EFFECTS OF A PILOT RANDOMIZED CONTROLLED TRIAL OF A WEB-BASED HPV VACCINATION INTERVENTION FOR YOUNG GAY AND BISEXUAL MEN: THE OUTSMART HPV PROJECT
Annie-Laurie McRee, DrPH, Abigail B. Shoben, PhD, Paul L. Reiter, PhD, MPH

Purpose: Effective interventions to promote human papillomavirus (HPV) vaccination are needed, particularly among populations at greater risk of HPV-related disease. Gay and bisexual men have high rates of HPV infection and HPV-related disease, such as anal cancer, yet vaccination among young gay and bisexual men (YGBM) remains far below national guidelines. We developed and pilot tested a web-based intervention, Outsmart HPV, to promote HPV vaccination among YGBM.

Methods: We recruited a national sample of young adult men ages 18-25 via social media in 2016. All participants (n=150): self-identified as gay or bisexual, were residents of the United States, and had not received any doses of HPV vaccine. Most participants self-identified as gay (84%), were non-Hispanic white (58%), and had some form of health insurance (82%). After providing informed consent and completing a baseline survey, participants were randomly assigned to receive either standard information about HPV vaccination (control) or population-targeted, individually-tailored HPV vaccination content (intervention) via a mobile-friendly web site. The intervention, called Outsmart HPV, provided participants with: (a) information about HPV and HPV vaccine; (b) resources and skills training that address common barriers/concerns; (c) prompts for creating a vaccination action plan; and (d) monthly text/email vaccine reminders. Participants completed follow-up surveys immediately afterwards and at 3 and 7 months later. We assessed between-group differences in HPV vaccine initiation (receipt of at least 1 dose) and series completion (receipt of all 3 recommended doses) at 7 months using logistic regression. Additional analyses assessed between-group differences in HPV vaccination attitudes and beliefs using linear regression.

Results: In intent-to-treat analyses, HPV vaccine initiation at 7 months was higher among YGBM who received Outsmart HPV compared to the control group (45% vs. 26%, OR=2.21, 95% CI: 1.09-4.48). Series completion was also more common among intervention participants (11% vs. 3%), though the difference was not statistically significant (<em>p</em>&lt;0.05). Compared to the control group, intervention participants reported: fewer perceived harms of HPV vaccine (<em>b</em>=-0.34); greater perceived risk for anal cancer; (<em>b</em>=0.30); and greater HPV vaccination self-efficacy (<em>b</em>=0.18) after receiving their content. Intervention participants rated the information quality, appearance, and functionality of Outsmart HPV highly (mean scores &gt;4.5 out of 5.0) and, more YGBM in the intervention (vs. control) group reported that materials were easy to understand (<em>p</em>&lt;0.05). Intervention participants also indicated that the monthly vaccine reminders were convenient and provided important information (mean scores &gt;4.0 out of 5.0; control group did not receive reminders).

Conclusions: Promoting HPV vaccination remains a public health priority. To our knowledge, Outsmart HPV is the first HPV vaccine intervention developed specifically for YGBM. This pilot study establishes the intervention’s feasibility and acceptability, and demonstrates the potential of the intervention for improving men’s HPV vaccination attitudes, beliefs, and behaviors. Our findings support continued
efforts to pursue a tailored, web-based approach to addressing low HPV vaccination among YGBM, and suggest that a larger efficacy trial of Outsmart HPV is warranted.

**Sources of Support:** National Cancer Institute of the National Institutes of Health (R21CA194831)

19.

THE PRELIMINARY EFFICACY OF A HIV PREVENTIVE INTERVENTION APP IN AN URBAN YOUTH-CENTERED COMMUNITY HEALTH CLINIC

David Cordova, Ph.D.

*University of Michigan*

**Purpose:** HIV remains a significant public health concern in the United States, and youth are disproportionately affected. This may be partially explained by two prominent HIV risk behaviors—condomless sex and drug use—and underutilized HIV testing among this population. Yet, few efficacious preventive interventions aimed at improving uptake of HIV testing, and preventing and reducing HIV risk behaviors among youth exist. To fill this gap, we developed Storytelling 4 Empowerment (S4E), a theory-driven, targeted and tailored, technology-based HIV preventive mobile application (app) for delivery in clinical settings. The purpose of this study was to examine the preliminary efficacy of S4E, relative to a tobacco informational pamphlet, in improving uptake of HIV testing and reducing HIV risk behaviors among youth in a community health clinic.

