# Abstracts of Plenary Sessions and Posters Accepted for Presentation at the 2016 Annual Meeting of the Society for Developmental and Behavioral Pediatrics

## Platform Session Abstracts Presentations

### Abstract 1

### Parent-Child Interaction Therapy in Children with Autism: Preliminary Results from a Randomized Controlled Trial

*Kim R. Zlomke, PhD, Garet Edwards, MS/MA, Noelle Vann, MS/MA, Jessica VanOrmer, MS/MA, Psychology, University of South Alabama, Mobile, AL*

**Purpose:** Parent-Child Interaction Therapy (PCIT) is an evidenced-based intervention to decrease disruptive behaviors in typically developing children. Only a handful of studies have examined PCIT in children with Autism Spectrum Disorder (ASD), and these studies have differing levels of experimental rigor. Given the high prevalence of comorbid disruptive behaviors in ASD, children are frequently referred for treatment prior to enrollment in school or participation in other interventions. Therefore, high quality research is needed to examine the effectiveness of PCIT for children with ASD. **Methods:** Children (n = 20, mean age 4.1 years) were referred to a community clinic for disruptive behaviors and were randomly assigned to a treatment or waitlist condition. PCIT was delivered in a time-limited format across 16 weeks by graduate level clinicians. **Results:** A mixed between-within subjects analysis of variance was conducted to assess the impact of PCIT on parentreport of disruptive behavior and parenting stress. The results indicated that there was a statistically significant difference between the treatment group and the waitlist group on disruptive behavior, F (1, 17) = 21.66, p < .001. Additionally, reports of disruptive behavior fell to nonclinical levels following treatment while the parents in the waitlist group continued to report clinically significant levels of problem behavior across time. While decreases in overall parenting stress were apparent for the treatment condition, the results were not significant between the two groups, F (1, 16) = .146, p = .71. **Conclusion:** PCIT appears to be an effective intervention for decreasing disruptive behavior in children with ASD. Decreases in parenting stress were also noted, however the insignificant results are likely due to the multiple areas of stress experienced by parents of children with ASD. Additional data regarding improvements in adaptive functioning and communication will be presented. These results are promising considering the need for empirically based interventions that target disruptive behaviors in children with ASD.

### Abstract 2

### Children referred to DBPs at academic medical centers to rule out an ASD: Can we predict who will receive an ASD diagnosis?

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**Purpose:** The number of children referred and diagnosed with an Autism Spectrum Disorders (ASD) is increasing, making up a larger proportion of referrals to Developmental-Behavioral Pediatricians (DBP).

We aim to determine the proportion of children referred to DBPs with concerns for ASD who do receive an ASD diagnosis and whether this is associated with demographics or sources of or reasons for referral. **Methods:** 56 DBPs at 12 academic medical centers in the DBPNet research network recorded data on <=15 consecutive new patients. Any diagnosis noted as suspected, provisional or confirmed was considered diagnosed in this analysis. Chi square tests compared kids referred for an ASD who were diagnosed with an ASD to those who were not. **Results:** Of 784 new visits, 324(41.3%) had an ASD concern; of these 221(68%) were dxed with an ASD (ASD+); 103 were not (nonASD). No significant differences were found in ASD+ v nonASD groups in gender (82 v 86% male), insurance (Medicaid 52 v 49%), parent education (45% college grad), race/ethnicity: NHW (43 v 54%) or age (4.8 v 5.6 yo). In a logistic regression with age, gender, race/ethnicity and sources of and reasons for referral, predictors of receiving an ASD dx were: socialization concern (OR 3.4, CI 1.8-6.5, p<.001), self-referral (OR 2.8, CI 1.1-7.1, p<.05), 2nd opinion (OR 6.4, CI 1.3-31.8, p<.05) & NOT having "other behavior concerns" (OR .37, CI .16-.86, p<.05). Approaching significance were, NOT having learning concerns (OR .43, CI .2-1.01. p=0.05), NHW race (OR 1.7, CI .98-2.8, p=.06), specialists referral (OR 3, .9-9.4, p=.06), & age <4yo (OR 1.7, CI .94-3.2, p=.08). Controlling for site, only more socialization concern, fewer behavior problem concerns and 2nd opinion remained significantly associated with receiving an ASD dx.**Conclusion:** Only 2 in 3 children referred with ASD concern were ultimately diagnosed with ASD. They were >3 times as likely to have socialization concern and only 1/3 as likely to have other behavior concerns when referred. A trend found children <4yo more likely to have an ASD. Focus on these traits may help prioritize long waitlists for assessment.

### Abstract 3

### Referral to and Utilization of Early Intervention Services among children in Child Welfare

*Jennifer A. Ehrhardt, MD, Developmental and Behavioral Pediatrics, Katherine Bowers, PhD, Jareen Meinzen-Derr, PhD, Biostatistics and Epidemiology, Cincinnati Children's Hospital Medical Center, Cincinnati, OH*

**Purpose:** Young children in child welfare (CW) have high rates of developmental delay. However, their utilization of appropriate interventions, such as Early Intervention (EI) Part C services, is surprisingly low. Additional research is needed to understand what is driving difference between level of need and level of service use. The objective of our study was to examine patterns of referral to and utilization of EI services in Ohio among children who had contact with CW. **Methods:** We conducted secondary data analysis using data from all children referred to Ohio's EI system between January 1, 2010 and December 31, 2012. We defined children as having contact with CW if, at any point during study period, they were referred to EI by CW agency (N=12,821). Children who were never referred to EI by CW agency served as our control group (N= 54,331). We performed descriptive and multivariable analyses to determine association between contact with CW and referral to and enrollment in EI. Due to vulnerable nature of population being studied and concern for potential to de-identify data, we had limited demographic information on our study sample. **Results:** We found that children in CW compared to control group were more likely to have > 1 referral to EI (18.6% v 9.3%, p<0.0001). Children in CW compared to control group were less likely to be enrolled in EI (14.5% v 55.6%, p<0.0001). On average, children in CW group spent 35 fewer days in EI. In adjusted analyses, the following were identified as predictors of shorter length of EI enrollment - contact with CW, foster parent as caregiver, > 1 referral to EI, and female sex. Further, children in CW compared to control group were more likely to be discharged from EI due to inability to contact caregiver (39% v 25.4%, p<0.0001) or caregiver voluntarily withdrawing child from EI (26.3% v 16.3%, <0.0001). **Conclusion:** Children who had contact with CW were more likely to have multiple referrals to EI but were less likely to be enrolled in EI. Interventions targeting systemic barriers like maintaining accurate contact information for caregivers and those that increase caregiversdesire and ability to participate in EI may help increase utilization of EI services in this vulnerable population.

### Abstract 4

### Do Medical Co-morbidities Contribute to the Dual Diagnosis and Developmental Outcomes of Children with Down Syndrome and Autism?

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**Purpose:** Children with Down syndrome (DS) experience many medical co-morbidities. Recently, an increasing number of children with DS are also being dually diagnosed with autism (ASD). DS associated with ASD is reported to be 1-11%. However, little is known whether co-morbidities contribute to a dual diagnosis or affect the developmental outcomes of children with DS/ASD. **Methods:** A cross-sectional/retrospective study was done via medical record review of all children seen in a regional DS clinic from June 2006 to September 2011. Data included diagnosis of ASD, mod-severe obstructive sleep apnea (OSA) by polysomnogram, congenital heart disease, respiratory problems, dysphagia, thyroid disease and seizures. Developmental outcomes were measured using the full scale developmental quotient (DQ) derived from the Capute Scales. Co-morbidities were compared between DS and DS/ASD using Fisher's exact test. Predictions of DQ for DS and DS/ASD were assessed using multiple linear regression and Wilcoxon rank-sum test respectively. Level of significance was set at alpha= 0.05. Analyses were done using STATA 13.0. **Results:** 520 children (age 8±4.6 yrs, 53% M) were reviewed. Avg age at developmental assessment was 3.8±3.2 yrs. 39 (7.5%) of the children (23 (59%) F) were diagnosed with DS/ASD. Prevalence of OSA was 22 % in DS vs. 29% in DS/ASD. Prevalence of seizures was 4% in DS vs. 14% in DS/ASD. DQ was lower among children with DS and OSA (p<0.001, 95% CI = -15.07, -7.10) and DS/ASD and OSA (p=0.034). DQ was also lower among children with DS and seizures (p<0.001, 95% CI = -28.15, -11.65) but not DS/ASD and seizures (p=0.637). All other co-morbidities were not statistically significant. **Conclusion:** This study indicates that among co-morbidities, OSA and seizures may contribute to a dual diagnosis of DS/ASD. However, only OSA, and not seizures, affected DQ in DS/OSA. Further investigation is required to determine medical influences on ASD diagnosis and DQ in this population.

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## Abstract 5

### Parent-Child Cognitive Behavioral Therapy for Anxiety in Young Children with Autism Spectrum Disorders: A Pilot Study

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**Purpose:** The purpose of this study was to evaluate the feasibility and estimate the effectiveness of parent-child CBT in young children with ASD plus anxiety. **Methods:** Nineteen children with ASD and clinically significant anxiety were offered 20 weeks of parent-child CBT with the Being Brave protocol. The treatment consisted of parent education and parent-child sessions that incorporated training in anxiety management and exposure practice. Participants included 16 boys and 3 girls ages 3 to 9. Anxiety was assessed at baseline (BL), post-treatment (PT), and 3-month follow-up (FU) using the K-SADS-E, the Pediatric Anxiety Rating Scale (PARS), and the Clinical Global Impressions Scale (CGI). Anxiety and coping skills were assessed weekly by parent ratings on the Spence Preschool/Childhood Anxiety Scale (SPAS and SCAS) and the Coping Questionnaire. Children completed the Koala Fear Questionnaire at BL and PT. **Results:** Eighteen children (mean age 5.7 years) completed the study. At PT, 14/19 (74%) were rated much improved or very much improved(CGI-Is 1 or 2). This is comparable to the 60% improvement rate in typically developing children in a previous published study. Significant decreases in PARS (mean BL=22.2, mean PT=13.5, paired t=7.85, p=<.001), SPAS (mean BL=43.0, mean PT=28.6, paired t=2.67, p=.03), SCAS mean BL=31.1, mean PT=21.7, paired t=3.98, p=.004) raw totals and increase in ability to cope with feared situations (mean BL=2.31, mean PT=4.84, t=10.36, p=<.001) rating on a 7-point coping scale were found. Fifteen children (79%) were reassessed at FU. Ten children (67%) continued to be rated much improved or very much improved. **Conclusion:** Parent-child CBT is feasible for use with young children with ASD and anxiety. Treatment shows potential for similar efficacy to that with children without ASD reported in previous studies. Randomized controlled trials are needed to confirm the efficacy of this approach. If confirmed, results will expand treatment options available to young children and their families to reduce anxiety and impairment associated with ASD.

## Abstract 6

### Objective versus Subjective Measures of Adherence in Adolescents and Young Adults with Attention Deficit Hyperactivity Disorder

*Megan R. Schaefer, MS/MA, Psychology, Auburn University, Auburn, Alabama, Scott T. Wagoner, MS/MA, Alana R. Resmini, MS/MA, Steven K. Shapiro, PhD, Psychology, Jan Kavookjian, PhD, Health Outcomes Research and Policy, Wendy N. Gray, PhD, Psychology, Auburn University, Auburn University, Alabama*

**Purpose:** This pilot study examines the prevalence and frequency of oral medication non-adherence using both objective and subjective data as well as compares the differences between these multi-method adherence measures in adolescents and young adults with Attention Deficit Hyperactivity

Disorder (ADHD). **Methods:** Fifty-four adolescents/young adults with ADHD enrolled in a study examining adherence to ADHD medication. Adherence to ADHD medication was measured via subjective (visual analog scale) and objective (pill count and electronic monitoring [EM]) methods. Adherence ratings obtained via these three methods were examined in terms of prevalence (<80% doses taken= non-adherent) and frequency (mean percent of prescribed doses not taken). **Results:** Prevalence of non-adherence was significantly higher when relying on objective (pill count, EM) compared to subjective measures (self-report) of adherence, $t(46) = -4.53$, $p < 0.01$ for pill counts and $t(44) = -3.33$, $p < 0.01$ for EM. According to self-report, 38% of patients were non-adherent to treatment. When objective measures were used, however, non-adherence prevalence was estimated to be 67-70%. Further, patients reported not taking an average of 21% of prescribed doses. Objective measures, however, indicated that adolescents/young adults missed 34-35% of their prescribed medication. **Conclusion:** Non-adherence to medication in adolescents/young adults with ADHD was consistent with high reported rates of nonadherence in other pediatric populations with chronic illness. Because adolescents/young adults with ADHD tend to overestimate their adherence when self-reporting due to reasons such as social desirability, physicians should exercise caution when making treatment decisions based on patient report of adherence. When possible, objective measures of adherence, such as pill count, should be used. Future research should examine reasons for inaccurate patient report of adherence as well as methods to increase reliability of these reports.

### Abstract 7

### Adherence to Attention-Deficit/Hyperactivity Disorder Medication During the Transition to College

*Wendy N. Gray, PhD, Steven K. Shapiro, PhD, Psychology, Auburn University, Auburn University, AL, Jan Kavookjian, PhD, Health Outcomes Research and Policy, Scott T. Wagoner, MS/MA, Megan R. Schaefer, BS/BA, Psychology, Auburn University, Auburn, AL*

**Purpose:** We examine trajectories of adherence to Attention-Deficit/Hyperactivity Disorder (ADHD) medication, and the role of transition status and executive functioning as predictors of these trajectories, in adolescents transitioning to college/independent ADHD management compared to young adults who are post-transition. **Methods:** Electronic medication monitors tracked adherence to prescribed ADHD medications across a fall semester (4 months) for 54 undergraduate students (35 freshmen transitioning; 19 upperclassmen post-transition) diagnosed with ADHD. Multi-level modeling examined individual trajectories in monthly adherence and the role of transition status and executive functioning on these trajectories. **Results:** Participants adhered to 53.53% of prescribed doses. Transition status predicted the linear slope in adherence, ß = -8.95, SE = 3.61, $p < .05$, with lower rates of initial adherence among freshmen transitioning to independence (34.17%) compared to post-transition upperclassmen (67.63%), ß = 33.46, SE = 8.00, $p < .001$. Adherence demonstrated a curvilinear change for both freshmen and upperclassmen, ß = -7.23, SE = 1.25, $p < .001$. It increased from month 1 to 2 (midterms) before subsequently declining through month 4 (final exams). Executive functioning did not predict adherence, ß = -0.10, SE = .02, p = .54.**Conclusion:** Adherence to ADHD treatment is suboptimal in both adolescents and young adult college students, with only half of all doses taken as prescribed. Adolescents transitioning to independence demonstrated the lowest levels of adherence, suggesting that transition is a high risk period for poor self-management of ADHD. Given the negative consequences of non-adherence on an individuals' academic, social, and vocational functioning, it is important that we understand the unique challenges associated with the transition to independence and create developmentally-tailored intervention programs to improve adherence in this population.

### Abstract 8

### Executive Function is Associated with Reading and Parent-Rated Child Function in 6 Year old Preterm Children

*Irene M. Loe, MD, Vanessa N. Kovachy, MS/MA, Katherine E. Travis, PhD, Heidi M. Feldman, Other, Pediatrics, Stanford, Stanford, CA*

**Purpose:** Deficits in Executive Function (EF) and reading impairments are sequelae of preterm birth. Few studies have compared the associations between EF and functional skills in preterm (PT) and full term (FT) children. We hypothesized that EF contributes to reading and child function in both groups. **Methods:** PT (n=48; mean GA 30) and FT (n=40) children (mean age 6y) completed (1) IQ and computerized EF tasks to assess working memory, spatial memory capacity, and planning (age 6) and (2) reading measures to assess reading comprehension and basic skills (age 7). Parents completed Behavior Rating Inventory of EF and Child Behavior Checklist (CBCL). Hierarchical linear regression models examined contributions of SES, sex, EF composite factor (created through factor analysis), and IQ to reading and parent-rated child function (CBCL total competence) in each group. **Results:** Regression models predicting to reading comprehension (see table) and single word reading were significant for both groups. EF and IQ contributed to reading in PT, SES in FT. Models predicting to total competence were significant for PT only ($R^2$=.35, p<.001). EF was a significant contributor to total competence in PT not FT. **Conclusion:** Different patterns of significant contributors in PT and FT groups suggest differences in biological and environmental factors contributing to functional outcomes. EF may be a more sensitive marker of problems and a target for intervention in PT.

