Session IV: Sexual Health & Vaccines


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**Purpose:** Clinic guides to successfully engage young males aged 15-24 in sexual and reproductive healthcare are lacking. This study’s goal was to explore factors influencing young males’ use of sexual and reproductive healthcare to inform such a guide.

**Methods:** 49 males were recruited to participate in focus groups from communities with high sexually transmitted disease (STD) rates in a northeastern city. Groups were stratified by age (4 among 15-19 yrs; 5 among 20-24 yrs), race/ethnicity (7 African American; 2 Latino) and sexual behavior (7 heterosexual; 2 non-heterosexual). Trained male moderators were matched to participants’ race/ethnicity and groups were conducted in English and Spanish, depending on need. Participants were queried on factors influencing young males’ use of sexual/reproductive healthcare using a brief self-administered survey and via a focus group moderator guide. Groups lasted 60 minutes, and were audio-taped and transcribed. Two researchers coded transcripts, categorized codes and conducted content analyses. A third researcher corroborated findings. Brief survey descriptive statistics were conducted. This study was IRB approved.

**Results:** 90% of participants reported sexual behavior. In the last year, 25% reported no regular doctor or insurance, 40% no STD/HIV test, and 30% no STD/HIV counseling by a doctor. Content analyses identified 5 domains influencing young males’ use of sexual/reproductive healthcare: accessibility, clinic visibility, confidentiality, patient-centered care and interpersonal factors. Identified themes within each domain serving as barriers and/or facilitators of care included: 1) accessibility - (a) availability of affordable/free services, (b) transportation, and (c) availability of walk-in services; 2) clinic visibility - (a) help to locate and receive services including clinic marketing via traditional (e.g., TV) or new technology (e.g., phone apps); 3) confidentiality - (a) fear providers do not maintain confidentiality and (b) applauding doctors who assure confidentiality; 4) patient-centered care - (a) preference for female providers and (b) wanting to choose one’s own clinician; and 5) interpersonal factors - (a) fears of positive STD test results and (b) stigma associated with being tested for STDs. Themes did not vary by participants’ sexual behavior. Language barriers at clinics were discussed among Latino groups (e.g., needing translators and materials in Spanish).

In exploring source of sexual/reproductive healthcare, the majority of participants reported mothers (84%) and doctors (81%) as most helpful sources. Although 44% of participants reported the Internet as an information source, participants discussed having mixed feelings trusting this source and concerns about search history privacy. Few participants reported having searched for a clinic to go to for a personal concern on a home computer (43%) or mobile device (23%) despite access to such devices.
Conclusions: Participants discussed specific factors influenced their sexual and reproductive healthcare use that can be easily incorporated into a clinic guide to assist in linking them to care (e.g., clinic access information, confidentiality assurances, patient-centered care). Future work should evaluate whether a tailored guide for young males results in their increased care use and explore ways to address the continued fear and stigma of a HIV/STD diagnosis.

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Results from eKISS (electronic KIOSK Intervention for Safer-Sex): A Pilot Randomized Controlled Trial to Test an Interactive Computer-Based Intervention for Sexual Health in Adolescents and Young Adults

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Purpose: Sexually transmitted infections (STIs) and unintended pregnancy rates are disproportionately high in adolescent and young adult populations. We need effective, scalable strategies to promote sexual health and prevent STIs and unintended pregnancies that reach young people in real-world settings. Interactive computer-based interventions (ICBI) are promising tools to meet these goals. The purpose of this study was to test the feasibility and acceptability of an interactive computer-based intervention for sexual health; assess the effectiveness of the intervention in reducing unprotected sex; and pilot test biomarker outcomes of STIs and unintended pregnancy.

Methods: The study is a pilot randomized controlled trial of males and females (14-24 years) seeking care in a public health STD Clinic and reporting at least one episode of unprotected vaginal sex in the last 2 months. Randomization was computer generated and stratified by gender, age group, and visit type. Investigators and participants were blinded to allocation to Intervention or Control Group. Participants entered their sexual history via Computer Assisted Self-Interview and provided urine samples for Chlamydia, gonorrhea and pregnancy (females) testing. The Intervention group completed an interactive-computer program and received personal feedback from a Physician Avatar about their protective and risky sexual behaviors; were offered video modules targeting sexual health knowledge and skills; and identified a goal behavior to change. At 3-month follow-up participants reported their interim sexual history, underwent follow-up urine testing. The primary outcome was unprotected vaginal sex (without condoms) in the last 2 months. Secondary outcomes included unprotected vaginal sex (without other contraception), number of sexual partners, incident STIs and unintended pregnancy. Poisson and logistic regression were used to assess for differences in treatment arms.