**Methods:** Fifty youth were recruited from a youth-centered community health care clinic in Southeast Michigan, sequentially randomized to either the S4E or Control group, and assessed at baseline and at 30-day follow-up. Youth completed self-report measures assessing HIV and STI testing post-intervention, and past 30-day sexual risk and substance use behaviors, self-efficacy and clinician-youth communication. Youth in the S4E group participated in an app aimed at improving clinician-youth HIV communication and self-efficacy. Once youth completed the intervention, clinicians were provided youth risk behavior scores via the S4E app, aimed at facilitating clinician-youth HIV risk communication, and link youth to care and prevention services. We conducted a descriptive statistics analyses, and computed paired t-test and binary proportions. Given the sample size and preliminary nature of our study, statistical significance testing was deemphasized. Rather, our primary purpose was to ascertain the parameters of our preliminary efficacy trial to be applied in a larger RCT.

**Results:** Participants were primarily female (81.6%; Mage = 18.86, SDage = 2.17), with a racial composition of 44.9% White, 42.9% Black, and 12.2% Other. Findings indicate that, relative to the control group, participants in the S4E group reported an overall higher uptake of HIV or STI testing (45.8% vs. 52%). Furthermore, when compared to the control group, participants in the S4E group reported a greater reduction in past 30-day condomless vaginal, anal, or oral sex (4.2% vs. 20%), and past 30-day illicit drug use (4.1% vs. 20%) at 30-day follow-up. Moreover, participants in S4E reported higher satisfaction with their clinician’s explanation of the recommended HIV/STI test (M = 3.83, SD = 1.25), relative to the control group (M = 3.69 SD = 1.20).

**Conclusions:** Findings indicate that S4E demonstrates preliminary efficacy in improving uptake of HIV and STI testing, and reducing HIV risk behaviors at 30-day follow-up, as compared to the control group. Furthermore, when compared to participants in the control group, participants in the S4E group
reported higher levels of clinician-youth communication which may be a pathway through which S4E has an effect on HIV testing and risk behaviors. Findings show the promise of S4E and suggest that a larger efficacy trial may be warranted.

Sources of Support: NIDA Grant# 1R03DA041891-01A1; NIMH Grant# R25 MH067127; Cancer Center Grant# G016234

20.

PARTNER NOTIFICATION, TREATMENT, AND SUBSEQUENT CONDOM USE: PELVIC INFLAMMATORY DISEASE: IMPLICATIONS FOR DYADIC INTERVENTION

Michelle Ha1, Harolyn Belcher, MD, MHS2, Arlene Butz, ScD.,R.N.3, Jamie Perin, PhD4, Maria Trent, MD, MPH3
1 University of Mississippi; 2 The Johns Hopkins University School of Medicine, Kennedy Krieger Institute; 3 The Johns Hopkins University School of Medicine; 4 Johns Hopkins Bloomberg School of Public Health

Purpose: Pelvic inflammatory disease (PID), an infection-related reproductive health disorder, is associated with adverse reproductive health outcomes. Prior research from our team suggests adolescents and young adults in urban communities often remain in the same sexual relationships after PID diagnosis. Understanding partner notification, treatment, and subsequent sexual behaviors are important for prevention of recurrent infection and sequelae. The objective of this study is to explore partner notification, treatment, and condom use after PID as a first step for optimizing prevention of recurrent infection.

Methods: This study utilizes data from the Technology Enhanced Community Health Nursing (TECH-N) study, a randomized controlled trial of an intervention to improve short-term self-care and prevent sexually transmitted infection (STI) recurrence among women ages 13-25 years with mild-moderate PID. Participants were recruited from an urban academic medical center in a high STI prevalence community at time of diagnosis. The intervention group received text-messaging and community health nursing visits. All participants received standard of care and antibiotics based on national guidance. Participants had an outreach interview to assess adherence to self-care behaviors including partner notification and treatment. Follow-up audio computer-assisted self-interviews (ACASI) about relationship status and sexual behaviors were given three months after PID diagnosis. Descriptive statistics and multivariable logistic regression models were used to determine the impact of women on sexual health of male partners based on condom use at last sex as it relates to partner notification, treatment, and relationship status.