**Comprehension**

| PT | | | | FT | | | |
|---|---|---|---|---|---|---|---|
| Model R2 .55 | p<.001* | | | R2 .35 | p=.003* | | |
| | R2 | R2 change | p F change | | R2 | R2 change | p F change |
| 1. SES | .028 | .028 | .255 | | .162 | .162 | .010* |
| 2. Sex | .032 | .004 | .684 | | .236 | .074 | .066 |
| 3. EF | .229 | .198 | .002* | | .288 | .052 | .114 |
| 4. IQ | .554 | .325 | <.001* | | .356 | .068 | .063 |

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### Abstract 9

### Cultural Relevance of Fine Motor Screening in a Rural Guatemalan Community

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**Purpose:** Previous research suggests that the Ages and Stages Questionnaire-3rd ed (ASQ) may not be culturally relevant for assessing developing in young children in Trifinio, a rural Guatemalan community. Nearly 40% of abnormal screenings were in the fine motor domain (FMD). We hypothesize that the elevated abnormal FMD scores are related to lack of exposure to the toys and objects assessed in the questionnaire. **Methods:** The FMD scores of Guatemalan children (n=56) were compared with Spanish and English speaking children screened at 12, 24, and 36 month well-child checks in Denver, Colorado. The groups were matched on age, gender, and socioeconomic status. Item analysis will be conducted to evaluate similarities and differences on items across the 3 groups. Analyses will include descriptive statistics and exploration of group differences. **Results:** Of the children with FMD scores, 43% were male. In the Guatemalan group, nearly 15% of 12-month-old children, nearly 62% of 24-month-old children, and none of 36-month-old children scored as abnormal in FMD. The questions that were most often scored as not yet involved toys or objects. Overall, both the Spanish and English FMD from Denver have lower rates of abnormal scores than the Guatemalan sample. At 24 months, only 7.7% of children in both of the Denver groups scored in the abnormal range on the FMD compared to nearly 62% in the Guatemalan sample.**Conclusion:** The findings support the hypothesis that questions pertaining to certain toys or objects may not be culturally relevant to the children in Guatemala, likely due to lack of exposure. Compared to the 24 month ASQ, there are fewer 12 and 36 month FMD questions about toys or objects that are unavailable in this community. As all of the Guatemalan children passed FMD at 36 months, this lack of exposure may not be significantly impacting their development. In the Denver sample, the English and Spanish groups appeared to have similar rates of abnormal ASQs that were far lower than the Guatemalan sample, suggesting the language alone does not account for differences in FMD scores. Implications for screening, identification, and intervention with young children in Guatemala and Colorado are discussed.

### Abstract 10

### Does psychological distress impact decisions about starting cross-gender hormones in teenagers with gender dysphoria?

*Jenna E. Wallace, PsyD, Psychiatry, Ajuah Davis, MD, Pediatrics, Henry Ng, MD, Medicine-Pediatrics, Deborah Casciato, MS/MA, Terry Stancin, PhD, Psychiatry, MetroHealth Medical Center, Cleveland, OH*

**Purpose:** Increasing numbers of youth with gender dysphoria (GD) and their families are seeking pediatric and mental health (MH) services. Readiness for medical interventions (e.g., puberty blockers, cross-gender hormones [CGH]) depends on evidence that potentially-interfering MH issues have been adequately addressed (World Professional Association for Transgender Health, WPATH, 2012). However, there are no specific guidelines on how those decisions are made within the context of a clinical team. The purpose of this study was to explore how psychological symptoms of teenagers with gender dysphoria may influence medical decision-making about readiness for CGH interventions. **Methods:** A retrospective chart review examined psychological assessment and subsequent medical interventions on 32 patients (ages 14-21 years, 66% female assigned at birth) who were seen at a multi-disciplinary transgender clinic at an urban academic health center in the Midwest. Parent, teacher, and youth reports of externalizing and internalizing symptoms were obtained using the Achenbach Child Behavior Checklist (CBCL), Teacher Report (TRF), and Youth Self Report (YSR) as part of the psychological assessment. **Results:** 15/32 teenagers had been started on cross-gender hormones (10 natal females, 5 natal males). Patients who were started on CGH were reported to have lower internalizing T scores than those who were not started on CGH: CBCL Mean T=56.3 vs. 67.6 t(28)=2.75, $p < .05$; YSR Mean T=54.9 vs. 71.0, t(20)=2.77, $p < .05$. Patients who were started on CGH did not differ on age, natal sex, TRF scores, or severity of externalizing behavior problems. **Conclusion:** Teenagers with gender dysphoria seeking medical interventions at a multispecialty clinic who were started on CGH presented with less internalizing distress than teenagers who were not started on CGH. This suggests that medical teams may be more comfortable making recommendations for CGH in teens with more stable MH presentations.

## Poster Symposium Abstracts

### Abstract 11

**Transition of Health Care for Youth with Special Health Care Needs: A Unique Partnership Between Pediatric and Internal Medicine Residents** *Gayatri Mahajan, MD, Robin L. Hansen, MD, Pediatrics, University Of California, Davis, Sacramento, CA, Patrick Romano, MD, Medicine and Pediatrics, University of California Davis, Sacramento, CA*

**Purpose:** To identify and address barriers to transition by implementing and evaluating an innovative model of transition training for pediatric and internal medicine (IM) residents. **Methods:** Pediatric and IM residents were trained in transition-of-care issues and resources, including use of an EMR transition-of-care template. Primary care IM and pediatric residents met in person with transition-age youth with special health care needs (YSHCN) and their families at the pediatric continuity clinic to discuss key transition issues. IM residents received an electronic version of the patient's portable medical summary prepared by the pediatric resident. Families were asked to schedule follow-up appointments in IM clinic. Qualitative feedback from both IM and pediatric residents was obtained. Electronic medical records were reviewed for 3 months after the transition meeting for appointments made/attended. **Results:** Twenty IM residents and 24 pediatric residents were trained in transition issues; pediatric residents were also trained in using the EMR transition template. From a cohort of 64, 12 YSHCN had a transition appointment scheduled; 5(42%) established care in IM clinic within 3 months after this appointment. All encounters used the EMR transition template and a portable medical summary was created for each. The warm hand off model and EMR resources were positively rated by pediatric residents and families. Perceived barriers included insurance issues, lack of familiarity of the pediatric resident with the patient, time constraints, language barriers, insufficient preparation of involved families and residents. **Conclusion:** Both pediatric and IM residents found training in transition issues very useful. Given the challenges involved in scheduling transition meetings and relatively few patients who actually transitioned, other methods of communication between pediatric and IM residents might be more feasible to ensure sustainability, such as phone/video transition appointments. Successful transfer of care requires more than one visit, and families as well as pediatric residents need to begin planning for transition in early adolescence.

## Abstract 12

## The Effects of Parental Involvement on Adherence in Students with Attention Deficit Hyperactivity Disorder Transitioning to College

*Megan R. Schaefer, MS/MA, Scott T. Wagoner, MS/MA, Alana R. Resmini, MS/MA, Psychology, Jan Kavookjian, PhD, Health Outcomes Research and Policy, Steven K. Shapiro, PhD, Wendy N. Gray, PhD, Psychology, Auburn University, Auburn, AL*

**Purpose:** This pilot study examines how changes in parental involvement (PI) in care relate to adherence to medication and control of symptoms in students with Attention Deficit Hyperactivity Disorder (ADHD) transitioning to college. **Methods:** Thirty-five undergraduate freshmen with ADHD reported on their PI in ADHD care and control of ADHD symptoms. Participants reported PI and ADHD control prior to the transition to college and shortly after transitioning using a 10-point Likert scale (1 - minimal PI/control of symptoms, 10 - high levels of PI/control of symptoms). Adherence to ADHD medication was measured via self-report. Therefore, the notion of social desirability bias may have impacted the results. **Results:** Participant-rated mean PI prior to transitioning to college was 7.09± 2.84. This significantly decreased to 4.69± 2.88 following the move to college, $t(34) = 5.27$, $p < 0.01$. Overall, seventy-four percent of participants reported a decrease in PI in ADHD care as they transitioned to college. However, only 26% of participants reported a decrease in their adherence. A decrease in control of ADHD symptoms during this transition period was reported by 28% of participants. PI in ADHD care and self-report of adherence were positively correlated, $r = 0.75$, $p < 0.01$. Current control of ADHD symptoms was not associated with current PI, $r= -.02$, $p = .89$, or adherence, $r= 0.14$, $p= 0.43$.**Conclusion:** Transition to college was associated with decreased PI in ADHD care among study participants. This dramatic change in PI made the participants' transition an abrupt experience. Students did not perceive this to have an impact on their adherence nor their control of ADHD symptoms. However, greater PI was strongly associated with better adherence, speaking to students need for continued support in ADHD management. Previous research provides support for gradual developmentally-tailored responsibilities for successful transition. Therefore, adolescents/young adults with ADHD and their parents may benefit from anticipatory guidance from pediatricians on the transfer of responsibilities prior to their transition to college.

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## Abstract 13

**Variable Medication-taking Patterns in College Students with Attention-Deficit/ Hyperactivity Disorder: The Role of Changing Academic Demands** *Scott T. Wagoner, MS/MA, Megan R. Schaefer, MS/MA, Psychology, Auburn University, Auburn, AL, Alana R. Resmini, MS/MA, Psychology, Children's Hospital of Colorado, Aurora, CO, Jan Kavookjian, PhD, Pharmacy, Steven K. Shapiro, PhD, Wendy N. Gray, PhD, Psychology, Auburn University, Auburn, AL*

**Purpose:** Extending research on the phenomenon of white coat adherence seen in numerous patient populations where patients are more adherent to treatment just prior to an appointment with a physician, the current study examines the effect on academic demands/tests on the medication taking behavior of young adults with Attention-Deficit/Hyperactivity Disorder (ADHD) across an academic semester (e.g., red pen adherence). **Methods:** Participants were forty-seven undergraduate students (42.6% male) with ADHD. Adherence to prescribed ADHD medication was measured via electronic monitoring caps. Mean adherence for the three days prior, and subsequent to, a participant-reported exam date were calculated. Red pen adherence was said to occur when adherence for the three days before the exam was higher than the adherence for the three days following. Additionally, rates of medication overuse prior to exams were examined. **Results:** On average, college students reported experiencing 4.22±2.03 evaluative events that may have impacted their medication-taking behavior. Red pen adherence was observed in the data, with participants demonstrating higher adherence rates in the three days prior to an exam (M=68.55% ±30.95) than the three days following an exam (M=55.18% ±37.36), t(46)=2.017, p=.05. Further, 8.3% (N=4) of participants took more medication than prescribed in the three days prior to an exam, most often on the day before an exam. **Conclusion:** In this study of college students with ADHD, adherence to medication is higher in the three days prior to an exam than in the three days following. Further, there may be trends to increase medication taking in the days prior to an exam. Because proper adherence is paramount to successfully managing ADHD, and because research indicates that cramming behaviors are associated with poorer long-term learning, it is important to disseminate strategies to both foster proper medication usage and effective study skills. Future studies examining student beliefs surrounding the effectiveness and efficacy of medications are needed in order to explain this phenomenon.

## Abstract 14

**Timing of Transfer to Adult Care: Differences in Parent and Pediatrician Perspectives** *Charina Reyes, MD, Catherine Scherer, DO, Katherine Myers, DO, Nancy Roizen, MD, Developmental Behavioral Pediatrics, UH-Rainbow Babies and Children's Hospital, Cleveland, OH*

**Purpose:** The 2011 AAP Clinical Report on Supporting Health Care Transitions from Adolescence to Adulthood recommends that pediatric providers begin to offer transition services to their patients beginning at the age of 12. Despite this, the transition process has been described as abrupt, with minimal or no preparation before transfer of care out of pediatric medicine. The purpose of this study is to determine the age at which parents of youth with developmental disabilities plan to transfer care to adult medicine providers and assess the current transition practices of pediatric providers. **Methods:** Parents of youth with developmental disabilities, including autism, ADHD and/or other developmental disabilities, were asked to complete a survey on transition to adulthood, including the age at which they plan to transfer care to an adult provider. Pediatric primary care providers practicing in the same geographic area as the parent respondents were also asked to complete a survey on their transition practices. **Results:** Among 107 parents of youth with developmental disabilities ages 12-21 (mean age=14.7 years), 86 (80%) had a pediatrician as their child 's primary care physician, with the majority (84%) having received their last annual physical exam within the past year. Parents reported plans to transfer care from their pediatrician to an adult medicine provider at a mean age of 18.6 years (range 15-22 years). 23% of parent respondents were unsure when they should transfer care. Meanwhile, pediatricians (n=23) expected transfer of care to an adult provider at a mean age of 21.2 years (range 18-26 years). 50% of the primary care pediatricians felt that difficulty identifying an adult provider was the biggest barrier in the transition process.**Conclusion:** Differences in the age at which parents and pediatricians plan on transferring care to adult medicine presents gaps in the transition process for youth with developmental disabilities. This highlights the importance of developing an office transition policy and allowing for sufficient time between the initiation of the transition process and the timing of transfer to adult medical providers.

### Abstract 15

### Identification of Children <36 Months at Risk for Developmental Delay/Autism: Results of National Survey of Pediatricians

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**Purpose:** Examine trends in primary care pediatric screening from 2002 to 2016 and current practices in children <36 months of age identified as at risk for developmental delay or autism. **Methods:** National, random sample Periodic Surveys of American Academy of Pediatrics U.S. members in 2016 (response=47%), 2009 (57%), and 2002 (55%). Analysis limited to the >95% of pediatricians who provide primary care to children <36 months and assess for developmental risk/autism, n=515, 605 and 649, respectively. Survey questions asked frequency of use of standardized screening tools to identify children at risk for developmental problems (all survey years) and autism (2016), who administers formal screening, and barriers to screening (2002 and 2016). Bivariate estimates were compared across survey years using chi-square tests. **Results:** Pediatricians' reported use of >1 formal instruments to screen children <36 months of age for developmental delay has increased from 23% in 2002 and 45% in 2009 to 63% in 2016 (p<.001). Ages & Stages Questionnaire (ASQ) was used by 48% in 2016, up from 22% in 2009 and 7% in 2002, p<.001. In 2016, 81% report always/almost always using >1 formal screening tool for autism; 74% report using the Modified Checklist of Autism in Toddlers (M-CHAT). Fewer pediatricians in 2016 compared to 2002 report administering the majority of the formal screening themselves (41% vs 86%, p<.001); 45% say either a nurse or medical assistant administers the screens in 2016 versus 4% in 2002. However, asked in 2016 only, 88% of pediatricians review the results themselves. Time limitations continue to be the main barrier to screening, although fewer pediatricians in 2016 than in 2002 report this barrier (58% vs 82% agree/strongly agree, p<.001). The next most frequently named barrier in 2016 is inadequate reimbursement (29%), down from 44% in 2002, p<.001. **Conclusion:** Pediatricians' reported use of a formal developmental screening tool has increased across survey years to 63%. In 2016, 8 of 10 pediatricians report using a standardized screening tool to identify children at risk for autism, primarily the M-CHAT. Pediatricians increasingly rely on staff to administer the formal screening; however, they interpret the results themselves. Time limitation and inadequate reimbursement continue to be primary barriers to formal screening, although both have decreased since 2002.

### Abstract 17

**Autism Screening in Primary Care: Community Providers Incorrectly Report Adherence to AAP Autism Screening Guidelines** *Jose R. Lopez-Lizarraga, MD, Developmental and Behavioral Sciences, Children's Mercy Hospital - UMKC, Kansas City, Missouri, Kimberly J. Reid, MS/MA, Bio-statistics Department, Sarah Nyp, MD, Developmental and Behavioral Sciences, Children's Mercy Hospital - UMKC, Kansas City, KS, Cy Nadler, PhD, Developmental and Behavioral Sciences, Children's Mercy Hospital - UMKC, Kansas City, MO*

**Purpose:** To compare community provider reports of adherence to current American Academy of Pediatrics (AAP) autism screening guidelines with their self-reported practices, including implementation of the Modified Checklist for Autism in Toddlers (M-CHAT). **Methods:** An online survey was distributed to primary care providers from Kansas, Oklahoma, and North Dakota. The survey collected demographics and self-reported ASD screening practices (including M-CHAT implementation procedures) and knowledge questions. **Results:** 133 providers completed the survey (50% pediatricians, 32% int. med/fam. physicians, 18% physician assistants). Of the 96 who reported routinely screening for ASD; 78% reported adhering to AAP guidelines. However, no providers correctly answered all of the knowledge questions that would confirm an ability to follow the guidelines. Only 35% of providers who use the M-CHAT could identify the correct procedures for responding to a positive screen. Knowledge of AAP guidelines and M-CHAT procedures was not significantly correlated with provider profession, years in practice, or frequency of conducting relevant well visits. **Conclusion:** Providers who report adherence with AAP guidelines appear at substantial risk for having gaps in knowledge that may negate the benefits of screening. Resident education programs, policy decisions in response to the USPSTF, and research on early autism identification must consider these gaps in knowledge that likely impact the effectiveness of community-based screening. Future research on community screening should focus on direct measurement of provider practices rather than relying on self report.

### Abstract 18

**A Statewide Network to Decrease the Age of Diagnosis for ASD / DD** *Thomas M. Lock, MD, Angela Tomlin, PsyD, Dorota Szczepaniak, MD, Kyle Baugh, BS/BA, MaryJo Paladino, MS/MA, Angela R. Paxton, BS/BA, Nancy L. Swigonski, MD, Pediatrics, Indiana University, Indianapolis, IN*

**Purpose:** To evaluate the feasibility and effectiveness of a statewide program to decrease the age of diagnosis for neurodevelopmental disorders that integrates community outreach, screening and diagnosis for children18-42 months of age. **Methods:** We use an implementation science framework with 4 drivers: 1) Early evaluation with rapid access leading to tiered system of diagnosis; 2) Utilization of evidence based standardized diagnostic assessment; 3) Quality improvement and tracking of data for sharing of best practices; and 4) Community focus to ensure receipt of services. The drivers (core elements) to which each site must have fidelity allows flexibility within communities to take advantage of local strengths and resources. During a 2 1/2 year period, 7/13-3/16, we developed curricular materials, established partnerships, memoranda of understanding, established 8 early evaluation hub sites with outreach to pediatricians and community partners. **Results:** 363/462 children (79%) ad a diagnosis of ASD, DD or both. Average age of diagnosis for ASD/DD is 29.4 mos vs state average of 63 mos. 28% o children were diagnosed with ASD; 57.5% wth DD; and 14.3% oher/unsure. Wait time from referral to evaluation ranged from 2 weeks-3 months. Referrals were from 158 primary care physicians. 61 pediatric practices were visited and given screening materials. 123 pediatricians were reached in the outlying areas of the state. Community resources were engaged in outreach with referral information to and from the Hub; family lead organizations served as faculty during one day of training with information re: resources and common issues of ASD/DD (sleep, feeding, toileting, behavior). The Hubs worked across hospital system and insurers. Several communities integrated the effort into community wide, cross sector (justice, education, spiritual, health, recreation) programs to ensure children received broad services and were ready to learn . Ongoing monitoring of data, monthly phone calls and annual meetings allow feedback and continued learning within the Hub Network. **Conclusion:** Integrating community based screening and evaluation improves diagnostic services for children with ASD/DD. By developing place based services in the local community, children receive diagnosis at a younger age, empower communities and pediatricians to address broad aspects/supports of ASD/DD and when adopted by the community are sustainable after an initial investment.