Results: Two hundred and forty-two of 272 participants completed the study yielding a follow-up rate of 89%. Average age was 21 years; with 65% female; 37% White; 34% Black; 10% Asian; 7% Hispanic; and 2% Native American. At the baseline visit 75% (99/130) reported the computer intervention was Very or Extremely Helpful. Statistical models were adjusted for baseline differences of self-reported history of STI and ever transactional sex. At 3-month follow-up the Intervention group reported 33% lower rate of unprotected vaginal sex (without condoms) [IRR=0.67, 95% CI: 0.44-1.01]; 20% fewer partners [IRR=0.80, 95% CI: 0.61-1.05]; and 48% fewer STI infections [IRR=0.52, 95% CI: 0.24-1.13]. Intervention females reported lower rate of unprotected vaginal sex (without other contraception) [IRR=0.78, 95% CI: 0.46-1.32] and half as many unintended pregnancies (n=5) versus Control females (n=10) [IRR=0.51, 95% CI: 0.16-1.6]. In a subgroup analysis, Intervention females showed a significant reduction in unprotected vaginal sex.

Conclusions: The interactive computer-based intervention for sexual health was feasible to execute and was acceptable to the study population. There was a trend in the effectiveness of the intervention in reducing unprotected vaginal sex, number of partners, incident STI and unintended pregnancy at 3-month follow-up although results did not reach statistical significance. The intervention may be more effective in females than males.

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Urinary Cadmium and the Timing of Menarche and Pubertal Development in Girls
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\textbf{Purpose:} Cadmium (Cd) is a developmental toxicant and carcinogenic metal. It is released into the environment during industrial processes and mining operations and bioaccumulates in plants grown in contaminated soil, especially tobacco and leafy green vegetables. In the US and Europe, the onset of menarche and puberty in girls has been decreasing for several decades. Exposures to endocrine-disrupting chemicals and metals such as Cd in the environment may impact the onset of puberty.

Few studies have examined whether Cd exposure affects the onset of estrus in animals or puberty in humans. Findings from published animal studies on the effects of in utero Cd exposure suggest that low-dose Cd exposure accelerates the onset of estrus by mimicking estrogen effects while exposure at higher doses delayed the onset of estrus due to ovotoxicity. In the only human study to date, urinary Cd concentrations in prepubertal girls was not associated with serum inhibin b, a marker of ovarian follicular development (Gollenberg et al., 2010). However, among girls with higher concentrations of urinary Cd, blood lead levels were inversely related to inhibin b levels.

The aims of this analysis were to: 1) determine whether urinary cadmium concentration differed by age and race/ethnicity in a cohort of girls and 2) evaluate whether cadmium was associated with the attainment of menarche and breast and pubic hair development.

\textbf{Methods:} The GRowth and LifeStyle (GRLS) study is a cohort of 230 girls, ages 10 to 13 years at baseline, residing in the San Francisco Bay Area. A total of 211 girls provided overnight urine specimens and completed a baseline interview and self-assessment of breast and public hair development and were followed for up to two years for the attainment of menarche. Cadmium and creatinine concentrations were measured using inductively-coupled plasma mass spectrometry (ICP/MS). We used Cox regression to evaluate whether cadmium was associated with age at menarche and cumulative logit regression to evaluate whether cadmium was associated with breast and pubic hair development.

\textbf{Results:} The baseline mean creatinine-adjusted cadmium concentration was 0.24 µg/g creatinine (SD=0.11 µg/g) and was highest among 10-year olds (0.29 µg/g creatinine) and decreased with increasing age (mean among 13-year olds=0.23 µg/g; p-trend=0.05). Chinese girls had higher cadmium levels than non-Hispanic Whites (0.30 vs. 0.23 µg/g creatinine; p=0.006).

Girls with the highest unadjusted cadmium levels (= 0.4 vs. <0.2 µg/L) were less likely to have attained menarche (hazard ratio=0.42; 95% confidence interval=0.23-0.78) and have a high Tanner stage of pubic hair development (odds ratio=0.24; 95% confidence interval=0.07-0.81). Breast development stage was not associated with cadmium concentration.

\textbf{Conclusions:} These findings suggest that a higher Cd body burden may delay androgenic development (the first stage of puberty) and menarche. This is consistent with evidence from animal studies suggesting that Cd exposure may delay the onset of estrus. Whether this is due to ovotoxicity, as proposed for animals, is unknown at this time.