Results: Of the 259 participants, majority were low income (86%), African American (94%) females with an average age of 18.8 years (SD 2.5). At baseline, average lifetime sexual partners was 6.0 (SD 6.6) and 57% of participants had a history of an STI. Ninety-one percent reported partner notification, and of those notified, 90% reported partner treatment. The control and intervention group reported changes in relationship status: 43% and 55% (p=0.045), respectively. Reports of condom use significantly increased in the control and intervention groups compared to baseline: 17% to 30% (p=0.046) and 16% to 39% (p=0.005), respectively. Among those reporting condom use at last sex as it relates to partner notification, treatment, and relationship status.
95% CI [1.45, 10.46]; Control OR=2.62, CI [1.00, 6.89], for group comparison p = 0.575). Participants using condoms at baseline were 3.1 times (OR=3.10, CI [1.56, 6.15]) more likely to report condom use during last sex compared to non-users based on self-report at three-month using ACASI, controlling for group and partner status.

**Conclusions:** Urban young women actively engage partners in the notification of and treatment for PID. TECH-N participants were more likely to report condom use at last sexual at three-months compared to baseline, but remains sub-optimal for STI protection. Given the open communication with partners about PID and known partner-associated effects on condom use, exploring the role of dyadic intervention to promote consistent, long-term condom use after PID for youth residing in high STI prevalence communities is warranted.

**Sources of Support:** National Institute of Nursing Research R01NR013507 [PI: Trent]; Centers for Disease Control and Prevention, Ferguson Fellowship Program 5U50MN000025-07 [PI: Belcher]
A GAME-BASED INTERVENTION FOR ADOLESCENT MENINGITIS PREVENTION: INFECTION CITY

Tiffany N. Bell, MPH¹, Jennifer Rowley, BA², Brandon J. Hill, PhD², Melissa Gilliam, MD, MPH³

¹University of Chicago Pritzker School of Medicine; ²Ci3, University of Chicago; ³University of Chicago

Purpose: This study explores the feasibility and preliminary efficacy of a game-based and classroom curriculum intervention about meningococcal disease and vaccination. The study assessed self-reported meningococcal disease awareness, knowledge, perceived risk, and willingness to get a meningococcal vaccine pre- and post-intervention among a sample of urban Chicago high school students.

Methods: The classroom curriculum and board game were developed by a team of health education researchers and game designers. The intervention, Infection City, included information about meningococcal disease, its epidemiology, and disease spread. The intervention was implemented over a two-day period in 9th, 10th, and 11th grade health education classes in an urban South Side Chicago high school. Participants completed baseline, immediate-post intervention, and 3-month follow-up paper and pencil surveys including sociodemographic characteristics, self-reported meningococcal disease awareness, knowledge, attitudes toward vaccine, and willingness to get a meningococcal disease vaccine, as well as general vaccine attitudes and general vaccine conspiracy beliefs. Participants also responded to questions about their experience participating in the program and game. All participants provided written informed assent, and written informed consent was obtained from parents/guardians. Each student received a $5 gift card for returning a signed parental consent form, regardless of their parent’s decision regarding enrollment. Data were analyzed in SPSS 23.0. Differences in outcomes between pre- and post-intervention were examined using paired t-tests and repeated measures analysis of variance (ANOVA). All procedures were approved by the university’s Institutional Review Board.

Results: Of the 199 students who completed the baseline survey, 157 students (79.0%) completed both the pre- and immediate-post assessment, and 129 students (64.8%) completed all three assessments. The mean age of the sample was 15.2 years (SD=0.88), the majority of the participants (97.8%) identified as Black/African American, and was female (58.8%). Analyses comparing differences in outcomes by pre-and post-intervention revealed that participants reported a significant increase in perceptions of meningitis risk without vaccination (p<0.001), belief in meningitis vaccine effectiveness (p<0.001), content knowledge and comprehension about meningitis epidemiology (p<0.001), and individual willingness to be vaccinated (p = 0.03) immediate-post intervention with a sustained effect at 3-month follow up. Additionally, 92.8% of youth considered the intervention “effective in helping young people learn how to prevent meningitis” and 69.5% agreed that the program was “easy to learn from”.