## Poster Session 1 Abstracts

### Abstract 19

### Cormorbidities of ASD and Pharmacotherapy in an Urban Subspecialty Clinic

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**Purpose:** Children with autism spectrum disorder (ASD) often experience emotional and behavioral challenges and have a high rate of mental health comorbidities, such as attention deficit hyperactivity disorder (ADHD), anxiety, mood disorders, and irritability. The objective of this study is to examine the prevalence of comorbidities and the use of pharmacological interventions in minority, Medicaid patients with autism from a subspecialty clinic in an urban hospital. **Methods:**A retrospective chart review was completed for patients seen in the developmental-behavioral clinic from January 2015 to January 2016. 57 patients met our inclusion criteria: diagnosis of ASD, age less than 18 years, ethnic minority and Medicaid health insurance.Quantitative variables were expressed as mean values (+/- standard deviation [SD]). Association was tested with $X^2$ test or Fischers exact test. **Results:**The diagnosis of ASD was made at a mean (SD) age of 73[34] months. In our sample, 45(75%) patients were Hispanic,11(19%)African-American, and 1(2%) Asian. Only 3 patients received Applied Behavioral Analysis (ABA) therapy, and 13 received after-school therapy of any kind. The most common comorbidities were: ADHD 36(63%), emotional dysregulation disorder 21(38%), sleep difficulties 15(27%), and anxiety 11(19%). Of the 36 patients with ADHD, 27(75%) were initially treated with methylphenidate and 5(19%) with dextroamphetamine/amphetamine. All but two patients treated with stimulants were school-aged (6 and older).12 (44%) patients discontinued methylphenidate due to the following side effects: irritability (9), emotionality (8), appetite suppression/weight loss (7), and headaches (3). Of those discontinuing methylphenidate, 9 patients were switched to dextroamphetamine/amphetamine. Of the 14 patients tried on dextroamphetamine/amphetamine, only 1 patient discontinued use due to side effects - irritability ($p<0.01$). **Conclusion:** More than half of the patients in our ASD sample also had ADHD, consistent with reported clinical samples. Methylphenidate was the most common pharmacologic intervention for children with ADHD and autism. It had a high rate of medication discontinuation, which supports findings from prior studies that children with ADHD and ASD experience more severe side effects to stimulants than children with ADHD alone.Patients who discontinued methylphenidate due to adverse effects often tolerated dextroamphetamine/amphetamine better.

## Abstract 21

## Getting Through the Door: Service Utilization Data within an Integrated Primary Care Clinic and Hospital Outpatient Clinic

*Andrew R. Cook, PhD, Blake M. Lancaster, PhD, Teryn P. Bruni, MS/MA, Pediatric Psychology, University of Michigan Health System, Ann Arbor, MI*

**Purpose:** This study compared scheduling data from a Hospital Outpatient Clinic (HOC) to an Integrated Primary Care (IPC) clinic within a mid-west academic health system. **Methods:**Service wait time, initial appointment follow-through, and utilization data within each clinic were compared using retrospective electronic medical record data. A total of 282 patients were scheduled with the same licensed psychologist with 33% of patients scheduled at a HOC located within a Midwestern university children's hospital and 67% were scheduled at an affiliated suburban IPC clinic approximately 22 miles from the main hospital. **Results:**It was found patients seen in the HOC (M=63.6, SD 27.8) waited three and a half times longer between the date their appointment was scheduled to their actual appointment date compared to patients scheduled in the IPC clinic (M=17.8, SD= 11.6). Patients scheduled in IPC were less likely to cancel intake appointments compared to patients in the HOC (IPC = 29%, HOC = 37.5%). Additionally, a higher rate of no shows were observed for the patients scheduled in the HOC setting (IPC = 3.5%, HOC = 10%) and appointment failure was higher in HOC for intake appointments (IPC = 15.9%, HOC = 20%). For return visits the HOC setting had more cancellations than the IPC setting (IPC = 37.2%, HOC = 41%) and patients were more likely to reschedule their return visits in the IPC setting. (IPC = 57.5%, HOC = 35.3%). Treatment maintenance was higher in the IPC setting with 81% of return visits maintained compared to approximately 69% in the HOC setting.**Conclusion:** Results are consistent with previous research showing that IPC models improve access to behavioral health services among pediatric populations. The current study represents a descriptive snapshot of clinical scheduling data, comparing IPC to one type of outpatient model. Future research should focus on a controlled study of IPC access and patient outcome data, compared to a variety of outpatient models.

# Abstracts of Plenary Sessions and Posters Accepted for Presentation at the 2016 Annual Meeting of the Society for Developmental and Behavioral Pediatrics

## Abstract 22

### How Do Primary Care Pediatricians Manage Behavioral Health Problems?

*Andrew Cook, PhD, Blake Lancaster, PhD, Teryn Bruni, MS/MA, Pediatric Psychology, University of Michigan Health System, Ann Arbor, MI*

**Purpose:** Pediatric primary care physicians (PPCPs) are often the first professionals families consult for management of behavioral health (BH) problems but may vary in their level of training and experience with these issues. This study assessed PPCPs perceptions on identification, treatment, and referral follow-up of patients with common BH problems (i.e., issues with anxiety, depression, feeding, sleep, toileting, behavior, and ADHD).**Methods:**Surveys were completed by 60 PPCPs within 20 clinics. Responses were on a 7-point Likert Scale (1= Very Uncomfortable/ Unlikely to 7 = Very Comfortable/Likely). **Results:**PPCPs endorsed relative comfort with differential diagnosis of all types of BH concerns (range of 5.17 to 6.20) but indicated significantly less comfort providing treatment for all concerns ($p< .001$) except ADHD ($p= .659$). PPCPs were particularly uncomfortable treating anxiety ($M= 3.78$) and depression ($M= 3.87$). When separated into age groups (0 to 2; 3 to 5; 6 to 12; 13 and up), PPCPs only endorsed greater than neutral ($M> 4.00$) likelihood of using medications for children with ADHD ages 6 and up ($M= 6.15$), depression ages 13 and up ($M= 4.32$), sleep issues ages 13 and up ($M= 4.05$), and toileting problems at all ages ($M= 4.41$). PPCPs were significantly more likely ($p< .0001$) to endorse medication for children ages 6 up with anxiety, depression, sleep, behavior problems and ADHD than for those under 6. No age differences were found for feeding or toileting problems. The likelihood of patient follow-up with on-site BH services ($M= 6.03$) was rated significantly higher than off-site ($M= 4.05$), $p <.001$. PPCPs with on-site BH providers ($n= 32$) felt patients with sleep issues, ADHD, and behavior problems were more likely ($p< .01$) to receive BH services than did PPCPs without on-site BH specialists.**Conclusion:** Aside from ADHD, PPCPs were less comfortable with treatment of behavioral health problems than they were differential diagnosis, and medication use was less supported for younger children with most BH issues. PPCPs also recognized the benefits on-site BH specialists provide in terms of improved patient access in primary care.

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## Abstract 23

### Red flags for Creatine Transporter Deficiency, and Potential Outcome Variables for the Severely Impaired

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**Purpose:** To identify clinical endpoints and methods of identification for Creatine Transporter Deficiency (CTD), a rare X-linked disorder associated with severe developmental impairments. **Methods:**We studied 20 males with CTD (age 1-21 years) using parent questionnaires and interviews, record reviews, and in some cases ($n=7$) direct testing. We gathered earliest concerns, top 3

current concerns, the path to diagnosis, co-occurring medical or behavioral conditions, developmental course, and intervention history. Direct testing involved standardized developmental measures, used regardless of chronological age. **Results:**Parents top behavioral concerns included: Language, negative behaviors, independence skills, attention, and emotion regulation. On standardized measures, children obtained a wide range of raw scores; however, all obtained the lowest possible standardized score (aka the floor). With regard to earlier identification of CTD, for 15 children the diagnostic path began with a neurologist. Eight had seizures before age 3. However, all showed significant delays before age 2. Most notably, in 12 cases, the constellation of severe infantile projectile vomiting (not just reflux) and/or failure to thrive before age 12 months, along with significant delays in crawling or walking were early indicators. **Conclusion:**First, raw scores from standardized measures may be a way to study developmental trajectories in very low functioning individuals, in domains relevant to parent concerns. Second, the combination of very early vomiting, failure to thrive, and motor delays might alert providers to the possibility of CTD before seizures appear, or help identify undiagnosed cases. Finally, to aid future genotype-phenotype studies, we used our results to create a CTD-specific developmental history questionnaire.

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**Abstract 25**

### Neurodevelopmental Outcomes in Infants with Microcephaly

*Eliza M. Gordon-Lipkin, MD, Mary Leppert, MD, Maura Blakemore Gentner, BS/BA, Neurology and Developmental Medicine, Kennedy Krieger Institute, Baltimore, MD*

**Purpose:** In light of the recent Zika Virus epidemic and the inferences of microcephaly in neonates, we examined longitudinal neurodevelopmental outcomes in a series of infants with microcephaly. **Methods:**Retrospective review of NICU follow-up clinic patients with a diagnostic code of microcephaly from 2006 to 2016 was conducted. Microcephaly diagnoses were verified by head circumference <5%ile by WHO growth curves. Data regarding prenatal, perinatal, and neonatal course was obtained. Data from NICU follow-up assessments including Capute Scales (fine motor, language) and gross motor age equivalent to yield developmental quotients (DQ) were collected. DQs were age adjusted up until 2 years for preterm infants. Delay was defined as DQ <70. **Results:**22 infants had microcephaly: 41% male, 55% preterm, and 41% IUGR/SGA. Etiologies were: unknown (23%), hypoxic ischemic encephalopathy (23%), intracranial hemorrhage (14%), migration anomalies (14%), syndromes (9%), CMV (5%), HSV (5%), hydrocephalus (5%), infarct (5%). At latest follow up (3-66 months, mean 26.8), 73% of patients had delay in one or more area of development: gross motor 65% (mean DQ 58.4), fine motor 59% (mean DQ 63.2), and language 59% (mean DQ 65.4). Mean DQs for the entire cohort and subsets based on time of etiologic onset are depicted in Table 1. **Conclusion:** Infants with microcephaly are at significant risk for delay across all aspects of development and at risk for long term disability. In this sample, postnatal etiologies of microcephaly had worse outcomes than congenital or unknown etiologies, but all groups showed significant delays. To help prognosticate outcomes for infants with microcephaly, further prospective studies are required.

**Mean DQ's in Infants with Microcephaly**

| | Gross Motor DQ | Fine Motor DQ | Language DQ |
|---|---|---|---|
| All Subjects (N=22) | 58.4 | 63.2 | 65.4 |
| Congenital Onset (N=7) | 69.7 | 70.0 | 69.6 |
| Postnatal Onset (N=8) | 33.2 | 45.9 | 56.0 |
| Unknown Onset (N=7) | 80.7 | 76.1 | 71.9 |

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## Abstract 26

## ADHD in Autism and Their Association with Other Treatable Comorbidities from a National Autism Registry

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**Purpose:** To compare phenotype and comorbidity of children with Autism Spectrum Disorder (ASD) with and without Attention-Deficit/Hyperactivity Disorder (ADHD) **Methods:**Data were obtained from a large internet-mediated autism research registry containing parent-report data on >20,000 children with ASD. Eligibility: professional diagnosis of ASD; Child with ASD Questionnaire (CAQ) completed between ages 6-17 years; Social Communication Questionnaire with score >/= 12 and Social Responsiveness Scale (SRS) T-Score >/= 60 to verify ASD diagnosis. Information was obtained from CAQ regarding diagnosis or treatment of ADHD, anxiety disorder, mood disorder (depression or bipolar), intellectual disability. ASD severity was measured by SRS Total Score. **Results:**3319 children met inclusion criteria; 45.3% had ADHD. ADHD was associated with an increase in ASD severity ($p<0.001$) but with a small effect size (Cohens $d=0.22$). Comorbidity rates of anxiety and mood disorders increased with age. Overall, a generalized linear model controlling for gender, race, ethnicity and intellectual disability showed that children with both ASD and ADHD had increased risk of anxiety disorder (Relative Risk=2.37, CI95[2.12,2.64]; $p<0.001$) and mood disorder (Relative Risk=3.17, CI95[2.65,3.79]; $p<0.001$) compared to children with ASD alone. **Conclusion:** Children with both ASD and ADHD have an increased risk of comorbid anxiety and mood disorder, increasing with age. Physicians caring for children with ASD should be aware of the coexistence of these treatable conditions and monitor for them as the children age.

**Comorbidity**

| | Anxiety Disorder (%) | Anxiety Disorder (%) | Mood Disorder (%) | Mood Disorder (%) |
|---|---|---|---|---|
| | ASD (-) ADHD | ASD (+) ADHD | ASD (-) ADHD | ASD (+) ADHD |
| Age 6-11 years | 14.8 | 41.1 | 4.6 | 18.9 |
| Age 12-17 years | 32.2 | 52.8 | 18.9 | 38.1 |

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### Abstract 31

### Training Pediatric Residents in Behavioral Health Service Delivery in Primary Care

*Jeffrey D. Shahidullah, PhD, Psychology, Rutgers University, Piscataway, NJ, Paul K. Kettlewell, PhD, Psychiatry, Geisinger Medical Center, Kathryn A. DeHart, MD, Pediatrics, Sharon L. Larson, PhD, Center for Behavioral Health Research, Geisinger Medical Center, Danville, PA*

**Purpose:** Pediatricians are positioned to serve an increasing number of youth who present with behavioral health concerns in primary care. Recognizing the lack of formal training in behavioral health that medical providers receive, the American Academy of Pediatrics (2009) highlighted key aspirational behavioral health competencies for pediatricians. The AAP posits that the attainment of these competencies requires innovations in residency training. This paper describes a recent innovation in residency training by delivering a behavioral health curriculum to pediatric residents in a setting in which behavioral health services are integrated with pediatric primary care. **Methods:**Data was collected via surveys and focus groups from 1st, 2nd, and 3rd year residents at each of the sites both before implementation of the innovative curriculum and 1 year after receiving this enhanced training in behavioral health. The dependent variable of interest were resident's comfort and knowledge in behavioral health.**Results:**Quantitative data using surveys found that residents across sites did not demonstrate significant differences in their comfort and knowledge in behavioral health at baseline. However, important distinctions were reflected after implementation of the curriculum that have implications for how we deliver training to future pediatrians. Qualitative data using focus groups revealed nine key themes that emerged regarding behavioral health service delivery including time management, struggles with establishing rapport with patients, knowing referral sources and protocols, comfort level diagnosing but not knowing how to treat a variety of conditions, difficulties in establishing communication and relationships with adults and dysfunctional families, making mistakes that result in poor outcomes, the relative importance of behavioral health compared to some of the more obvious physicalconditions, and a general lack of training in addressing a wide range of behavioral health issues. **Conclusion:** Fear, frustration, and a recognition that training to date limits new pediatricians in their ability to confidently address behavioral health problems. Changes in medical school training and

residency to improve skills in behavioral health service delivery may be warranted. Residents will continue to be followed throughout their training to determine best strategies to improve knowledge, skills, and confidence.

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### Abstract 32

### Larger Contribution of Familial Associations to Obesity in Children with Autism Spectrum Disorders

*Jack Dempsey, PhD, Pediatrics, Baylor College of Medicine, Houston, TX, Allison G. Dempsey, PhD, Pediatrics, University of Texas Medical School at Houston, Houston, TX, Robert G. Voigt, MD, Sonia Monteiro, MD, Pediatrics, Baylor College of Medicine, Houston, TX*

**Purpose:** Rates of obesity in children with Autism Spectrum Disorder (ASD) are higher than rates among the general population. Among the general population, sibling obesity is a stronger predictor of child obesity than is parental obesity. The current study seeks to determine if there is an association between parent and sibling obesity status and obesity status in children with ASD. **Methods:**The current study consisted of secondary analysis of data from the Simons Simplex Collection (SSC) to identify predictors of obesity in children with ASD. Data from probands included in the SSC were included in this study if they had BMI data for the proband (child with an ASD), one sibling, and two parents, resulting in an included sample of 1,791 probands (mean age 9.1 years). **Results:**In this sample, 17.2% of probands were obese. In a stepwise logistic regression model, proband obesity status was associated with obesity status of the sibling (odds ratio [OR] 2.66; 95% CI, 1.92-3.70), mother (OR 2.10; 95% CI, 1.59, 2.77), and father (OR 1.51; 95% CI, 1.15, 1.98). Proband obesity was also related to somatic complaints (OR 1.60; 95% CI, 1.006, 2.53), mood stabilizers (OR 1.80; 95% CI, 1.19, 2.72), internalizing problems (OR 1.60; 95% CI, 1.14, 2.30), age (OR 1.01; 95% CI, 1.00, 1.01), and some adaptive functioning domains (OR .987; 95% CI, .977, .997). Race, ethnicity, income, sex, and maternal education were not significant predictors. **Conclusion:**Sibling obesity is a stronger predictor of obesity in children with ASD than is parent obesity. Maternal obesity is more strongly related than paternal obesity to proband obesity. Familial obesity is a stronger predictor of obesity than is use of antipsychotic medications. Results support a family-centered approach to treatment of obesity in children with ASD.