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A Brief Intervention to Reduce Adolescent Sexual Risk Behaviors: Feasibility and Impact
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Purpose: Many adolescents with high-risk sexual behaviors only receive health care episodically in the emergency department (ED). ED visits offer an opportunity to deliver brief interventions to improve health, but no proven ED-based brief intervention to reduce sexual risk behaviors exists. The study objectives were to 1) assess feasibility of a novel intervention using National Research Council criteria (effectiveness, efficiency, and satisfaction), and 2) examine impact on attitudes and behaviors.

Methods: In this cross-sectional pilot study, sexually active patients aged 14-19 years presenting to a Midwestern ED were recruited to receive an intervention to reduce sexual risk behaviors. The intervention, based on motivational interviewing (MI), included agenda setting, exploration of behaviors, decisional balance exercise, tailored feedback, and referral to the hospital-affiliated Adolescent Clinic. Individually-tailored sessions offered provision of condoms, prescriptions for emergency contraception, and/or testing for sexually transmitted infections (STI). Participants completed a survey and intervention at baseline, an immediate post-intervention survey at Time 1, and a three-month phone follow-up survey at Time 2. Surveys assessed sexual behaviors, attitudes and self-efficacy regarding condoms and birth control. Additional questions included: demographics (baseline), satisfaction, and fidelity measures (Time 1). Feasibility criteria were: 1) Subject rated interventionist fidelity to MI principles (Likert scale 1 = strongly agree to 4 = strongly disagree), 2) Session duration (minutes), and 3) Subject satisfaction (Likert scale 1=not at all to 5=very).

Results: Sixty-six subjects (96% of approached) completed the screening with 24 (37%) qualifying for enrollment by reporting previous sexual activity. Of those, 20 (83%) participated (mean age 16.2 years; 60% female). Subjects somewhat or strongly agreed that the interventionist: 1) “was easy to talk to” (90%), 2) “was concerned about me” (78%), 3) “understood me” (89%), 4) “treated me like an equal” (89%), and 5) “did not push me into something I wasn’t ready for” (80%). The mean duration was 15.7 minutes. All subjects were fairly (20%) or very (80%) satisfied. One subject tested positive for Chlamydia trachomatis and received treatment at Adolescent Clinic. When offered, most (59%) accepted condoms and 71% accepted a prescription for emergency contraception. Five subjects kept appointments at Adolescent Clinic where additional services were provided: STI testing (n=2), birth control prescribed/administered (n=2), provision of condoms (n=1), and influenza vaccination (n=1). Fifteen subjects (75%) were reached for 3-month follow-up. Among those reporting sex since enrollment (n=6), 67% reported continued condom use at most recent sex. There were positive trends in attitudes towards condoms and birth control self-efficacy.

Conclusions: This ED-based intervention was delivered with high fidelity and relative rapidity, and resulted in high satisfaction among these sexually active adolescents. A considerable proportion received health services essential for optimal sexual health. Studies to assess efficacy appear warranted.

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**Variations in Provider Responses to Automated Decision Support and Impact on Missed Opportunities for Vaccine Adolescent Administration**

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**Purpose:** Vaccine coverage rates are far lower for adolescents than they are for younger children. Providers are more likely to deliver recommended vaccines to adolescents at standard preventive visits and less likely to vaccinate older adolescents and problem-focused visits. An automated clinical decision support tool provides actionable and up-to-date information at the point of care to reduce missed opportunities for vaccination of adolescents regardless of when they engage in care. The purpose of this study is to determine the degree to which vaccine delivery following a vaccine computerized clinical decision support system (CCDSS) varied by patient characteristics (age, gender, and number of vaccines due) and visit characteristics (preventive vs. problem focused).

**Methods:** We implemented a CCDSS in a single urban teaching clinic where residents, adolescent medicine fellows, and nurse practitioners provide pediatric primary care, adolescent medicine and HIV specialty care. This tool provided an alert to providers, using the clinic’s electronic medical platform, when adolescents ages 11-21 were due for any recommended vaccine, based on standard Center for Disease Control & Prevention schedules. These alerts were triggered for all types of visits, including acute visits. We examined factors associated with vaccination including age (using following age categories: 11-12, 13-17, and ≥18); gender; type and number of vaccines due; and visit type using chi-squared and multiple logistic regression analyses.

