value for THC-COOH on urine drug testing should definitely be evaluated regarding cannabis use disorder.

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MEDS, MYTHS, AND MARIJUANA: ADOLESCENTS WITH CHEDS, MYTHS, AND MARIJUANA: ADOLESCENTS WITH CHRONIC ILLNESSES TALK MEDICATION MANAGEMENT

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Purpose: Prescription drug misuse is a rising problem in adolescents and young adults. According to the 2012 Monitoring the Future survey, 15% of high school seniors reported past-year misuse of prescriptions. Additionally, providers increasingly recommend marijuana (a common drug of abuse) to treat various conditions. Regarding substance use prevention, adolescents with chronic illnesses present with distinct needs compared to their healthy peers. Adolescents with chronic illnesses face complex conditions, often requiring multiple medications, which can be taken in excess or intentionally withheld. Additionally, research indicates that adolescents with chronic illnesses are at least as likely (and in some cases, more) to misuse substances as their healthy peers. Thus, prescription drug use, medication management, and substance abuse prevention are key issues as these adolescents transition to adult care. In order to adapt substance use prevention programs to adolescents with chronic illnesses, qualitative research is needed to identify the unique needs and strengths of this clinical population. This study explores issues related to prescription management, medication misuse, and marijuana in a medical context. Adolescents with chronic illnesses are interviewed in light of their growing autonomy with medication management.

Methods: Qualitative semi-structured interviews with twelve adolescents with chronic illnesses were performed. Adolescents had been in treatment for at least one chronic, non-terminal, non-psychiatric illness for a minimum of one year prior to the interview. Content analysis was performed on the qualitative interview data, generating six key themes. Based on these data, recommendations for clinical interactions with adolescents with chronic illnesses are proposed in order to assist the clinician in partnering with the adolescent to prevent medication/substance misuse.

Results: Six key themes emerged from content analysis: 1) accessibility and knowledge of prescriptions, 2) aversion and avoidance of prescribed medications, 3) common occurrences of medication misuse, 4) marijuana seen as a safe alternative to prescriptions, 5) acknowledgement of consequences of marijuana, and 6) desire for support from parents and providers around medication management.

Conclusions: These results suggest several important takeaways for adolescent providers. First, adolescents with chronic illnesses understand some of the dangers of prescription misuse, yet additional prevention measures are needed. Second, teens differ in how they view medical marijuana. Some view it as a preferable alternative to other medications; others believe that it is too risky. Third, teens report receiving inaccurate marijuana information from media and peers; providers should consider proactive discussions with teens. Finally, adolescents see parents and medical providers as crucial accountability partners as they transition toward more autonomy in managing their own illnesses and medications as young adults.

Sources of Support: Sources of support: Maternal Child Health Bureau and Social Development
54.

SCHOOL CONNECTION AS A PROTECTIVE FACTOR AGAINST PROBLEM SUBSTANCE USE AMONG STREET-INVOLVED YOUTH: A SEQUENTIAL MIXED-METHODS STUDY

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Purpose: To identify a role for schools in protecting against problem substance use patterns among street-involved youth.

Methods: Data from the 2006 multi-city British Columbia Street Youth Survey (N=762) among youth age 12-18 were used for logistic regression models, separately by gender, with theorized risk and protective factors for problem substance use, defined 3 ways: heavy marijuana use (20+ times in past month); heavy alcohol use (binge drank alcohol 3+ times in past month); 3+ severe consequences from substance use in past year. Risk factors were family problem alcohol use, comorbid mental health conditions, and physical abuse history. School connectedness was the protective factor; age was included as a covariate. First bivariate, then multivariate logistic regression models were conducted, and probability-profiles were calculated from the final model. Post-analysis interviews with 11 street-involved youth (4 girls/6 boys), ages 16 to 24, provided in-depth information on school experiences.