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### Abstract 34

### Changes in Resident Comfort with ADHD Following Involvement in a Stimulant Titration Program

*David O'Banion, MD, Developmental and Behavioral Pediatrics, Emory University, atlanta, GA, Alix Darden, PhD, Pediatrics, University of Oklahoma Health Science Centre, Oklahoma city, OK, Mina Boazak, MD, Psychiatry, Emory University, Atlanta, GA*

**Purpose:** Implementation and evaluation of a novel stimulant titration program during residency Developmental and Behavioral Pediatrics (DBP) rotation a pilot study. **Methods:**PGY2 pediatric residents participated in a telephone-based stimulant titration program with DBP patients up to one

day per week during their DBP rotation. Consenting residents completed a pre/post survey on ADHD experience and comfort. Likert pre/post responses were analyzed independently and in paired samples. **Results:**Of the 12 residents taking the post survey, none reported a negative experience with the intervention, 62% fund the intervention helpful, while the majority of respondents with a neutral opinion, 66%, eported too little exposure. Resident-reported value in other ADHD educational experiences noted 58% psitive responses towards continuity clinic and 100% seing patients with DBP faculty/fellows. Paired sample residents, N=7, reported significantly improved comfort with side effect management (comfortable pre-survey=14.3%, ost survey=100%, =0.005), with improved comfort determining optimum dose (comfortable pre-survey=42.9%, ost survey=100%, =0.07), and no significant reported improved comfort in ADHD diagnostics (those comfortable pre-survey=71.4%, ost survey=100%, =0.46). **Conclusion:** The intervention was a distilled experience where residents have frequent opportunity to manage ADHD medications. They reported few experiences prior to the DBP rotation in addressing issues in ADHD care and low level of comfort. Our findings support our hypothesis that the intervention during the DBP clerkship is a positive educational experience, but larger studies will need to be conducted for results to be generalizable. Our findings reveal improvements in resident comfort with side effect management and dose optimization, specific objectives of the intervention. Residents report higher levels of comfort in ADHD care issues following the DBP rotation, suggesting the intervention may contribute to an effective ADHD curriculum.

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### Abstract 35

### Behavioral Health Utilization in an Integrated Pediatric Continuity Care Clinic

*Lila Pereira, MS/MA, Jenna Wallace, PsyD, Whitney Brown, PhD, Psychiatry, Terry Stancin, PhD, Psychiatry, Pediatrics, & Psychological Sciences, MetroHealth Medical Center/Case Western Reserve Univ, Cleveland, OH*

**Purpose:** Integrating behavioral health and primary care services has been shown to be an effective approach to caring for children with complex health care needs. However, there has been little attention on preparing professionals to work in integrated primary care teams, or on how such training impacts behavioral health utilization. The purpose of the present study was to describe the impact of embedding doctoral psychology interns in a pediatric resident continuity care clinic setting on behavioral health care utilization. **Methods:**At an urban, academic medical center, doctoral psychology interns participate as team members in all 9 pediatric resident continuity care clinics. Supervision of psychology interns is provided by a pediatrician preceptor with remote and onsite access to psychologists. Over 4-months, services provided by the psychology interns were tracked including numbers of warm hand-offs, patient behavioral consults (including co-visits with residents), patient follow-up appointments, and crisis evaluations. **Results:**Psychology interns completed 157 warm handoffs, 152 same-day patient consults, and 163 follow up appointments; 63 patients attended group therapy sessions. Of 13 patients evaluated for suicidal/homicidal ideation (who previously would have been referred immediately to the hospital Emergency Department [ED] for evaluation), 11 were stabilized in primary care and only 2 required further ED services.**Conclusion:** Integration of psychology trainees into resident continuity clinic resulted in more than 500 same-day or rapid behavioral health services in just 4 months, and diverted 85% of mental health crises from ED and other possible psychiatric hospitalization expenses. Prior to integration, none of these services would have been provided on site. In addition to providing interprofessional team training, integrated continuity care clinics can improve access to behavioral health services and offer significant cost-saving opportunities to health care systems.

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### Abstract 36

### Pharmacogenomically Relevant Medication use by Children with Suspected Monogenic Disorders: Implications for Next Generation Sequencing

*Benjamin T. Black, MD, Pediatrics, Raymond Caylor, PhD, Bradley Belden, BS/BA, Sarah E. Soden, MD, Center for Pediatric Genomic Medicine, Children's Mercy Kansas City, Kansas City, MO*

**Purpose:** Whole exome and genome sequencing (WES/WGS) are increasingly used to identify the genetic etiology of neurodevelopmental disorders (NDD). Because these tests decode all genes, there is potential for incidental findings in genes involved in drug metabolism and response. Functional genotypes have been established for several pharmacologically active genes that encode for Cytochrome P450 (CYP) enzymes, such as CYP2D6, CYP1A2, CTP3A4, CYP2C9 and CYP2C19. Many medications commonly prescribed to individuals with NDD and impairing neurobehavioral symptoms such as anxiety, inattention, irritability, and aggression are CYP substrates. Children with developmental disabilities are uniquely vulnerable to the limitations of subjectively guided medication management (i.e. trial and error), the mainstay of current practice. **Methods:**Under an IRB approved protocol, the medical records were reviewed of 257 probands consecutively enrolled into The Center for Pediatric Genomic Medicine (CPGM) repository at Children's Mercy Hospital who had WES/WGS completed for NDD-related monogenic disease diagnosis. Each proband's medical record was reviewed for exposure to 62 medications metabolized by CYP2D6, CYP1A2, CYP3A4, CYP2C9 and CYP2C19. **Results:** Almost 90% of the participants were exposed to one or more of the medications surveyed. The number of surveyed medications each patient was exposed to ranged from 0-15 (mean 4), and 44.4% were exposed to five or more medications. Of the medications surveyed, 22 have genetically driven dosing recommendations in the pharmGKB database, and 128 patients (49.8%) were exposed to one or more of these. **Conclusion:** Pharmacogenomic results from diagnostic WGS/WES have the potential to impact clinical care, allowing for dosing and drug selection that reduces the chance of harmful side effects and improves the likelihood of efficacy.

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## Abstract 37

## United States pediatric residents'comfort and knowledge level with attention-deficit hyperactivity disorder: A survey based study

*Katherine Myers, DO, Charina Reyes, MD, Pediatrics, Rainbow Babies and Children's Hospital, Cleveland, OH, Steven Lewis, MS/MA, MetroHealth Medical Center, Cleveland, OH, Nancy Roizen, MD, Pediatrics, Rainbow Babies and Children's Hospital, Cleveland, OH*

**Purpose:** Despite the rising prevalence of ADHD, previous research has indicated that primary care pediatricians feel that additional training in developmental-behavioral conditions such as ADHD would have been useful. The purpose of the study is to determine current US pediatric residentsexposure to, as well as knowledge and comfort level providing appropriate medical care to patients with ADHD. **Methods:**This national survey consisted of US pediatric residents completing an investigator-designed questionnaire in spring 2016 on their comfort level and knowledge of ADHD based on the American Board of Pediatrics content specifications for general pediatrics. The survey included questions involving residentsknowledge and comfort level managing children with ADHD. Comfort level was measured using a 4-item scale for ADHD which demonstrated good reliability (Cronbachs alpha 0.78). **Results:**A total of 1700 US-based pediatric residents completed the survey. 38.2% of respondents were in their first year of training, 31.3% second year, 24.8% third year, and 5.8% were either chief residents or 4th year residents. 44.6% reported plans to go into primary care, while the remainder reported interest in pursuing subspecialties. Multiple linear regression revealed that more educational opportunities for ADHD, increased residency training level, higher numbers of patients seen, and regular prescribing of ADHD medications were all associated with increased comfort level in managing ADHD (all $p<.0001$). No significant difference was noted in the comfort level or knowledge of those who were going into primary care versus specialty care. Of respondents in their final year of residency, only 68% reported that their training program prepared them well for managing patients with ADHD.**Conclusion:** A significant proportion of pediatric residents in their final year of training reported that their residency did not prepare them well for managing ADHD. Increased educational opportunities, patient exposure and prescribing experience in residency were associated with improved comfort level in managing children with ADHD. These findings suggest increased educational and clinical experiences surrounding ADHD during residency may increase the comfort level of pediatric residents managing patients with ADHD.

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## Abstract 39

## Parent-Driven Toileting Intervention for Children with Autism Spectrum Disorder: Efficacy of the Autism Treatment Network's "Toileting Toolkit"

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**Purpose:** The Autism Treatment Network's "Toileting Toolkit" (ATN, 2011) is currently considered a "best practice"treatment for teaching toileting skills to children with Autism Spectrum Disorder (ASD). Goals include establishing a toileting routine, teaching the recognition of body cues, developing supports, and using reinforcement. The purpose of this project was to determine the effectiveness of the toolkit. **Methods:**Participants included 16 children ages of 3-6 years previously diagnosed with ASD. Children and families participated in a 12-week intervention. Treatment involved parent training and parent-driven implementation of techniques based on the "Toileting Toolkit" published by the ATN. One-hour study visits were scheduled on weeks 2, 4, 6, 9, and 12 to collect data and provide parent consultation. Data were collected using forms developed for the study and included Toileting Data Logs, the Parent Satisfaction Survey, Parent Training Fidelity Checklists, Treatment Fidelity Checklists, and the Adverse Events Log. Participants completed measures of cognitive functioning, adaptive behavior, and symptoms of autism (e.g., ADOS). **Results:**Overall, results support the feasibility of a parent-driven model with consultation to promote successful toileting outcomes using the "Toileting Toolkit." The average treatment fidelity score was 94%, while 46.2% of parents reported that they were "Very Satisfied" with their child's intervention at the 3-month follow-up visit post-intervention. The median number of successes (e.g., urinating in the toilet) during a 3-day count increased from 1 to 4 successes at 3-months post-intervention. Additionally, at the conclusion of the intervention, some children were reported as having toileting independence. **Conclusion:** The ATN's "Toileting Toolkit" is a behavioral approach to toilet training and is an effective modality in teaching toileting skills to children with ASD. Additionally, it is a parent-driven treatment that can be easily implemented through a behavior consultation model.

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### Abstract 40

### A Learner-Completed Objectives Log as an Instrument to Determine Effectiveness of a Developmental and Behavioral Rotation

*Stephanie C. Spinelli, OTR/L, BS, Medical Education, Pediatrics, Orlando Health, Orlando, FL, J. Gene Chen, MD, Medical Education, Pediatrics, University of Florida at Orlando Health, Orlando, FL*

**Purpose:** Accomplishing goals and objectives for developmental-behavioral pediatric (DBP) rotations at pediatric training programs often includes a combination of both hospital based and community sites. Determination of the extent that objectives are being met for a rotation participant may not be overt. This study determines the effectiveness of a learner-completed objectives log as a tool for measuring the implementation of objectives for a Developmental and Behavioral Rotation. **Methods:** This is a retrospective study of de-identified data from objectives logs completed by rotation participants including pediatric residents and medical students from 2010 through 2016. The purpose of the objective log was to facilitate participant review of DBP rotation goals and improve assessment skills of each site purpose. Objectives were developed from the American Board of Pediatrics Content Outlines and literature review. Participants logged objectives that applied to their site experience. The primary outcome was the mean percentage of objectives met as determined by learners over the entire rotation. Secondary outcomes included the number and type of objectives each site was able to meet. If more than 40% of learners reported that a site met an objective, then the site was counted as meeting the objective. **Results:** We examined 46 logs listing 15 sites and 16 objectives. Participants met a mean of 15 of 16 objectives per rotation (96%).Individual sites met a mean of 6 objectives (range 0-15). Some sites fulfilled unique objectives that were unable to be met at other locations. **Conclusion:** A learner-completed objectives log to document goals and objectives met by individual sites during a DBP Rotation is a practical tool for the assessment of met objectives and the utility of individual sites.

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## Abstract 42

## Psychological Stress in Youth on the Spectrum: Is the PROMIS® Psychological Stress Experiences Measure feasible and valid in literate youth with an ASD?

*Naomi B. Gershon, MD, Ayesha Cheema-Hasan, MD, Elaina Ramos, BS/BA, Yvette Yatchmink, MD, Pediatrics, RIH, Providence, RI, Nathan Blum, MD, Chris Forrest, MD, Pediatrics, CHOP, Philadelphia, PA, Carole Tucker, PhD, Temple University, Philadelphia, PA, Pamela High, MD, Pediatrics, RIH, Providence, RI*

**Purpose:** Stress in youth with an Autistic Spectrum Disorder (ASD) elicits a burden on youth and caregivers. Success of interventions is difficult to gauge, given the social-communication impairment inherent in the diagnosis. NIH Patient Reported Outcome Measurement Information System (PROMIS) measures are valid for typical youth. We aim to determine the preliminary validity and feasibility of using PROMIS Psychological Stress Experiences measures with literate youth aged 11-17 with ASD **Methods:** Use a statewide Autism registry to identify 100 youth (11-17yo) with ADOS-2 verified ASD (module 3/4). Eligible youth reading at or > 3rd grade level complete: Youth- Strengths and Difficulties Questionnaire (Y-SDQ), and PROMIS Psychological Stress Experiences (Y-PSE) and Peer Relationship (Y-Peer) computerized adaptive test (CAT) measures. Parents complete: PROMIS Adult Depression, Parent-Proxy Peer Relationships (PP-Peer) and Parent-Proxy Psychological Stress Experiences (PP-PSE) measures. STATA generated Pearson's Correlations **Results:** To date, 67 parent/youth dyads are enrolled. Means obtained: Age 13.6 (SD 2.1)yo, ADOS severity 7.1 (SD 2.0), Y-PSE T-score 54.3 (SD 8.3), PP-PSE T-score 64.7 (SD 8.6), Y-Peer T-score 43.4 (SD 8.2). Y-PSE and PP-PSE are normally distributed and are 0.4-1.4 SD >mean for typical youth. Y-PSE T-scores correlate with PP-PSE ($r=0.28$, $p<0.05$) and Y-SDQ Emotion Subscale ($r=0.56$, $p<0.0001$). PP-PSE correlates with parent's own depression ($r=0.34$, $p<0.01$). Y-PSE scores are negatively associated with Y-Peer ($r= -.29$, $p<0.05$). Y-PSE was not associated with ADOS severity or parent's depression **Conclusion:** PROMIS Y-PSE and PP-PSE CATs can be administered in literate youth with ASDs. Scores are elevated compared with typical youth, but correlate within dyads. Y-PSE correlated with the emotion subscale on a questionnaire commonly used in youth with an ASD. Parents who see their youth as stressed, have more depression themselves. This suggests preliminary validity in this population. Data completion and qualitative interviews are ongoing. Funded by MCHB & SDBP YI Research Award

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## Abstract 43

### Developmental, Medical, and History of Intervention in Youth at Risk for Autism Spectrum Disorder

*Emily Crosby, BS/BA, Catherine C. Bradley, PhD, Pediatrics, Amy E. Wahlquist, MS/MA, Public Health Sciences, Andrea D. Boan, PhD, Jane M. Charles, MD, Laura A. Carpenter, PhD, Pediatrics, Medical University of South Carolina, Charleston, SC*

**Purpose:** Research has found that a number of early developmental factors are associated with ASD. Youth diagnosed with ASD have also been shown to have elevated rates of co-occurring medical and behavioral diagnoses; however, it is unclear how these comorbidities vary for youth at differing levels of risk for ASD. The aims of this study are to evaluate prenatal, birth, intervention, developmental, and medical history for a sample of youth at varying levels of risk for Autism Spectrum Disorder (ASD: n = 292).**Methods:**Data for this study is from the South Carolina Childrens Educational Surveillance Study (SUCCESS), which is the largest ASD screening and assessment study that has been completed in the US to date. School-aged children 8-11 years of age were identified as being at risk for ASD using the Social Communication Questionnaire (SCQ). Participants (n=292) completed developmental assessments to determine ASD case status according to both DSM-IV-TR and DSM-5 criteria. Clinical best estimate diagnoses were based on lifetime history of ASD symptoms. Participants were 65% male, 43% white non-Hispanic, 36% black non-Hispanic, 9% non-native English speakers, and 66% from Title 1 public schools (schools with a high percentage of low income students).**Results:**Among the 292 youth presenting for diagnostic evaluations, 52 met DSM-5 criteria for ASD. Most parents of children diagnosed with DSM-5 ASD (80.4%) indicated early concerns about their childrens development compared to only 38.5% of non-ASD youth. Over two thirds of youth with ASD were taking at least one psychoactive medication. The most common comorbid diagnoses by parent report were ADHD (60%), Speech/Language Impairment (50%), and anxiety disorder (28.8%). Only 36.5% of youth meeting DSM-5 criteria for ASD had ever received ABA, although 83% had received speech therapy in the past. Almost 14% of youth with ASD had received some form of complementary or alternative medicine (CAM) and 9.6% were on a special diet, compared with 10% and 4.7% of youth without ASD. **Conclusion:** Previous research has shown that a variety of early developmental and medical issues are associated with ASD, however it is not yet clear how these issues impact youth at varying levels of risk for ASD. Additional analyses are underway regarding how these developmental and medical factors varying across risk groups and between youth both with and without DSM-5 ASD.