**Results:** In a 15-month period, 5943 alerts for vaccines due were sent during 3,672 visits among 1,936 unique patients. The number of alerts per visit ranged from 1-5 vaccines (Mean 1.6, SD 0.89). Alerts were most common for HPV (47.7%) and MCV (27.2%). Hepatitis B (2.2%), IPV (2.0%) and MMR (1.7%) were less common. Overall, 45.8% of reminders resulted in vaccine administration at that visit. Response rates were highest for younger adolescents (55.3% for ages 11-12, compared to 47.1% for ages 13-17 and 34.1% for those ≥18, p=<0.001), and higher for males than females (51.4% vs 40.5%, p=<0.001). Response rates were highest when patients were due for 3 vaccines (57.6%) and lowest when patients were due for only 1 vaccine (42.5%) (p<0.001). In the final adjusted model, males had a 46% greater odds to receive vaccines in response to alerts than females (OR 1.46, 95% CI 1.28-1.67), while older adolescents were less likely to receive vaccinations as compared to 11-12 year olds (13-17yo: OR 0.79 (95% CI 0.67-0.94) & ≥18yo: OR 0.46 (95% CI 0.37-0.55). Patients requiring 2 or 3 vaccinations were more likely to receive them than those requiring only 1 (OR 1.40, (95% CI 1.17-1.67) and OR 1.58 (95% CI 1.29-1.92) respectively). Provider response to CCDSS did not differ by visit type in final model.

**Conclusions:** The use of an electronic alert system for adolescents has potential for improving vaccine administration by promoting vaccination during early adolescence and targeting certain groups that would otherwise be missed by vaccines targeting only females. Additional efforts may need to be used to promote vaccination in older adolescents.

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Factors Associated With Early Uptake and Series Completion of HPV Vaccination in Male and Female Adolescents.

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Purpose: To assess the impact of gender-specific human papillomavirus(HPV) vaccination recommendations and demographic characteristics on: (1) early uptake, (2) coverage, and (3) series completion for males and females.

Methods: We analyzed HPV vaccination for 11-18 year-olds using the Citywide Immunization Registry (CIR), a database containing vaccinations administered in New York City. Initiation was defined as receipt of >=1 dose, and timely completion as >=3 doses within 12-months of initiation. Patient-specific variables included age, gender, and insurance status. Practice-specific variables included practice-type, number of Tdap vaccines reported (proxy for practice size), and percent poverty in practice location. We evaluated factors associated with early initiation (within 1 year of routine gender-specific recommendations [females: 3/23/07, males: 12/23/11]), and timely completion.

Results: Of the 1,494,767 11-18 year-olds in the CIR from 2005-2012, 50.2% were male, 56.7% received their vaccines in private practices, 57.9% in practices in the highest tertile of adolescent patient population size, and 46.9% in practices in the highest poverty tertile areas. Of all 13-18 year-olds as of July 2013, 47.2% received >=1 dose, with 44.3% initiating at <=12 years, 41.6% at 13-15 years, and 14.1% at 16-18 years. Within one year of routine recommendations for their gender, 28.8% of 13-18 year-old females vs. 29.3% of males had initiated vaccination. Both males and females had significantly greater odds of early uptake if they were publicly insured, seen at a practice with moderate-to-large number of adolescents, and/or at a public hospital/community health clinic (PH/CHC) or private hospital (adjusted odds ratios (AORs) range 1.29-2.22; 95% CI range for all AORs 1.26,2.29). Being seen at a practice in a high vs. low poverty area was associated with early uptake for males (AOR 1.61; 95% CI 1.57,1.66) but lower uptake for females (AOR 0.96; 95% CI 0.93,0.99). Half of those who initiated HPV vaccination in 2011 were male; of those who initiated, females were more likely to complete within 12 months (females 38.4% vs. males 35.7%;p<0.0001). For both genders, those seen at low or mid-level poverty area practices or practices with more adolescents had greater odds of completion (AORs range 1.09-1.29; 95% CI range 1.02,1.41); those seen at a private hospital vs. private practice and those uninsured had lower odds of completion (AORs range 0.75-0.88; 95% CI range 0.71,0.93). However, males seen at PH/CHC were more likely than those seen at private practice to complete (AOR 1.10; 95% CI 1.05,1.16).

Conclusions: Despite the pre-existence of permissive recommendations for males, male uptake in the first year after routine recommendation was similar to that of females in their first year post-routine recommendations. While males seen in higher poverty areas were more likely to initiate, both males and females from those areas were less likely to complete the HPV vaccine series. Similarly, although both genders seen in private practices were less likely to initiate, females seen at those practices were more likely to complete, while males were less likely. In 2011, half of those initiating HPV vaccination were male. Completion rates for both genders remained below Healthy People 2020 targets.

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