Results: Most youth surveyed (62.1%) reported attending school, girls significantly more likely than boys (70.8% vs. 53.3%). The probability profiles identified school connectedness was protective against heavy marijuana use for girls, but not boys. Probability for heavy marijuana was 33.1% without any risk or protective factors, reducing to 17.1% with increased school connectedness; it was 62.4% for youth with family problem alcohol use and a mental health condition, but dropped to 40.9% with both risk factors and high school connectedness. School connectedness was protective against heavy binge drinking for boys but not girls. Boys with no risk factors had a probability of 32.5%, this dropped to 17.6% with high levels of school connectedness. Family problem alcohol use and experiences with physical abuse increased the probability to 65.5%, with school connectedness the probability was lower, at 45.7%. School connectedness provided limited protection against consequences of substance use among girls; the probability was 81.2% when mental health conditions, family problem alcohol use and physical abuse were present, but school connectedness only reduced the probability to 80.3%. For boys, probability without risk or protective factors was 24.6%, reduced to 15.5% with school connectedness. The presence of family problem alcohol use, anger issues and experience with physical abuse increased the probability to 73.3%, but school connectedness reduced it to 61.1% even with these risks. Youth identified experimenting with substances as natural, but did so while under extreme stress from outside school. Youth were sensitive to judgement for substance use and academic ability; they felt most adults lacked empathy about their difficult life experiences. Their suggestions for improving school environment included less structured learning, identifying school as a place for friends, and a reprieve.
from difficult home life. Many youth interviewed spoke of at least one adult they trusted at school who helped them access health and social support services. Youth felt substance use education must be non-fear based, with more details about health and social consequences.

**Conclusions:** School connectedness appears to buffer identified risk factors for substance use among street-involved youth. Renewed engagement between health professionals and schools is needed to address social structure influence on substance use and service access.

**Sources of Support:** None

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55.

**RELATIONSHIP BETWEEN LIVING SITUATION AND SUBSTANCE USE IN AN URBAN ADOLESCENT POPULATION**

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**Purpose:** Substance abuse in adolescence is related to many psychosocial and environmental factors, family structure being one that has received considerable attention. However, little data exists about how living arrangements may be related to substance use. This study sought to examine the relationship between living situation and substance use in an urban adolescent population.

**Methods:** Data for this study was obtained from evaluation survey of the largest freestanding comprehensive-care adolescent health center in the world, conducted by an independent agency (ICF International). The Mount Sinai Adolescent Health Center (MSAHC) sees nearly 12,000 patients a year, of whom > 95% were minority and approximately 65% low socioeconomic status. The sample in this study had a total of 1368 male and female adolescents. Of the total sample, 702 were current MSAHC patients and 700 were non-MSAHC patients recruited from the local community and matched for age and gender. Data was collapsed across these groups and enrollment group was included as a control variable in all analyses. The mean sample age was 19.5 ± 2.2 [SD] years. 47.3% of the sample was Hispanic, 54.4% was African American. Survey data was gathered via a self-reported, 20-minute phone survey for all participants. We performed a cross-sectional analysis of baseline data. Multinomial logistic regressions were performed, controlling for age, recruitment group, gender, and zip code.

**Results:** 1099 (80.3%) patients reported living in their parents’ home, 190 (13.9%) reported living in another person’s home, and 79 (5.8%) reported living in their own place. Eighty-four (6.1%) of patients reported that they had ever used illegal drugs or pills without a prescription. Of the prior 30 days, patients reported smoking cigarettes on 2.5 ± 7.5 days, drinking 5 or more drinks of alcohol 1.0 ± 3.0 days, and using marijuana 3.3 ± 8.1 times. Regression analyses indicated that adolescents who have their own place vs. living with their parents were at 0.75 increased log odds of having (ever) abused prescription drugs Exp(B) = 2.12, p = 0.048. However, living in their own place or in another person’s home relative to with parents was not associated with increased odds of smoking cigarettes, excessive alcohol use, or marijuana use (all p’s > 0.13). A post hoc power analyses revealed power > 0.9 to detect
even a small effect.

Conclusions: Living situation in an urban adolescent population significantly affects illegal prescription drug abuse. This information may be useful to aid providers in targeting counseling to more vulnerable patients.


56.

TRAJECTORIES OF SUBSTANCE USE FREQUENCY AMONG TEENS SEEN IN PRIMARY CARE
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Purpose: Trajectories of substance use among adolescents presenting for primary care have not been well characterized but understanding them is critical for the clinician, who is in a position to counsel and refer to treatment. We empirically identified major substance use trajectories of adolescent primary care patients during the year following a routine clinic visit, and characterized the demographic and risk profiles of the different trajectory groups.

Methods: As part of a large intervention trial, adolescents 12-18 years of age presenting for routine care were recruited at 9 primary care practices in New England from 2005-2008. Participants completed a modified timeline followback (TLFB) interview assessing past 90-day of use of alcohol, cannabis, or other drugs at baseline and 12-month follow-up. We used hierarchical agglomerative clustering methods to identify trajectories of substance use frequency, using squared Euclidean distance as the measure of similarity/distance across factors and Ward’s method for combining clusters. We then examined the association of demographic factors and peer, sibling and parental substance use with trajectories using the chi-square test and multinomial logistic regression.