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## Abstract 45

### Integrated Naturalistic Developmental Behavioral Interventions for Toddlers with Autism: A Pilot Study of Treatment Efficacy and Program Feasibility within a Community Based Setting

*Cynthia N. Martin, PsyD, Jamie M. Winter, PhD, So Hyun Kim, PhD, Catherine Lord, PhD, Psychiatry, Weill Cornell Medical College, White Plains, NY*

**Purpose:** RCTs of Integrated Naturalistic Developmental Behavioral Interventions (NDBIs) such as The Early Start Denver Model (ESDM), and the Early Social Interaction (ESI) model have been shown to improve functioning in toddlers with autism spectrum disorder (ASD). These models of intervention for toddlers emphasize a developmentally appropriate curriculum using behavioral teaching principles and parent training. Although promising, access to NDBIs has generally been restricted to university-based research programs and are not typically available within community-based settings. We aim to explore (1) the feasibility and (2) the treatment efficacy of short-term (6 month) NBDIs incorporated into a state Early Intervention (EI) Program. **Methods:** 27 toddlers with ASD (16-33 months) were enrolled over an 18-month period. 6 months of treatment was provided. Outcome measures included Mullen Scales of Early Learning and ESDM Checklist. The MSEL provides age equivalents (AE; in months) for Visual Reception (VR), Fine Motor (FM), Receptive Language (RL), and Expressive Language (EL). The level of mastery on ESDM was calculated by dividing the number of skills mastered within the total number of items in domains of Receptive Communication (RC), Expressive Communication (EC), Social Skill (SS), Play, and Behavior. **Results:** Dropout rate was low (11%). Over the course of 6 months all children showed improvements in MSEL and ESDM Checklist. The average change in MSEL AE across individuals was 18.5 months (SD=10.1) for VR, 8.8 months (SD=8.4) for FM, 19.5 months (SD=12.7) for RL, and 17.2 months (SD=12.4) for EL. The average change in ESDM % of mastery was 37% for RC (SD=14), 46% for EC (SD=10), 27% (SD=12) for SS, 36% in Play (SD=14), and 85% (SD=19) in Behavior. **Conclusion:** Data suggests that NDBIs were successfully implemented within a state-funded EI program. Favorable treatment effects were found in all developmental areas, with largest effects in receptive and expressive language, play, and behavioral regulation.

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### Abstract 46

## Relationship between Mental Health Factors and Emergency Department Visits among Children in Foster Care

*Marsheena Murray, PhD, Psychiatry, MetroHealth Medical Center, Cleveland, OH, Annie Zhang, BS/BA, Biology, The Ohio State University, Columbus, OH*

**Purpose:** Children in foster care are one of the largest, most vulnerable and underserved populations served by medical and behavioral health systems. Among the health challenges facing this population are high rates of mental health disorders and fragmented health care resulting in reliance on non-emergent emergency department [ED] usage. The purpose of this project is to examine the relationship between mental health factors and ED usage among children in foster care in an urban area. **Methods:**: Through a unique collaboration with the county child protective service agency, an urban medical serves as the integrated medical home for youth in foster care. Children receive a comprehensive initial medical and developmental/behavioral (DB) assessment approximately 30 days after foster care placement. A retrospective chart review of patient electronic medical records was conducted with data extracted including demographic characteristics, foster care history, mental health history, and ED visits prior to enrolling in the medical home. **Results:**Participants were children (ages 5-20) in foster care in a Midwestern city (N = 310) who visited the medical home between January-April 2015. A MANOVA with independent variables consisting of mental health diagnosis, psychotropic medication usage, and mental health service use with dependent variables being rates of ED usage was significant, F (6, 602) = 8.12, p < .001; Wilk's › = 0.8586, partial ·2 = .075. The relationship between psychotropic medication and ED usage was significant, X2 (1, N= 159) = 5.56, p< 0.05, as was the relationship between mental health services and ED usage, X2 (1, N= 157) = 5.59, p<< 0.05. Number of placements and number of psychotropic medications were found to be significant predictors of ED usage, recording an odds ratio of 1.34 and 1.52 respectively. **Conclusion:** Mental health factors (number of psychiatric diagnoses, number of psychotropic medications, and usage of mental health services) were significantly related to ED usage among foster care children. Given the high prevalence of mental health illness, increasing reliance on ED for mental health care, and challenge of fragmented medical care, the medical home model for youth in foster care offers unique opportunities to study and address these concerns.

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## Abstract 53

### Parental Perceptions of ADHD Specific Risk of Alcohol and Marijuana Use for Their Adolescents with ADHD

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**Purpose:** Youth with Attention-Deficit/Hyperactivity Disorder (ADHD) are at increased risk for early initiation of alcohol and marijuana use and development of substance use disorders. Additionally, alcohol and marijuana use can worsen ADHD symptoms, negatively interfere with treatment, and exacerbate poor outcomes. Our objective is to describe parental perceptions of ADHD-specific alcohol and marijuana use risk for their adolescents with ADHD. **Methods:**Parents of adolescents with ADHD ages 13-18 years were recruited via a national ADHD website to complete an online survey about perceptions and knowledge of adolescent alcohol and marijuana use harm as related to their adolescent with ADHD. We used frequencies to report demographics and parental perceptions and knowledge. **Results:**Forty-one parents completed the survey regarding their adolescents with mean age of 14.7 years, of whom 65.9% were male and 90.2% white. Most adolescents (80.5%) took prescription ADHD medication. Co-morbid anxiety or depression was reported in 53.7% and co-morbid conduct or oppositional disorders reported in 34.1% of adolescents. While most parents reported talking to their adolescent about alcohol (97.5%) and marijuana (89.8%), fewer talked about alcohol (52.5%) or marijuana (46.2%) use risks specifically related to ADHD. Approximately one third of parents (32.5%) recognized that their child with ADHD was at greater risk of initiating alcohol use than peers. Seventeen percent of parents thought that their child consuming up to one drink (9.8%) or up to two drinks (7.3%) was not dangerous. The majority (87.9%) of parents want their adolescents ADHD care provider to discuss ADHD-specific alcohol and marijuana use risk with their adolescent now or in the future. **Conclusion:** Although parents of adolescents with ADHD are discussing alcohol and marijuana use with their adolescents, they may not consistently discuss or comprehend ADHD-specific risks for substance use. However, parents are receptive to providers discussing ADHD-specific substance use risks with their adolescents.

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**Abstract 54**

## Self Report measures for Peer Relationships in literate youth with Autism Spectrum Disorders; Can PROMIS® deliver?

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**Purpose:** The NIH sponsored Patient Reported Outcome Measurement Information System (PROMIS) provides valid and efficient outcome measures for typical children and adults. Our study aims to determine the feasibility and preliminary validity of using PROMIS Pediatric Peer Relationships measures in literate youth aged 11-17 with ASDs**Methods:**We utilized a statewide Autism registry to identify 100 youth ages 11-17 with ADOS-2 (module 3/4) verified ASD and Vineland Adaptive Behavior Scales II. Eligible literate youth reading at or above 3rd grade level complete Youth- Strengths and Difficulties Questionnaire (Y-SDQ), the Pediatric Peer Relationships(Y-Peer) and Psychological Stress Experiences (Y-PSE) PROMIS computerized adaptive test (CAT) measures. Parents complete the Adult PROMIS Depression (PD) and the Parent Proxy Peer Relationship (PP-Peer) CAT. STATA generated Pearsons Correlations**Results:**To date, 67 parent/youth dyads have completed our study. Youth were 13.6 (SD 2.1) yo, ADOS severity 7.1 (2.0), Y-Peer T-Score 43.4 (SD 8.2), PP-Peer T-Score 33.7 (SD 7.0) and PD T-Score 51.8 (SD 7.8). T-scores were normally distributed. Mean Y-Peer was 0.66 SD lower and P-Peer was 1.6 SD below typical youth scores. Y-Peer T-scores are associated with PP-Peer T-scores (r=0.39, p=<0.001). Y-Peer T-scores are negatively associated with their Y-PSE (r=-0.29, p=<0.05). The Interpersonal Relations (r=0.25, p=0.05) and the Play-Leisure (r=0.24, p=0.06) subdomains of the Vineland Socialization Domain are trending towards significant correlation with Y-Peer. The Y-Peer is not correlated with ADOS severity or Y-SDQ peer problem sub-scale. **Conclusion:** The Y-Peer and PP-Peer T-scores for PROMIS are well correlated. Youth with ASD recognize difficulties in their peer relationships, but not to the extent their parents report. Youth reporting problems in their peer relationships also reported elevated stress. Literate youth were accepting of PROMIS measures which may provide a way of giving them a voice in their care. Data completion is underway and we hope to use our ongoing qualitative research to shed further light. Funded by the SDBP Young Investigator Award & MCHB

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## Abstract 55

## Psychiatric comorbidity in urban adolescents with headache

*Sergey Y. Tereshchenko, PhD, Margarita Shubina, MD, Department of child's physical health, Research Institute of medical problems of the North, Krasnoyarsk, Krasnoyarsk krai, Russia*

**Purpose:** The Development and Well-Being Assessment (DAWBA) diagnostic tool was developed by R. Goodman et al. as comprehensive semistructured interview for the diagnosis of psychiatric disorders and has been found to been an effective diagnostic tool in clinical and epidemiological settings. Data regarding the DAWBA estimated psychiatric symptoms in Russian adolescents with different headache types are limited. **Methods:**224 urban Siberian (Krasnoyarsk, Russia) adolescents aged 12-18 attending a tertiary medical center for primary diagnosis of tension-type headache (n=109, TTH, including the subtypes frequent episodic TTH, chronic TTH), migraine (n=89), and mixed type (n=26, TTH+migraine). All of them and 180 healthy matched controls completed computer-assisted DAWBA package of interviews. Each of psychiatric disorders was coded on a computer-generated 5-point probability scale. The Mann-Whitney U test was used. **Results:**Significant positive associations were detected between all headache subgroups (TTH, migraine, and TTH+migraine) and posttraumatic stress disorder, generalized anxiety disorder, and depressive disorder probabilities (Table 1). Specific and social phobias were more characteristic for adolescents with TTH (TTH and TTH+migraine groups), whereas obsessive-compulsive disorder was more typical for migrainers (migraine and TTH+migraine groups). **Conclusion:**Headache adolescents referred to tertiary medical center have a significantly high prevalence of psychiatric comorbidity. Spectrum of psychiatric disorders may be different in headache types (TTH or migraine) that should be taken into account when evaluating the adolescents mental health status.

**Table 1.**

| DISORDERS | No headache (0) | TTH (1) | Migraine (2) | TTH+migraine (3) | p |
|---|---|---|---|---|---|
| Specific phobia | 0,28 (0,00-0,56) | 1,51 (0,72-2,31) | 0,00 | 0,60 (0,00-1,20) | p0-1=0,049 |
| Social phobia | 0,02 (0,00-0,04) | 0,33 (0,13-0,53) | 0,07 (0,02-0,11) | 0,00 | p0-1=0,048 |
| P. stress disorder | 0,08 (0,00-0,16) | 0,54 (0,08-1,00) | 1,10 (0,47-1,73) | 2,62 (0,63-4,60) | p0-3<0,001 |
| O-Comp. | 0,10 (0,02- | 0,00 | 0,27 (0,09- | 0,24 (0,07- | p0-3=0,021 |

| | | | | | |
|---|---|---|---|---|---|
| disorder | 0,18) | | 0,45) | 0,41) | |
| Anxiety disorder | 0,10 (0,02-0,18) | 0,95 (0,46-1,45) | 1,07 (0,46-1,68) | 2,48 (0,49-4,47) | p0-1,2,3<0,01 |
| Depressive disor. | 1,11 (0,55-1,67) | 3,12 (2,06-4,18) | 3,26 (2,09-4,43) | 3,46 (2,20-4,73) | p0-1,2,3<0,01 |

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## Abstract 56

### Quality of Life for Families of Children Diagnosed with Comorbid Attention Deficit Hyperactivity Disorder and an Autism Spectrum Disorder

*Jennifer Aites, MD, Noelle Huntington, PhD, Developmental Medicine Center, Boston Children's Hospital/Harvard Medical School, Boston, MA, Sarah Weas, Other, Developmental Medicine Center, Boston Children's Hospital, Boston, MA, Eugenia Chan, MD, Developmental Medicine Center, Boston Children's Hospital/Harvard Medical School, Boston, MA*

**Purpose:** Neurodevelopmental disorders such as attention deficit hyperactivity disorder (ADHD) and autism spectrum disorder (ASD) have known effects on parent and family functioning; however, few studies have examined the impact of comorbid ADHD and ASD on family quality of life (F-QoL). The objective is to compare the impact on F-QoL among children diagnosed with ADHD only, ASD only, and comorbid ADHD and ASD.**Methods:**We prospectively surveyed families of children ages 6 to 12 years with a diagnosis of ASD, ADHD, or comorbid ADHD and ASD receiving care at Boston Childrens Hospitals Developmental Medicine Center. Data collected included demographics, comorbid diagnoses, age at diagnosis, medications and side effects, attention and behavior ratings through the Vanderbilt Assessment Scale (VAS), overall functioning through the modified Clinical Global Impression Scale (CGIS), and F-QoL through the PedsQL 4.0 Family Impact Module (FIM). We compared F-QoL between groups using ANOVA. **Results:**To date, we have complete data on 124 families: 84 ADHD only (71% male, mean age 8.9 years), 22 ASD only (100% male, 8.5 years), and 18 comorbid ADHD and ASD (88.9% male, 9.2 years). For the ADHD only, ASD only and co-morbid groups, average FIM scores were 64.4, 62.5 and 61.2, VAS were 25.1, 26.1 and 28.1, and CGIS scores were 4.8, 4.6 and 4.1, respectively. None were significantly different by group. Data collection is in process for an additional 69 children with ASD only and 57 children with co-morbid ASD and ADHD. Additional analyses will examine the relationship between the childs diagnosis and F-QoL, while controlling for covariates. **Conclusion:** The shift to using DSM5 allows comorbid ASD & ADHD diagnoses to be made and understanding the similarities and differences in the experiences of these families is important to providing good care. Though our data currently show no significant differences in their F-QoL or child functioning compared to children with ADHD only and ASD only, it is premature to make any conclusions given the ongoing data collection in the ASD and comorbid groups.

# Abstracts of Plenary Sessions and Posters Accepted for Presentation at the 2016 Annual Meeting of the Society for Developmental and Behavioral Pediatrics

## Abstract 57

### Reducing time to diagnosis and associated costs in Developmental Behavioral Pediatrics clinics using Quality Improvement methodology

*Lisa W. Kuan, MD, Heather Johnson, PsyD, Developmental and Behavioral Pediatrics, Cincinnati Children's Hospital, Cincinnati, OH*

**Purpose:** Demonstrate that access to autism spectrum disorder diagnostic evaluations can be improved using Quality Improvement methodology while also reducing overall cost. **Methods:** Access principles were employed to identify opportunities for interventions and systems change. We specifically employed strategies to increase clinician supply without adding FTE, by adjusting provider schedules, and visit lengths. We also developed and tested a new, more efficient clinical model for the diagnosis of children under age 3 with developmental concerns. Specifically this model employs 3 clinicians (MD, SLP and Psychologist) seeing children under age 3 over two hours, with 4 children scheduled in a 4 hour block. Supply and demand for under 3 year old evaluations was measured, and demand data was used to determine how many 4 hour evaluation blocks were needed in a month to minimize delay. **Results:**Time to initial visit was improved from 120 days to 20 days, as measured by Third Next Available appointment. Time through the diagnostic process was improved from 139 days to 21 days. Costs were reduced $992 per patient. Average number of patient visits was reduced from 5 to 2, and average number of hours spent in evaluation was reduced from 8 to 2.5 hours. **Conclusion:** Despite increasing demand for diagnostic services, improvement in access to diagnostic services and cost reduction can be obtained, through the application of access priniciples.

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## Abstract 58

### Low Birth Weight Associated With Poor Executive Function Skills In US Children Entering Kindergarten

*Rebecca J. Scharf, MD, Sarah E. Miller, DO, Mark D. DeBoer, MD, Pediatrics, University of Virginia, Charlottesville, VA*

**Purpose:** Executive functions include planning, organization, task initiation, attention, working memory, cognitive flexibility, and impulse control. These have been associated with success in school and beyond. Identification of children at risk for executive skills dysfunction is important to improve developmental and functional outcomes. This study is designed to examine the relationship between birth weight and executive function skills in kindergarten children. **Methods:**The Early Childhood Longitudinal Study Kindergarten 2011 cohort is a sample of 18,174 children entering kindergarten in the US in 2011. Birth weight and gestational age were obtained by parental interview. Executive functions were assessed: the number reverse test was used to measure working memory and the card sort test was used to assess cognitive flexibility. Teacher evaluation was used for evaluation of additional executive functions. Data was analyzed using SAS to run all linear and logistical regressions. **Results:**Birth weight was found to have a statistically significant relationship with executive function skills. For every kilogram of birthweight scores of working memory were increased by 1.47 (p< 0.001) and cognitive flexibility increased by 0.28 (p< 0.001) independent of gender, gestational age, parental education, and family income. Teacher evaluation of executive functioning also found a statistically significant relationship between birth weight and executive function skills across all domains. Furthermore, children born low birth weight, <2500 grams, were 1.5 times more likely to score in the bottom 20 percent of children on the number reverse test and the card sort with an OR= 1.49 (CI 1.21 1.85) p<0.001 and OR= 1.55 (CI 1.26-1.91) p<0.001 respectively. **Conclusion:** As birth weight increases there is an improvement in executive function by both child assessment and teacher evaluation independent of gestational age, parental education, and family income. Children with the lowest birthweights are at increased risk of poor executive functioning and may be provided with appropriate follow up, evaluation, and interventions.