Conclusions: Our findings suggest that a low-cost two-session game-based health intervention and curriculum is feasible, can promote meningococcal disease education, and positively influence meningococcal vaccine perceptions among urban adolescents of color. These findings have implications for improving adolescent vaccination rates, addressing racial/ethnic disparities in vaccination, and reducing preventable life-threatening diseases in this population. Further, our findings suggest that game-based health curricula may provide a novel approach to addressing disease awareness and education and potentially influence vaccination perceptions among adolescents.
COMPARISON OF AN IN-PERSON VS. EHEALTH MINDFULNESS MEDITATION-BASED INTERVENTION FOR ADOLESCENTS WITH CHRONIC MEDICAL CONDITIONS: A MIXED METHODS STUDY

Nicholas Chadi, MD1, Miriam Kaufman, BSN, MD2, Elii Weisbaum, MEd3, Catherine Malboeuf-Hurtubise, Ph.D.4, Sara Ahola Kohut, PhD2, Jake Locke, MD1, Dzung X. Vo, MD1

1Boston Children's Hospital; 2Hospital for Sick Children; 3Institute of Medical Sciences, University of Toronto; 4Université du Québec en Outaouais

Purpose: Mindfulness-based interventions (MBIs) have been shown to have positive impacts on mental health and well-being for adolescents living with chronic health conditions. However, many teens with chronic illnesses experience barriers such as pain, reduced mobility and distance making it difficult to attend mindfulness programs in person and compromising accessibility. The aim of this study was to compare the acceptability and effectiveness of a MBI for adolescents with chronic illnesses delivered in person vs. electronically.

Methods: This project was a single-center randomized mixed-methods study for adolescents with a diagnosis of chronic illness. Each participant received an adapted 8-week MBI, Mindfulness Awareness and Resiliency Skills for Adolescents (MARS-A), delivered either in person or via a secure eHealth audio-visual platform allowing group interactions in real time. Groups were facilitated by two experienced mindfulness providers. Data was collected on the first and last day of the MBI and at two months post-intervention through participant log books, semi-structured interviews, saliva analysis and standardized research questionnaires administered via a secure online platform. Quantitative outcomes included acquisition of mindfulness skills, depression and anxiety symptoms, coping with illness, self-esteem and salivary cortisol levels. Qualitative outcomes included self-reported weekly home practice and acceptability of the intervention.

Results: 18 participants were randomized and 14 completed the intervention (7 participants/group). 78% participants were female and the average age was 15.3 years (range=12-18). Participants presented 11 different primary chronic health conditions including epilepsy (n=3), chronic pain (n=2), anorexia nervosa (n=2), thalassemia (n=2), rheumatological conditions (n=2), respiratory conditions (n=2) and diabetes (n=1). Comorbid rates of chronic pain (44%) and mood and anxiety disorders (83%) were high. Data from practice log books revealed similar frequency and duration of home practice in both groups: in-person group: 6.1 times/week (range=1.4-13.4) and 35.5 minutes/week (range=4.3-154.7); eHealth group: 6.1 times/week (range=2.9-9.7) and 33 minutes/week (range=6.6-107.8). Practice frequency and duration were maintained at follow-up. Results from paired t-test analysis revealed a statistically significant reduction in depressive symptoms two months post-MBI (p=0.034, Cohen’s d=0.635). No significant differences were found in salivary cortisol levels and measurement scores for any of the other outcomes between the in-person and eHealth groups at each of the three data collection points, although the power of the study was limited by the small number of participants. Thematic qualitative analysis revealed that participants in both the eHealth and the in-person group felt a sense of community among participants and reported that the MBI positively impacted well-being, stress, pain control and sleep.
Conclusions: To our knowledge, this is the first randomized study comparing in-person and eHealth delivery of an 8-week MBI for adolescents with chronic illnesses. Quantitative and qualitative data suggested that eHealth delivery of MBIs is convenient, feasible and acceptable and represents a promising avenue for increasing the availability of MBIs for patients with chronic health conditions. Larger randomized trials are needed to further compare the effectiveness of in-person and eHealth MBIs in this population.