Results: Of 860 adolescents (mean age, 15.4 years [standard deviation, 2.0 years], 60.9% female, 65.6% white non-Hispanic), 198 (23.1%) reported any past 90-day alcohol or drug use at baseline, and 27.9% at 12 months. Of those reporting past 90-day use at baseline, median use during that interval was 3 days (interquartile range, 2-11 days), with 91.4% reporting alcohol use and 39.4% drug use. Six distinct trajectories were identified: [Group A] those with little or no past 90-day use at both baseline and 12 months (62.7% of cohort); [B] those with little or no use at baseline but who initiated during follow-up (16.5%); [C] those that rapidly escalated from less than monthly use to weekly use (3.7%); [D] those that escalated gradually from less than monthly use to weekly use (7.4%); and those whose use stayed stable, with either [E] less than monthly use throughout (5.6%) or [F] at least monthly frequency of use (4.1%). Age significantly predicted trajectory group (chi-square, 47.4; p<0.001), but gender and race/ethnicity did not. Group C (rapid escalators) had the highest percentage of younger adolescents
(46.9% were 12-14 years), and Group F (stable monthly users) of older adolescents (57.1% were 17-18 years). Compared to all other groups, Group A (stable non-users) was less likely to have substance-using siblings (odds ratio [OR], 0.55; 95% confidence interval [CI], 0.41–0.75) or peers (OR, 0.64; 95% CI, 0.44–0.93). Having substance-using parents increased the odds of being a rapid escalator vs. a stable non-user (OR, 1.55; 95%CI, 1.09-2.20).

Conclusions: While a majority of adolescent primary care patients remain infrequent users or non-users over one year, some show a worrisome escalation of use. Rapid escalators are more likely to use at younger ages and have substance-using parents. Providers should ask about use of substances by parents, siblings and peers to better understand the likely trajectory of adolescents' substance use. Sources of Support: Drs. Hadland and Harris: MCH/HRSA (T71MC00009). Dr. Hadland: NIH/NICHD (1T32HD075727). Drs. Harris and Knight: NIH/NIAAA (1R01AA021904).

57.

A LOOK INTO 9TH AND 12TH GRADERS' ACCESS TO ELECTRONIC CIGARETTES
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Purpose: Electronic cigarettes (e-cigs) are becoming more popular, and the prevalence of their use is increasing sharply. A recent CDC report states that from 2011–2012, current use of e-cigs among high school students increased from 1.4% to 2.8%. In 2012, 7.2% of high school students who ever used e-cigs said they had never smoked conventional cigarettes. Youth are bombarded with advertisements for e-cigs; and exposure to tobacco ads has been directly related to tobacco use. However, we know little about specifically where and how youth are exposed to e-cig media and advertisement, nor where they obtain or purchase e-cigs. Our aim is to further identify venues where youth are exposed to e-cig ads and sources from which youth are obtaining e-cigs.

Methods: 1000 9th and 1000 12th grade adolescents are being recruited to a study examining access to e-cigarettes. To date 200 9th and 12th graders have been enrolled and the remaining participants will be recruited throughout September (2014). Adolescents who agreed to participate completed a survey distributed on-line via Qualtrics. All participants were asked to identify where they had seen advertisements for e-cigs (e.g., Internet, TV, public transportation, radio, magazines). They were also asked whether they had seen any actor and/or public figure using or promoting e-cigs. Adolescents who used e-cigs were asked to identify where they purchased or procured the products the last time they got or used them.

Results: Preliminary analysis showed that adolescents saw advertisements for e-cigs on the internet (Instagram 21.6%, Youtube 18.9%, Google ads 18.9%, Facebook 13.5%); 59.5% also reported seeing advertisements at liquor stores and 55.4% at gas stations; and 44.6% reported seeing a celebrity using an e-cig in a movie or on TV. When asked where adolescents got these products the last time they used them, 43.8% reported getting them from a friend and 41.7% purchased them from a smoke shop.
Analysis on the full sample will be completed by February.

**Conclusions:** Adolescents are exposed to both professional advertisements and peer-to-peer messaging about e-cigs. Data show that most youth are obtaining their e-cigs from friends or from smoke shops. These findings suggest that implementation of policies regarding Internet sale and advertising as well as more rigorous laws pertaining to the sale and access of e-cigs are warranted. Additionally, these preliminary data suggest the need for more studies to assess how tobacco products are promoted to adolescents on social media platforms.

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**E-CIGARETTES AS A GATEWAY TO SMOKING: WHAT DO ADOLESCENTS THEMSELVES THINK?**

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**Purpose:** To determine whether electronic cigarettes (EC) can act as a gateway to smoking traditional cigarettes (TC) among adolescents.