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## Abstract 60

## Indicators in Infancy of Subsequent Social Skills

*Catherine C. Workman, MD, Carolyn B. Cates, PhD, Developmental and Behavioral Pediatrics, New York University, New York, NY, Caitlin F. Canfield, PhD, Developmental and Behavioral Pediatrics, New York University, New York, NY, Adriana Weisleder, PhD, Anne M. Seery, PhD, Alan L. Mendelsohn, MD, Developmental and Behavioral Pediatrics, New York University, New York, NY*

**Purpose:** Social skills deficits have long-term implications for later maladaptive outcomes. While there has been substantial study of the early onset and trajectory of social-communication difficulties in children with development disabilities such as Autism Spectrum Disorder (ASD), there has been limited study of this in children without known disabilities. We sought to understand the trajectory of social skills acquisition in infants and toddlers at increased risk for deficits due to low socioeconomic status (SES). **Methods:** We performed a nested, longitudinal analysis of mother-child dyads enrolled postpartum in an inner city public hospital and followed through age 3 years. Predictor variable (6-months): infant social communication, assessed at 6 months using 2 Communication and Symbolic Behavior Scale (CSBS-DP) subscales: 1) Emotion and Eye gaze; and 2) Communication. Outcome variable (36 months): Social Skills Subscale from the Behavior Assessment System for Children (BASC-2). Multiple regression analyses adjusted for sociodemographics, psychosocial risks (including maternal depressive symptoms) and infant temperament.**Results:**80 families assessed at both time points, with: mothers 89% Hispanic, 76% primary language Spanish, 88% low SES (Hollingshead), 32% with psychosocial risks, and children 39% first born, 49% female. In correlation analyses, 6-month communication score was associated with 36-month BASC-2 social skills t-score (CSBS total r=.44, p<.001; CSBS eye gaze r=.40, p<.001; CSBS communication r=.32, p=.004). In multiple regression analysis, CSBS scores remained independent predictors of BASC social skills scores (CSBS total $^2$=.39, p<.001; CSBS eye gaze $^2$=.36, p=.001; CSBS communication $^2$=.261, p=.02) **Conclusion:** Early reductions in social communication may be an indicator of later risk of social skills deficits. Identification and development of effective approaches for screening and intervention has the potential to improve behavioral outcomes in infants and toddlers at-risk due to low SES.

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### Abstract 66

### The Longitudinal Impact of Central Nervous System (CNS) Directed Treatment on Competence and Adjustment among Pediatric Cancer Survivors

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**Purpose:** Central nervous system (CNS) directed treatments can cause long-term cognitive, social, and emotional difficulties for children with cancer. However, limited work has examined the emergence of these problems longitudinally. Therefore, we compared competence and adjustment in children who did/did not receive CNS-directed treatment during the first three years following a cancer diagnosis or relapse. **Methods:**Mothers (n=97) and fathers (n=37) reported on their child's competence (social and school) and adjustment (anxious/depressed and withdrawn/depressed) near diagnosis (T1) and three years post-diagnosis (T2) using the Child Behavior Checklist. Children (n=38) completed the Youth Self-Report. Using medical chart data, children were separated into a CNS-directed treatment group (cranial radiation, intrathecal chemotherapy, and/or neurosurgery) and non-CNS treatment group. **Results:**At T1, there were no group differences across informants. At T2, mothers reported that children in the CNS group demonstrated poorer social (d=.41, p<.05) and school competence (d=.55, p<.05), and were more withdrawn/depressed (d=.48, p<.05) compared to children in the non-CNS group. Similarly, fathers reported deficits in social (d=.91, p<.05) and school competence (d=.72, p<.05), and marginally higher withdrawn/depressed symptoms (d=.64, p=.058) for children in the CNS group. Children did not self-report differences in competence or adjustment. Due to power limitations, mixed factorial ANOVAs were only conducted for mothers and indicated that school competence decreased over time in both groups, F(1,68)=8.53, p<.01. **Conclusion:** Children who receive CNS-directed cancer treatment may experience significant difficulties by three years post-diagnosis. Early identification of children vulnerable to difficulties is important to promote timely intervention and long-term adjustment.

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# Abstracts of Plenary Sessions and Posters Accepted for Presentation at the 2016 Annual Meeting of the Society for Developmental and Behavioral Pediatrics

## Poster Session 2 Abstracts

### Abstract 73

### Liver transplantation on cognitive and language development of children with Biliary Atresia

*Ramkumar Aishworiya, MD, Evelyn Law, MD, Paediatrics, National University Hospital, Singapore, Singapore*

**Purpose:** Children with a liver transplant have more developmental and cognitive delays compared to healthy peers. Previous studies focused on outcomes of children age 8 and above. Children who have had a transplant at a very young age may maintain or even improve their cognition after a transplant. Aim: To assess the individual change in pre and post-transplant cognition and language scores in very young Biliary Atresia (BA) patients.**Methods:**Consecutive patients diagnosed with BA in Singapore's only liver transplant centre were recruited when listed for a transplant. Exclusion criteria were patients with 1) additional chronic diseases other than BA and 2) neurological disorders. Children were assessed using the Capute Scales (CAT and CLAMS) pre-transplant and 3-6 months post-transplant to obtain their cognitive and language Developmental Quotient (DQ), respectively. For children who did not undergo transplant, a second assessment was done 6 months after the first. Parents completed a demographic questionnaire. Medical data from hospital records were collected using a data extraction form. Descriptive statistics were used to assess for prevalence of cognitive and language delays. Paired t-tests were then used to compare developmental quotients pre & post-transplant for each patient. **Results:**A total of 12 patients with BA were recruited over the study period. Their mean age was 1.3 years (SD 0.4). Ten of them received a transplant; the mean age of transplant was 1.2 years (SD 9.3). Among all patients, the mean CAT DQ was 86.3 (SD 17.4) and the mean CLAMS DQ was 81.1 (SD 19.7). 33.3 % had cognitive delays (defined as DQ < 70) and 25% had language delays. There was no significant difference in the mean CAT DQ or CLAMS DQ pre & post-transplant (CAT DQ: 86.3 vs 76.3, p=0.82; CLAMS DQ: 81.2 vs 71.9, p=0.85). There was also no difference in the repeat test scores between transplanted & non-transplanted patients. Patients with a lower maternal education level and a prolonged intra-operative time were more likely to have developmental delays (p=0.07 and 0.05 respectively). **Conclusion:**Cognitive and language scores are significantly lower in this sample of BA patients awaiting transplant compared to population means. This does not change even after a very early transplant. Patients with BA need early identification and therapy for developmental delay to improve outcomes.

# Abstracts of Plenary Sessions and Posters Accepted for Presentation at the 2016 Annual Meeting of the Society for Developmental and Behavioral Pediatrics

### Abstract 75

### Feasibility of Utilizing Wearable Activity Monitors to Track Sleep in Children with ADHD

*James M. DuRant III, MD, Andrea Boan, PhD, Developmental and Behavioral Pediatrics, Concetta Riva, MD, Pediatric Pulmonology, Angela LaRosa, MD, Developmental Pediatrics, Medical University of South Carolina, Charleston, SC*

**Purpose:** Understanding sleep is important in managing behavior in children. Inadequate or insufficient sleep can mimic the symptoms of ADHD in children. Wearable technologies are often used by people who wish to document their own health and lifestyle behaviors, and the use of this technology has the potential to affect healthcare. The feasibility of health tracking among children is unclear and the benefits are unproven in this population. **Methods:**Children (n=20) aged 4-10 with ADHD were provided Misfit activity monitors at a typical clinical ADHD follow up encounter. Quantitative data was collected over 7 nights and the data from the monitors was examined to assess engagement, sleep timing, and sleep amounts. A sleep questionnaire was given to compare estimated sleep versus recorded sleep. **Results:**Data logs revealed continuous usage over the 7-day period averaging 6.2 days. When children wore their devices on the hip reasonable data was obtained and 18 of the 20 devices were returned by mail without prompting. Actual bedtimes were later and total sleep times were less than caretaker estimates. There were few barriers to continuous engagement over this 7-day period in monitoring sleep. **Conclusion:** Based on this pilot data, findings suggest monitoring sleep over a period of 7 days yielded reasonable data and indicated feasibility during this period which could provide a relatively low cost and effective method of obtaining in-home sleep information. Extending monitoring over a duration needs to be examined to assess further feasibility in this population.

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### Abstract 77

### Health and education professionals in Flint, MI: attitudes, knowledge, and self-efficacy regarding parenting behaviors.

*Lauren K. O'Connell, MD, Gwendolyn Reyes, MD, Pediatrics, Hurley Medical Center/Michigan State University, Flint, MI, Evilia Jankowski, MS/MA, Genesee Intermediate School District, Flint, MI, Tiffany Ceja, MS/MA, Hurley Medical Center, Flint, MI, Cathy Baker, MS/MA, Genesee Intermediate School District, Flint, MI, Mona Hanna-Attisha, MD, Pediatrics, Hurley Medical Center/Michigan State University, Flint, MI*

**Purpose:** Children in Flint, MI, like many children across the U.S., are exposed to high level of toxic stress. Effective parenting behaviors (EPBs) moderate the effect of toxic stress; health and education professionals are key sources of parenting support. This study seeks to 1) describe the attitudes, knowledge, and self-efficacy regarding EPBs of pediatric residents and Head Start staff in Flint, MI, and 2) identify differences between these professional groups. **Methods:**An online survey was administered to pediatric residents and Head Start staff in Flint, MI. Primary outcomes of interest were respondents' attitudes, knowledge, and self-efficacy regarding EPBs. Statistical analyses included chi square and t tests. **Results:**27 pediatric residents (87%) and 73 Head Start staff (49%) completed the survey. No significant differences were found between attitudes of pediatric residents and Head Start staff (p=0.07-0.6). A large majority of pediatric residents and Head Start staff endorsed the EPBs of setting limits (93%, 97%) and following through on consequences (93%, 92%). Harsh parenting behavior was also endorsed: 22% of residents and 42% of Head Start staff endorsed spanking, while 74% of residents and 56% of Head Start staff endorsed yelling. The fund of knowledge regarding child-led play, effective commands, and principles of effective parenting was low for both residents and Head Start staff. Overall, Head Start staff correctly answered a higher percentage of knowledge questions than pediatric residents (64 vs 58%,p=0.05). A higher proportion of Head Start staff than pediatric residents endorsed 'knowing how to assess parenting behaviors' (67 vs 37%,p=0.02).**Conclusion:** Head Start staff have a greater fund of knowledge and greater self-efficacy regarding EPBs than pediatric residents. Residents may benefit from learning about EPBs from and alongside education professionals. While both groups of professionals endorse some EPBs, the endorsement of harsh parenting behaviors is concerning. HMC and Head Start are collaborating, with funding from the AAP Community Pediatrics Training Initiative grant, to implement EPB curricula with both populations. This intervention is currently in progress and effectiveness data will be available in Fall 2016.

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## Abstract 78

## Sex Differences in Autism Spectrum Disorder in the SUCCESS Study

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**Purpose:** Research has consistently found a sex difference in rates of Autism Spectrum Disorder (ASD) between males and females. Differences in phenotype between males and females have also been reported, however it is unclear how these differences may be impacted by the new DSM-5 criteria for ASD. This study seeks to overcome this limitation by evaluating sex differences in a large screening and assessment study of ASD.**Methods:**Data for this study is from the South Carolina Childrens Educational Surveillance Study (SUCCESS), which is designed to assess the prevalence of ASD through population-based screening and evaluation. School-aged children 8-11 years of age (n = 3596) were screened for ASD risk using the Social Communication Questionnaire (SCQ). Participants (n=292) completed developmental assessments to determine ASD case status according to both DSM-IV-TR and DSM-5 criteria. Clinical best estimate diagnoses were based on lifetime history of ASD symptoms. **Results:**Unsurprisingly, males in both the full surveillance sample (n = 3596) and diagnostic assessment group (n = 292) had higher SCQ scores than females suggesting higher risk for ASD overall. However, this difference was not statistically significant in the diagnostic assessment group due to the fact that that invitations for diagnostic assessment were based solely on SCQ scores. The overall sample fell in the average range for both IQ (mean KBIT-2 = 93.97) and overall adaptive functioning (mean Vineland ABC SS = 91.79), with moderate impairment in social skills (mean SRS-2 t-score = 64.68). IQ and SRS-2 scores did not vary between males and females in those presenting for diagnostic assessment, but females scored higher on parent-reported adaptive functioning ($p < 0.05$). Despite making up only 65% of the diagnostic assessment sample, males accounted for 87% of the DSM-5 ASD diagnoses, indicating that although similar numbers of males and females fall in the at risk range on the SCQ, more males meet full DSM-5 diagnostic criteria.**Conclusion:** Although sex differences were present in both the screening and assessment phases of the SUCCESS study, they were most significant at the diagnostic level, such that significantly more males were diagnosed with DSM-5 ASD. Further analyses examining possible sex differences in individual DSM-5 diagnostic criteria are ongoing and will clarify the role of sex differences in the changing DSM ASD criteria.

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### Abstract 79

### Age at testing and detection rate of chromosomal microarray genetic findings in children with autism when ordered by developmental & behavioral pediatricians

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**Purpose:** Given the awareness for the importance of CMA results and their clinical utility in patients with developmental delay (DD), intellectual disabilities (ID) and autism spectrum disorders (ASD), we wanted to determine whether the average age of children tested would be younger when CMA was ordered by developmental & behavioral pediatricians compared to pediatric neurologists and other specialists. We also hypothesized that the detection rate for genetic findings would be similar for all ordering pediatric specialists, thus being independent of ordering provider type. **Methods:**7291 children under the age of 18 years with DD, ID, ASD, and/or multiple congenital anomalies were tested by clinicians using Lineagens FirstStepDx CMA service from 10/29/2010 through 02/29/16. T-test and chi-square analyses were used to determine whether there were significant differences in the average age at testing and detection rate, respectively, between the groups. **Results:**see table **Conclusion:**Developmental & behavioral (DB) pediatricians are amongst the highest ordering specialists of Lineagens FirstStepDx CMA testing. DB pediatricians are testing kids at a significantly younger age than other community specialists who order this CMA testing. DP pediatricians and pediatric neurologists have similar detection rates for normal, unknown and abnormal findings. The distribution of findings vs. no findings is the same for these two specialties. Common genetic diagnoses made by DB pediatricians include microdeletion & microduplication syndromes (ex: 22q11.2 deletion syndrome, 15q13.3 deletion syndrome, 16p11.2 deletion and duplication syndrome) as well as sex chromosome aneuploidies (ex: 47,XYY syndrome) and mosaic aberrations.

**Comparison Table of Pediatric Specialties ordering CMA testing**

| Provider Type | Number of Patients | Patient Age (yrs) | No CNCs found on CMA | CNCs found on CMA |
|---|---|---|---|---|
| All providers | 7291 | 6.45 | 72.5% | 27.5% |
| DB pediatricians | 2116 | 6.20 | 73.3% | 26.7% |
| Pediatric Neurologist | 2673 | 6.46 | 72.9% | 27.1% |
| null hypthsis: no diff | Chi stat= .988 | Chi critical= 5.99 | P= .610 | Null accepted |

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### Abstract 80

### Meeting the Needs of Children and Families Affected by ASD with a Best Practice Care Coordination Model

*Jeanne W. McAllister, MHA, MS/MA, Rebecca McNally Keehn, PhD, Rylin Rodgers, BS/BA, Thomas Lock, MD, Pediatrics, Indiana University School of Medicine, Indianapolis, IN*

**Purpose:** Care coordination (CC) is a standard for children with special healthcare needs including those with Autism Spectrum Disorder (ASD). Families report barriers in accessing recommended interventions while the healthcare system is challenged to meet their needs. CC services are critical for improving child, family, and system outcomes yet evidence based models of CC are lacking. Our goal is to characterize unmet population health needs while determining if a best-practice model of CC is effective in addressing family, clinician, and care coordinator priorities. **Methods:**Use an implementation science and mixed method approach to evaluate a model of CC delivered to a subset of 88 children, ages 2-10 years (mean: 4.7 years; SD: 1.8; 85% male) diagnosed with ASD and their families between February 2015 and April 2016. Participants were referred from 6 neurodevelopmental tertiary care specialty programs; >90% access more than 1 sub-specialist. Data were collected from the Shared Plan of Care as a quality indicator of CC, which includes medical information, family report, referral source, and community partners. Family goals were categorized using a 3-step process: 1) independent review of goals 2) consensus decision on categories (i.e., type and number), and 3) consensus coding on a sub-sample. Goal progress was documented upon exit from CC. Pre/post family surveys are collected at baseline and at 6 months. Family goals were categorized using a 3-step process: 1) independent review of goals 2) consensus decision on categories (i.e., type and number), and 3) consensus coding on a sub-sample. Goal progress was documented upon exit from CC. Pre/post family surveys are collected at baseline and at 6 months.**Results:**Families identified a mean of 6.7 goals (SD: 1.7; Range 4-11) including basic needs, accessing interventions, treatments, educational services, and insurance. At CC exit >70% of all goals were completed or in progress. Surveys show enhanced family empowerment (n=33, t=2.98; p < .01); finding good preschool, daycare, or school interventions increased after CC (46.7%/pre; 100% post). **Conclusion:** Identifying shared goals to guide CC and empowering families with navigation skills is consistent with a CC definition and best practice model. CC holds the potential to improve child outcomes, reduce family burden, lower overall costs, and provide a pathway to family-centered care.