Sources of Support: This study was funded by a 1440 Award from the Mind and Life Institute and a post-graduate research award from the University of Toronto.

23.

PRACTICAL TOOLS TO SUPPORT ADOLESCENT SUBSTANCE ABUSE PREVENTION IN PRIMARY CARE: A MULTI-SITE RANDOMIZED CONTROLLED TRIAL OF COMPUTER-FACILITATED SCREENING AND PROVIDER BRIEF ADVICE IN THE MEDICAL OFFICE.

Sion K. Harris, PhD1, Lon Sherritt, MPH1, Laura Grubb, MD, MPH2, Ronald Samuels, MD3, Thomas Silva, MD3, Louis Vernacchio, MD4, Wendy Wornham, MD5, Gizem Erdem, PhD6, John Rogers Knight, MD1

1Boston Children's Hospital; 2Tufts Medical Center-Floating Hospital for Children; 3East Boston Neighborhood Health Center; 4Longwood Pediatrics; 5Lexington Pediatrics; 6Koc University

Purpose: Substance use (SU) can harm the developing adolescent brain, making delaying its initiation or decreasing its frequency among youth an important public health goal. National guidelines recommend primary care providers screen all adolescents for SU and give brief advice, but studies show that adherence to this recommendation is suboptimal. Often cited barriers to screening include lack of time and training. To ameliorate these barriers, we developed a computer-facilitated Screening and Brief Advice (cSBA) system consisting of computerized pre-visit screening and psychoeducation for patients, and point-of-care decision support and advice guidance for providers. We tested the system’s effects, compared to treatment as usual (TAU), on adolescent receipt of provider advice to avoid SU, and on SU prevention during a 12-month follow-up, as indicated by time to first substance use post-visit.

Methods: Patients ages 11-20 years with upcoming well-visits at 5 Boston-area pediatric primary care practices (54 participating providers) were consecutively recruited in 2015-2016 through mailed informational letters, or upon arrival for their visit. Participants (N=1011) provided informed assent (18 years), with an IRB-approved waiver of parent consent. Before seeing their provider, participants completed the CRAFFT 2.0 screen on a tablet computer, and then were randomized within site (1:2.5) to receive either TAU (n = 279) or cSBA (n = 732). The computer program then presented cSBA participants with immediate personalized feedback about their screen results, brief psychoeducation on substance use risks to health and development, and gave providers the screening results, “talking points” (guiding 2-3 minutes of brief discussion), and recommended follow-up plan. We assessed advice receipt with a patient questionnaire immediately post-visit, and substance use days at baseline and through the 12 months post-visit using a Timeline Follow-Back calendar completed confidentially online or by phone at 3-month intervals. We used Cox proportional hazards regression analysis in SPSS to compare days-to-first-use post-visit, controlling for age and baseline use.

Results: The participation rate was 89%; 89% of baseline completers had at least one follow-up assessment, with no significant difference in retention or baseline substance use rates between groups.
Participants had mean age+SD 15.0+2.3 years, and were comprised of 51% girls, 44% White non-Hispanic, 77% from two-parent homes, and 65% had college-graduate parents. Most (85%) saw a pediatrician (vs. NP/PA), and 93% had >1 prior visit with that provider. Twenty-nine percent reported any baseline past-12-month alcohol or drug use, with alcohol, cannabis, and other drug use rates 27%, 15%, and 2%, respectively; 9% were CRAFFT+ (score >2). cSBA increased patient-reported receipt of provider advice to avoid use (90% vs. 71%, chi-square p<.001). Adjusted hazard ratios (AHR) for days-to-first-use of any substance in cSBA compared to TAU was .77 (95%CI .61-.98), indicating longer time until use post-visit in the intervention group; the AHR for alcohol was .75 (.59-.96), and for cannabis .61 (.44-.86).

**Conclusions:** Computer-facilitated adolescent screening and provider brief advice significantly delayed, compared to usual care, time to first substance use following the pediatric well-visit.

**Sources of Support:** NIAAA grants 1R01AA021904 and 1R34AA023026; HRSA/MCHB Leadership Education in Adolescent Health T71 MC00009 (SKH).