**Methods:** As part of a larger qualitative study on EC use including 42 adolescents/young adults (16-26y.o., 19 females) in 8 focus groups (FG) (4 FGs with EC users, 2 with TC users, 1 with non-users, 1 with mixed consumption types), participants were asked if they believed that ECs could act as a gateway to smoking. FGs were audio-recorded and transcribed verbatim. Transcripts were analyzed according to a thematic analysis procedure.

**Results:** Participants expressed significant threat of EC acting as a gateway to TC use among adolescents. Several factors encouraging this passage were reported: (1) EC was a smooth way of starting for those who found TC too brutal at first; (2) EC users got used to the smoking gestures, tastes, nicotine (if present), inhalation, and feel in the throat, all of which acted as an efficient preparation for real smoking; (3) EC did not bring much satisfaction in terms of effect, inducing a great risk to move on to TC; (4) groups of youths always included those who want to take their consumption further and pull their peers along, in this case from EC to TC; and (5) TCs were considered easier to use compared to ECs requiring a lot of preparation. Worries were accentuated by the powerful attractiveness of EC inciting many adolescents to try or use it due to: its fashion and popularity; the perception of EC as harmless, not seeing the potential underlying addiction, while enjoying the same socializing characteristics as smoking; the possibility of using EC in smoke-free areas; the lack of available information on EC and notably on its harmfulness; its ease to hide from parents; its ease to obtain; its sweet taste; and its high-tech/modern aspect. Participants considered an even greater gateway threat regarding very young adolescents given their naive perception of EC as harmless. Some participants reported that EC had
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acted as a gateway to TC for themselves either by starting their overall cigarette consumption with an EC or by starting EC after having stopped smoking for a while leading them to start smoking again. Only a small minority of participants did not perceive EC as a risk for a gateway to TC for two reasons: (1) EC could have the reverse effect of keeping adolescents away from TC; (2) because of the belief that no one would want to start ECs if not smoking TCs in the first place. Finally, some participants believed that the gateway threat existed only (for some) or specially (for others) if ECs contained nicotine.

Conclusions: ECs are considered by adolescents themselves as having a great potential of acting as a gateway to smoking although perceived as a harmless substance. Health professionals should screen for EC use and inform consumers of the potential gateway effect. From a public health perspective, there is an urge for better preventive policies directed at protecting adolescents.

Sources of Support: Swiss Tobacco Prevention Program

59.

PASSENGERS UNDER THE INFLUENCE: AN EXAMINATION OF THE CHARACTERISTICS OF COLLEGE STUDENTS WHO RIDE WITH MARIJUANA IMPAIRED DRIVERS
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Purpose: Each year, thousands of teens are killed because of driving while impaired or because of riding with an impaired driver. Additionally, recent legalization in two states of recreational use of marijuana suggests participation in marijuana impaired driving is a significant concern. Many campaigns have been launched to prevent driving under the influence, especially amongst the adolescent and young adult population, however little is known about the characteristics of adolescents who choose to ride with an impaired driver. It remains unclear whether these adolescents are also substance users, or whether they could help reduce impaired driving related harm by being designated drivers.

Methods: Undergraduates from two large state universities (one in the Midwest and one in the Northwest) were randomly selected from university registrar lists and recruited for a longitudinal study looking at substance use and health behaviors. In the summer after their first year of college, participants (n=338) were interviewed by phone and self-reported current substance use (past 28 days for alcohol, marijuana, and hookah) and frequency of experiences with an impaired driver (as a driver or passenger within the last 30 days.) Analysis included chi squared test for proportions.

Results: A total of 315 participants completed interviews (93.2% retention rate). These participants were 56.5% female, 75.9% Caucasian and 59.1% from the Midwest university. A total of 14.0% reported being a (PMID) at least once in the past 30 days. These PMID participants were 70.5% Male, 77.3% Caucasian, and 70.5% from the Midwest university. PMID participants were more likely to report driving under the influence of marijuana themselves in the past 30 days compared to non-PMID participants (38.6% vs 1.1%, p=0.00). PMID participants were also more likely to report current substance use compared to non-PMID participants in several areas including: current alcohol use (93.1% vs 39.1%, p=0.00), current marijuana use (68.2% vs 12.9%, p=0.00), and current hookah use (15.9% vs 6.6%, p=0.039).
Conclusions: We found that PMID participants had significant differences in alcohol and substance use behavior when compared with non-PMID participants. PMID participants were more likely to drive under the influence of marijuana themselves, more likely to drink alcohol, and more likely to use substances such as marijuana and hookah. These findings suggest that PMID participants are not the best choice for potential designated drivers. These findings also suggest that impaired driving interventions should not only be targeted toward drivers, but potential passengers as well.

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