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### Abstract 81

### Systematic development of an evidence-based tool to promote adjustment to pediatric medical conditions: The Cellie Coping Kit

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**Purpose:** Millions of children and their families must deal with acute or ongoing medical conditions resulting in substantial physical and psychological challenges. Given the limited resources available to help children and parents manage these challenges, evidence-based cost effective interventions are necessary to support as many children as possible (i.e., those who may not have access to mental health providers or who do not require a that level of support). The Cellie Coping Kit Intervention is an affordable, transportable, parent-led intervention that can be tailored to each family to provide concrete, evidence-based strategies to manage medical-condition related physical and psychological challenges. The Cellie Coping Kit was initially developed for children with cancer and has since been adapted for children with sickle cell disease, injuries, and food allergies. This presentation will review the overarching intervention content, discuss how the intervention has been tailored for each population, and compare initial results specific to intervention acceptability, feasibility, and learning outcomes across populations. **Methods:** A total of 93 child-parent dyads participated in Cellie Coping Kit Intervention studies in which they used the Cellie Kit for 4 weeks and then completed a follow-up assessment via phone. **Results:** Across populations, 64-100 % used the Kit, 80-100% found the kit easy to understand, 80-100 % would recommend the Cellie Kit to other families. Many families reported learning new information (e.g., emotional reactions to medical conditions, life-saving tips regarding implementing medical plans) and skills (e.g., communicating about the childs medical condition, strategies to administer medication, strategies to deal with pain). **Conclusion:** In conclusion, the Cellie Coping Kit is an intervention that, using a systematic approach, can be adapted across different pediatric populations. While more research is needed to determine whether the Cellie Coping Kit may affect patient satisfaction or health outcomes, initial findings are promising with most children and parents finding the tool helpful and easy to use.

### Abstract 82

## Impact of Age and Comorbidities on Early Morning Functioning in School-Age Children With Attention-Deficit/Hyperactivity Disorder

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**Purpose:** To examine the impact of age and comorbidities of stimulant-treated children and adolescents with attention-deficit/hyperactivity disorder (ADHD) on the severity of inadequately controlled symptoms and related functional impairments, and emotional impact on primary caregivers, specifically during the early morning routine (EMR) before school.**Methods:**An online quantitative research survey was conducted in primary caregivers of stimulant-treated children and adolescents with ADHD. Caregivers who identified inadequately controlled ADHD symptoms during the EMR were asked to continue the survey. **Results:**There were 201 caregivers with 120 children and 81 adolescents; 49 had a child with oppositional defiant disorder (ODD), 66 had no comorbidities (NC), and 86 had other comorbidities (OC). On a 10-point scale (1 = no ADHD symptoms; 10 = significant ADHD symptoms), inadequately controlled ADHD symptoms were rated as most severe during the EMR (children: 6.8, adolescents: 6.0 [$p<0.05$]; ODD: 7.0 [$p<0.05$ vs. OC], NC: 6.3, OC: 6.3) and evening homework time (children: 6.5, adolescents: 6.4; ODD: 7.4 [$p<0.05$ vs. NC and OC], NC: 6.0, OC: 6.3). Caregivers of children vs. adolescents reported similar unwanted behaviors that appeared frequently during the EMR. Caregivers of children with ODD were significantly more likely to report problems with the following unwanted behaviors compared to children with NC and OC: "fails to finish things", "argues a lot", "inattention to detail", and "defiant"($p<0.05$). As a result of their child's ADHD symptoms during the EMR, caregivers reported that they often felt overwhelmed and exhausted (43% vs. 37%), and raised their voice more (38% vs 37%) ($p<0.05$).**Conclusion:** Early morning ADHD symptoms and related functional impairments appear more severe for stimulant-treated children vs. adolescents, and children with ADHD and ODD. Caregivers of both age groups, regardless of comorbidity, report a high prevalence of inadequately controlled early morning ADHD symptoms and related functional impairments, both of which have a negative impact on caregivers. Effective management of ADHD symptoms during the EMR remains a significant unmet need for children and adolescents with ADHD.

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### Abstract 83

## Developmental-Behavioral Pediatric (DBP) Workforce: Practice Similarities and Differences of NP and MD Professionals

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*Academy of Pediatrics, Elk Grove Village, IL, Nancy J. Roizen, MD, Pediatrics, Rainbow Babies and Children's Hospital, Cleveland, OH, Carolyn Bridgemohan, MD, Pediatrics, Boston Childrens Hospital/ Harvard Medical School, Boston, MA*

**Purpose:** To evaluate current practice similarities and differences in the provision of DBP care among NPs and physicians (MD/DOs).**Methods:**Survey emailed to 1568 members of the AAP Section on Developmental Behavioral Pediatrics and Council on Children with Disabilities, Society of Developmental Behavioral Pediatrics & National Association of Pediatric Nurse Practitioners Developmental-Behavioral & Mental Health Special Interest Group. This analysis is focused on the care provided by NPs and MD/DOs. **Results:** Response rate was 48%. We analyzed data from 714 clinicians providing direct patient care. 61% of MDs & 98% of NPs were female with 85% of 714 reporting race as white. At least 50% of both groups treated common DBP diagnosis such as autism and intellectual disability; however, these were more often treated by MD/DOs (p=<.003). NPs treated a greater percentage of mental health conditions(e.g. eating disorders and self-injury) (p=<.002). The difference in conditions treated was not significant for ADHD, sleep problems, toileting, or High Risk Infant Follow-up. MD/DOs report greater involvement in program evaluation, quality improvement and clinical research (p=<.001). Both groups reported low rates of involvement in intervention and bench research. **Conclusion:** NPs spend more time providing direct patient care compared to physicians, and less time on initial visit. No differences were found in time spent on follow-up. While NPs make up a significant proportion of the workforce treating DBP conditions, professional representation of NPs in clinical and programmatic research is limited.

| Response Category | NPs n=125 #(S.D.) | MD/DO n=589 #(S.D.) | Statistical Sig. |
|---|---|---|---|
| % Time Direct Patient Care | 73 | 65 | p=.008 |
| New Visit #Billable Minutes | 67 (+34.4) | 85 (+49.5) | p=.001 |
| New Visit #Non-Bill Minutes | 36 (+30.9) | 36 (+30.9) | p=.002 |
| F/up #Bill/Non-Billable Min | 40 (+26.4) /25 (+38.1) | 40 (+34.5) /23 (+22.0) | ns |

# Abstracts of Plenary Sessions and Posters Accepted for Presentation at the 2016 Annual Meeting of the Society for Developmental and Behavioral Pediatrics

## Abstract 84

### Examining the impact of asthma in school aged children: Can an early childhood intervention program place impoverished children on a level playing field with their more advantaged peers?

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**Purpose:** The purpose of this retrospective study was to examine the efficacy of an early childhood (EC) health care coordination program in offsetting the negative impacts of asthma at school age. **Methods:** Archival data from the health care coordination program, which targets impoverished medically underserved children and their families, provided risk factors (e.g., homelessness, substance abuse in the home), program assistance received (e.g., number of visits, developmental education) and demographic information to be paired with school system data. Children from the intervention program who received asthma case management (ACM) were compared to their more advantaged peers from the school system who had also received an asthma diagnosis. 9,940 children, born between 2002-2009, were included in the data set. Analyses included school years spanning from AY 08-09 through AY 12-13. Data was deidentified after matching occurred. Analyses focused on the 336 children diagnosed with asthma; 163 of these participated in the intervention program for ACM. **Results:** ANOVAs indicated there were no differences in grades, discipline incidents, number of times changing school systems, PALS scores, or SOL scores (p's>.05) between the intervention group and their more advantaged peers. The one consistent difference was in absenteeism, specifically the intervention group was in attendance fewer days each year than their peers [(F (1, 115) = 4.033, p = .047, eta2 = .034, Mdiff = 24.87 (2009); F (1, 156) = 17.906, p < .001, eta2 = .103, Mdiff = 38.17 (2010); F (1, 201) = 14.593, p <.001, eta2 = .068, Mdiff = 26.62 (2011); F (1, 234) = 6.747, p = .10, eta2 = .028, Mdiff = 16.6 (2012)]. **Conclusion:** Impoverished children served by the EC intervention program were as successful as their more advantaged peers in educational outcomes, despite more missed class days. Additional risk factors faced by this medically underserved group will be explained in order to better understand the population and the effectiveness of the intervention program.

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## Abstract 86

### The Impact of Residential and School Mobility on Children with Autism Spectrum Disorders (ASD)

*Marilisa G. Elrod, MD, Pediatrics, Naval Medical Center Portsmouth, Portsmouth, VA, Alison R. Marvin, PhD, Medical Informatics, Kennedy Krieger Institute, Baltimore, MD, J. Kiely Law, MD, Medical Informatics, Kennedy Krieger Institute/Johns Hopkins Medicine, Baltimore, MD, Beth Ellen Davis, MD, Pediatrics, University of Washington, Seattle, WA, Paul H. Lipkin, MD, Medical Informatics, Kennedy Krieger Institute/Johns Hopkins Medicine, Baltimore, MD*

**Purpose:** To describe the impact of residential/school mobility on children with ASD -- who express preference for routines and rituals, and frequently require educational supports and other therapies -- and their families. **Methods:** Parents registered in the Interactive Autism Network -- a large, validated and verified, internet-mediated autism research registry -- were invited to complete the Changing Home And School Environments (CHASE) survey about their children aged 5-17 years. **Results:** N=1245; mean age 11.7 years (SD=3.35); white=84%; male=81%; military connection=19%. Number of Moves: 76% of children had moved at least once during their lives, 48% since starting kindergarten. Of those who moved: 34.7% moved once, 33.2% moved 2 or 3 times, and 32.1% >= 4 times. Reason for move: job (35%), housing (23%), family (16%), schools/services (15%). Regression was reported in behavior (46%) and skills (14%; 51% moderate-to-severe) concomitant with a move. The table presents time to re-establish services following a child's most recent move. With the exception of Primary Care, it took > 3 months for the majority to re-establish services, with a significant minority requiring > 12 months or not yet being able to do so. **Conclusion:**Children with ASD may experience significant regressions in behavior and skills as well as challenges with re-establishing services following a residential move. Disclaimer: The views expressed are those of the authors and do not reflect the official policy of the U.S. Government.

| Service | Movers Using | Re-establish | <=3 months | <= 12 months | >12 months | Not Yet |
|---|---|---|---|---|---|---|
| Primary Care | 373 (100%) | 221 (59.3%) | 74.2% | 89.1% | 3.2% | 7.7% |
| Specialty Care | 309 (82.8%) | 140 (45.3%) | 48.9% | 76.3% | 8.6% | 15.1% |
| Speech Pathology | 256 (68.6%) | 85 (33.2%) | 47.1% | 74.1% | 14.1% | 11.8% |
| Occ. Therapy | 239 (63.9%) | 86 (36.0%) | 34.9% | 66.3% | 15.1% | 18.6% |
| ABA | 248 (66.3%) | 94 (37.9%) | 34.4% | 66.7% | 10.6% | 22.6% |
| Mental Health | 259 (69.6%) | 103 (39.8%) | 43.7% | 70.9% | 15.5% | 13.6% |
| Support Group | 199 (53.5%) | 93 (46.7%) | 38.7% | 57.0% | 11.8% | 31.2% |

# Abstracts of Plenary Sessions and Posters Accepted for Presentation at the 2016 Annual Meeting of the Society for Developmental and Behavioral Pediatrics

## Abstract 87

### Chronic Pain in Children Attending an Interprofessional Med/Psych Day Treatment Program

*Heather A. Chapman, MD, Diane DerMarderosian, MD, Pam High, MD, Pediatrics, Brown University, Providence, RI*

**Purpose:** Chronic pain (pain present for >3 months) is a common pediatric problem. Though data has shown varying prevalence of pediatric pain (7-37%), large population based studies have narrowed this range, reporting the prevalence of pediatric chronic pain as 25%. Treatment programs focusing on chronic pediatric pain have confirmed the significant impact this can have on a childs function as measured by school attendance. Admission data to a unique interprofessional pediatric med/psych day treatment program was reviewed to better understand patient level characteristics associated with chronic pediatric pain. **Methods:** All admissions during a 12 month period were reviewed for primary admitting diagnosis. Demographic data on age and gender were collected for all patients. Additional information was gathered regarding location of pain and functional impairment as measured by school absence. **Results:** Over a 12 month period (October 2014-October 2015) a total of 186 admissions were reviewed and 46 admissions (25%) were for a primary pain diagnosis. The top 3 single pain locations reported were abdomen (48%), head (28%) and limb (6.5%). Additional pain locations included multi-site (11%), both head and abdomen (8.8%) or head and back (2.2%), and 6.5% of patients had pain in other diffuse areas (back, trunk, whole body). There were more girls (27, 59% of admissions) than boys (19, 41% of admissions) admitted for chronic pediatric pain. The majority of patients admitted for chronic pain were 13 to 17 years of age (67%) with the remaining admissions (33%) 8 to 11 years of age (there were no 12 year olds admitted with chronic pain). School absence was a commonly reported functional sequelae of chronic pain. **Conclusion:** Conclusion: Data regarding chronic pediatric pain admissions to a unique interprofessional med/psych day treatment program were consistent with data from population based and pain program specific studies. Chronic pain is a common pediatric problem, has greater prevalence in girls than boys and leads to functional impairment as measured by school absence.

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## Abstract 88

### Expanding Age Range for Autism Screening

*Louisa A. Salisbury, MD, Pediatrics, Ellen C. Perrin, MD, Developmental Pediatrics, Chas D. Hannum, MD, Pediatrics, Tufts Medical Center, Boston, MA, Jonathon D. Nyce, BS/BA, Pediatrics, Tufts School of Medicine, Boston, MA, Radley C. Sheldrick, PhD, Developmental Pediatrics, Tufts Medical Center, Boston, MA*

**Purpose:** Despite emphasis on early detection of ASD, average age of diagnosis remains 4 years. Commonly used ASD screening tools have not been validated for children over 30 months. Our aim was to evaluate whether 2 ASD screening tools, the POSI and MCHAT are accurate in children 31-48 months as well as in the recommended age range 16-30 months. The POSI was drafted by members of the Boston Autism Consortium as part of the Survey of Wellbeing of Young Children with a goal to create a screening tool that is shorter, has direct scoring, more response options and doesn't require follow-up interview. **Methods:** A retrospective chart review of children 16- 48 months evaluated at a developmental-behavioral pediatrics center. Parents completed the POSI and MCHAT as part of a routine intake questionnaire. In order to evaluate sensitivity and specificity, the results were then compared with clinical diagnoses made by a certified developmental-behavioral pediatrician after a full evaluation. **Results:**479 children with complete data. 77% boys, 46% with Medicaid, 63% Caucasian, 80% English speaking, 19% premature. In 16-30 month group (see table), the POSI showed higher sensitivity of 93.6%. In 31-48 month group POSI had sensitivity of 75% MCHAT 69%. **Conclusion:** Our results suggest the MCHAT and POSI show acceptable sensitivity in the recommended age range as well as ages 31 - 48 months. Data is from a referral sample so specificities are lower than would be expected in primary care.

**Results**

| | SENSITIVITY | SPECIFICITY |
|---|---|---|
| 16 - 30 month olds (n = 271) | | |
| POSI | 93.6% (95% CI: 88.9-96.8%) | 40.8% (95% CI: 31-51.2%) |
| MCHAT | 77.5% (95% CI: 70.5-83.5%) | 54.1% (95% CI: 43.7-64.2%) |
| p value (McNemar Test) | 0.0001 | 0.02 |
| 31-48 month olds (n = 214) | | |
| POSI | 75% (95% CI: 66.4-82.3%) | 47.8% (95% CI: 37.1-58.6%) |
| MCHAT | 69.4% (95% CI: 60.4-77.3%) | 58.9% (95% CI: 48-69.2%) |
| p value (McNemar Test) | 0.34 | 0.13 |

## Abstract 90

## Relationship Among Reception of Behavioral Health Care, Communication, and Presence of Psychosocial Problem

*Kara S. Monnin, MS/MA, Jeannette M. Iskander, MS/MA, Beth G. Wildman, PhD, Kent State Psychological Sciences, Kent State, Kent, OH*

**Purpose:** The combination of psychosocial problems and a chronic illness can cause significant difficulties for families, but when these families do not receive the mental health care they need, families can face additional problems. In this study, we used the National Survey of Children with Special Health Care Needs (CSHCN; 2009-2010) and examined the relationship between parent report of receipt of behavioral health services, type of psychosocial problem, communication between the physician and patient/family, and various demographic moderators. **Methods:** The CSHCN (2009-2010) includes interviews of over 40,000 parents of children with special health care needs ages 0-17; however, analyses were based on the 10,693 parents who reported that their child needed mental health care. Logistic regression analysis was conducted to investigate whether reported communication, over and beyond reported presence of a psychosocial problem, predicted reported reception of mental health care, and then examined moderators (e.g. poverty level, education level, gender of child, and race) within the same model. **Results:** When presence of psychosocial problem was controlled for, communication significantly predicted reception of behavioral health care, [(Chi-square)(3) = 871. 990, $p<.001$]. The reported presence of a psychosocial problem increased the odds of reporting receiving care by a factor of 1.18 [95% C = (1.06, 1.31] for Internalizing type, by 1.16 [95% C = (1.04, 1.30)] for Externalizing type, and by 2.86 [95% C = (2.67, 3.08)] for overall communication. When moderators were examined within this relationship, only the interaction between communication and poverty level significantly predicted reception of care (R2 = .134, $p<.01$), with this model also representing the data well, [(Chi-square) (3) = 862.79, $p<.001$. **Conclusion:** Our findings support the importance of communication between parents and health care providers in order for children with chronic illnesses to receive behavioral health care, and highlight the importance of moderators, such as poverty level in this relationship. Future research is needed to better understand this relationship between reception of care, communication, psychosocial problem, and poverty level.

## Abstract 91

### Comparing Two Models of Behavioral Health Programs in Pediatric Primary Care

*Miguelina German, PhD, Michael Rinke, MD, Silvie Colman, PhD, Andrew Racine, MD, Diane Bloomfield, MD, Rahil Briggs, PsyD, Pediatrics, Montefiore Medical Center, Bronx, NY*

**Purpose:** As the patient centered medical home model of care expands, it is important to examine different models of integrated behavioral health programs in pediatric primary care to understand their impact on referral rates and primary care provider (PCP) competency and satisfaction with mental health services. **Methods:** The current study examined 2 models of behavioral health at Montefiore Medical Group in the Bronx, NY between 09/2014-02/2015 using 13 primary care practices in a matched design. All practices used the Pediatric Symptom Checklist-17 to universally screen children and were staffed with a generalist social worker (GSW) who could provide concrete services and Problem Solving Therapy across the lifespan. Eight of the practices also received an integrated pediatric psychologist (IPP) with expertise in treating ADHD, anxiety, depression, and trauma. Referral rates were calculated using the electronic medical record while pediatric competency and satisfaction were assessed with an online survey. **Results:** The PCP referral rate of children was 26.3% at the practices with an IPP compared to 9.8% at the practices with a GSW ($z=-14.21, p<.05$). PCPs in the IPP practices reported feeling more competent addressing the next steps to take after a child or adolescent patient tested positive on a behavioral health screen [$F(1,52)=3.94$, $p<.05$ and $F(1,50)=4.53, p<.05$ respectively] and managing ADHD among adolescents [$F(1,50)=4.57, p<.05$] compared to PCPs in the GSW practices. No differences were found in PCPsself-reported competency to address anxiety, depression, or trauma. PCPs in the IPP practices reported higher levels of satisfaction in the time, availability, and ease in finding behavioral health services for their patients, in receiving feedback from the behavioral health providers about their patients, in the quality of care received by their patients, and job satisfaction as it related to the mental health needs of their patients ($p<.05$ for all).**Conclusion:** Results suggest that IPP models compared to GSW results in increased mental health referral rates and PCP competency and satisfaction with mental health services for children and adolescents.

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## Abstract 92

### A Childs Perceived Strengths and Challenges

*Raymond A. Sturner, MD, Barbara J. Howard, MD, Pediatrics, Johns Hopkins U SOM, Baltimore, MD, Tammy D. Barry, PhD, Psychology, Washington State U, Pullman, WA, Rebecca A. Glover, BS/BA, Psychology, Washington State University, Pullman, WA*

**Purpose:** Moving routine well child care from a pathology focus to a more whole person/family strength building focus requires different expectations from parents and children and new strategies for responding by PCPs. An understanding of parental responses to agenda-broadening questionscan inform strategies to engage families in this way. **Methods:** Two questions were added to the chief complaint in an online pre-well child visit questionnaire for parents of 11,869 children 4-12 years in a national primary care sample. Parents were asked to select 1 or 2 strengthsfrom a list adapted from Gardners multiple intelligences as well as 1-2 most challenging parts of parenting this child. **Results:** From 20 strengths, parents most often endorsed verbal ability (20.9%), followed closely by personality (20.2%), then curiosity about the world (17.5%). The areas of intelligence/ talent were endorsed consistently across ages; athletics (11.1%), math (13.9%), music (5.4%), art (5.3%), nature (6.1%), insight (8.3%). From 17 concerns, parents most often endorsed irritability/temper/moodiness (21.9%), managing behavior (19.7%), worrying about school/homework issues (17.2%), and worrying about learning (15.4%). Frequencies of identified strengths were largely consistent across ages 4-12; frequencies of identified concerns became more consistent after children entered school. **Conclusion:** In family-centered care, in order to engage parents and their preschool and school-aged children around their priorities, PCPs need strategies to address their issues of behavioral management/mood regulation and learning. Given the demonstrated consistency of talents starting in preschool, it is relevant to discern and discuss ways to build on identified strengths to foster esteem and buffer any weaknesses.

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### Abstract 93

### The "Best and Hardest Parts" of Parenting

*Raymond A. Sturner, MD, Barbara J. Howard, MD, Pediatrics, Johns Hopkins U SOM, Baltimore, MD, Tammy D. Barry, PhD, Rebecca A. Glover, BS/BA, Psychology, Washington State University, Pullman, WA*

**Purpose:** "Agenda-broadening questions" are recommended as part of well child visits to communicate openness to issues parents may not consider part of medical check-ups. However, there is little data available to guide clinicians regarding this approach or to know what parents may want to explore at various ages of their children. **Methods:** Two questions were added to a questionnaire immediately following a more traditional "chief complaint" asking to indicate the "1 or 2 very best parts of taking care of your child" and the "..very hardest parts of taking care of your child". Data was collected via a pre-visit online questionnaire in a national primary care sample prior to 74,905 regularly scheduled well child visits for 0-3 year olds. **Results:** From 11 "best parts" options, parents most often endorsed the way he/she smiles (55.8%), playing with him/her (50.5%), and watching him/her with siblings (24.8%). From 16 "hardest parts" options, parents most often endorsed crying/fussing/tantrums (20.7%), sleep (15.2%), and managing other stress (10.5%). Worrying about health was endorsed by almost 1 in 5 parents of newborns, but the frequency dropped at every age level thereafter. Although there were some nuanced differences, the frequency of endorsement for the best/hardest parts of parenting were largely consistent across 10 narrow age bands of the 0-3 range. **Conclusion:** In the first two months worrying about health was the highest endorsed item but, thereafter, in order to connect and be responsive to parent concerns PCPs should be prepared to discuss a variety of issues such as crying/fussing/tantrums, which was the most common "hard part" endorsed across the age range. Life balance issues were consistent "hard parts" submitted as free text in addition to the standard items. The data illustrate issues that should be addressed by clinical programs striving for "family centered care".

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## Abstract 94

### Are Age Restriction Labels Effective or Enticing?: Reactance Theory and the Adolescent Consumer

*Jonathan M. Goldman, Other, Pediatrics, Ruth L. Milanaik, DO, Dev. Beh. Pediatrics, Cohen Children's Medical Center of NY, Lake Success, NY*

**Purpose:** Reactance theory, proposed by Jack Brehm in 1968 outlines the consequences that occur when individuals perceive their freedoms are threatened . Age restriction labels such as not recommended for use in minors,although placed on products for the safety of the teen consumer, may inspire feelings of reactance in adolescents. It is unclear whether these labels are acknowledged by adolescents, and if so, are they considered a deterrent or an enticement. **Methods:** Teenagers attending an upper socioeconomic suburban high school were given an anonymous three part survey. Section one collected demographics and purchasing history. Section two asked the subject to view seven different novel similarly themed product dyads, and to choose one of each dyad. In each product dyad, one of the products contained a age restriction warning label product. Warning label placement and order of product presentation was randomized . The third part asked teens to categorize each dyad choice using the variables, The age restriction label encouraged my choice, The age restriction label discouraged my choice or I did not notice the age restriction label.Finally teens were asked about parental permissiveness of age restricted products.**Results:**150 subjects participated, mean age: 15.15 years, 51% male. Overall despite warning labels underage teenagers chose age restricted products 55% of the time. Mature video games were chosen 56% of the time, restricted energy drinks 46% and rated R movies 64.5% and restricted power bars 55%. Eighty six percent of parents were reported permissive of mature movies, 80% permissive of mature video games and only 32% of energy drinks. Teens reported that for both mature movies and video games they either didn't notice or were encouraged by the age restriction label 73% of the time, and 63% for both energy drink and powerbar. When teens indicated their parents were not permissive, warning labels were either not noticed or encouragedage restricted choice an average of 74%.**Conclusion:** Warning labels should be considered ineffective for adolescents and may conversely contribute to product appeal. The FDA and product safety commissions should reconsider the use of age restricted labels in an effort to help protect minors. Future studies should concentrate on more effective ways to communicate health and safety risks to underage teens.

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## Abstract 95

### Between the Lines: The Effects of Fiction on Theory of Mind in School-Aged Children with Autism Spectrum Disorder

*Angela Scott, Other, Developmental-Behavioral Pediatrics, Mark Edwards, MD, Pediatric Psychology, University of Arkansas Medical Sciences, Little Rock, AR*

**Purpose:** This pilot study investigates the potential use of storybooks to improve Theory of Mind skills in children with ASD. It proposes that parental co-reading of high-quality fictional storybooks can improve

theory of mind skills in autistic children compared to reading non-fiction books at the same frequency. **Methods:** Twenty-one children (ages 6-9) with autism spectrum disorder were recruited into multiple baseline single case design study. All participants engaged in a daily co-reading schedule with an identified caregiver who underwent brief training sessions prior to each condition. Subjects were randomized to zero, six or twelve weeks of control condition, using non-fiction childrens books, prior to entering a 12 week intervention condition using high-quality childrens fiction. Theory of Mind skills were serially assessed using a validated measure based on caregiver observations of childrens social behavior (the Theory of Mind Inventory, ToMI). Additional assessments included the Author Recognition Test (ARTs), a validated measure of familiarity with fiction, as well as a Reading Habits Survey (RHS) and Caregiver Satisfaction Survey (CSS) developed for this project. **Results:** Of the 21 subject dyads recruited enrolled, 4 withdrew and 5 were lost to follow-up. Twelve were included in the analysis. Scores on the ToMI were plotted over time and condition. Graphical analysis and predicted ToMI scores over time indicate a positive effect on Theory of Mind skill development during intervention, but not control, conditions. Qualitative information gleaned from the CSS includes specific suggestions for improving adherence and feasibility in future studies. **Conclusion:** Despite difficulty with attrition, adherence and small sample sizes, this pilot study demonstrates that, for at least some of the families who participated, parental co-reading seems feasible as a home-based adjunct intervention for children with ASD. Results must be interpreted with caution but nonetheless suggest that Theory of Mind skills may increase with exposure high-quality fictional storybooks as compared to non-fiction read at an equal frequency. Additional research, which can now draw from the lessons learned in this pilot project, will be needed to confirm this finding under more robust conditions.

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### Abstract 96

### Down Syndrome Disintegrative Disorder Across the Lifespan: A Systematic Review

*Ellen J. Fremion, MD, Internal Medicine and Pediatrics, Baylor College of Medicine, Houston, TX, Jonathan Castillo, MD, Kathryn Ostermaier, MD, Developmental Pediatrics, Texas Children's Hospital, Houston, TX, Cynthia Peacock, MD, Internal Medicine and Pediatrics, Baylor College of Medicine, Houston, TX, Heidi Castillo, MD, Developmental Pediatrics, Texas Children's Hospital, Houston, TX*

**Purpose:** The purpose of this systematic review was to describe clinical presentations, work-up, and treatment outcomes for Down syndrome disintegrative disorder across the life span. **Methods:** A literature search was done using Pubmed, Embase, PsycINFO, and Scopus databases. Articles were included if they were in English and described cases of individuals with DS who presented with decline in activities of daily living skills (ADLs), social withdrawal, psychomotor slowing, sleep disturbance, anorexia, mood changes, and/or thought disturbances. **Results:** A total of 1403 articles were identified. 21 articles met inclusion criteria for case analysis, yielding 65 cases. 41 individuals were female (63%),the average age of presentation was 27.2 (range: 10-63). The frequency of symptoms was as follows: 52 (80%) patients had mood changes, 43 (66.3%) social withdrawal, 32 (49.2%) sychomotor slowing, 31 (47.7%) ADL decline, 26 (40%) sleep disturbance, 24 (36.9%) thought disorder, 34 (36.%) anorexia, and 21 (32.3%) speech decline. The most successful therapies reported were electroconvulsive therapy, selective serotonin re-uptake inhibitors, and anti-psychotics. 35 (53.8%) returned to baseline, 28 (43%) had partial improvement **Conclusion:** The cases reviewed suggest the following: (1) the onset of symptoms is most often in young adulthood, (2) the clinical deterioration is often catastrophic with only half returning to baseline, and (3) evidence-based work-up and management for this condition is limited. In order to more accurately describe this disorder a new DSM-5 Classification may be needed.

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## Abstract 100

## Attention Deficit Hyperactivity Disorder (ADHD) in Children and Adolescents who are Homeless: A Nine Year Study

*James M. Lewis, MD, Jesse C. Lewis, BS/BA, Pediatrics, Joan C. Edwards School of Medicine at Marshall University, Huntington, WV*

**Purpose:** Although homeless children and adolescents are a vulnerable subset of children with special health care needs who are at increased risk for both developmental-behavioral disorders and fragmented medical care, the prevalence and outcome of ADHD in this population has not been well studied. **Methods:** From July 2007 through November 2011, all homeless children and adolescents who entered the local City Mission met with a care coordinator who assisted parents to document health care needs including a current diagnosis of ADHD. Parents then completed a Parent Vanderbilt Assessment Scale and the information was provided to the pediatric resident in the University Continuity Clinic. Charts of all patients described with ADHD were reviewed for demographic and outcome data through November 2016. **Results:** Parents identified 37 of 115 school-aged children as diagnosed with ADHD (32%). Of the 34 charts available for review the male: female ratio was 27:7 and the mean age was 10.68 plus or minus 0.23. The Body Mass Index (BMI) was equal to or greater than the 85%tile in twelve patients (35%). Teacher Vanderbilt Assessment Scales were obtained in seven cases (20%). Thirteen patients (38%) had no additional clinic visits. Only five children (15%) were followed in Continuity Clinic for greater than one year, received stimulant medication and had appropriate follow-up care. **Conclusion:** The prevalence of ADHD in children and adolescents who are homeless may be 3-4 times greater than the general pediatric population. Current management strategies for this treatable condition appear to be inadequate.

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## Abstract 101

## Attention Hyperactivity Deficit Disorder and Co-existing Anxiety: Long-Term Response to Stimulant Therapy

*James M. Lewis, MD, Pediatrics, Meredith Woodall, MD, Internal Medicine - Pediatrics, Michael Matheney, BS/BA, Niccia Valentine, BS/BA, Anu Pokharel, BS/BA, Pediatrics, Joan C. Edwards School of Medicine at Marshall Unive, Huntington, WV*

**Purpose:** Although anxiety is a coexisting condition in 30-40% of pediatric patients diagnosed with ADHD, the safety and effectiveness of stimulant medication as the primary treatment for both ADHD and anxiety is not well established. **Methods:** Parents of new patients with ADHD seen from January 2013 through July 2014 completed the Screen for Child Anxiety Related Disorders (SCARED) documenting the presence of an anxiety disorder by a score of >25. All patients subsequently received multimodal ADHD treatment, including stimulant medication, by one physician following current AAP guidelines. Consistent improvement in ADHD and anxiety by parent report was documented by chart review of subsequent office visits through July 2015. Attention span and anxious/worried symptoms were graded by parents on each visit as improved, worse, or unchanged. **Results:** Of the 111 patients enrolled and diagnosed with ADHD, 36(34%) received a SCARED score of >25. A total of 104 patients completed the study as indicated in the table. There were no significant differences in median age (10), sex (75% male), ADHD primarily inattentive type (15%) or family history of anxiety (34%).**Conclusion:** Stimulant treatment of pediatric patients with both ADHD and anxiety results in parent-reported improvement in both anxious/worried symptoms and attention span equal to patients with ADHD alone.

**Positive Response of anxiety and ADHD ratings to stimulant thera**

| | ADHD and Anxiety (n=35) | ADHD Alone (n=69) | p-value |
|---|---|---|---|
| Anxious/worried rated sever | 27 (77%) | 16 (23%) | |
| Improved | 24 | 13 | 0.66 |
| Unchanged/worse | 3/0 | 3/0 | 0.66 |
| Attention span rated severe | 32 (91%) | 16 (23%) | |
| Improved | 29 | 13 | 0.39 |
| Unchanged/worse | 3/0 | 3/0 | 0.39 |

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## Abstract 102

### Predicting Care Coordination in the Presence of a Comorbid Developmental Disability or Psychosocial Problem

*Jeannette M. Iskander, MS/MA, Kara S. Monnin, MS/MA, Beth G. Wildman, PhD, Psychological Sciences, Kent State University, Kent, OH*

**Purpose:** Children with chronic illnesses often require the use of multiple services (e.g., medical, educational, or social). Coordinating services is often difficult for families. Having a child with a psychosocial or developmental comorbidity may make coordination more difficult. We examined whether having a comorbid psychosocial problem or development disability affects care coordination. **Methods:** The National Survey of Children with Special Health Care Needs (CSHCN; 2009-2010) is a nationally representative sample of telephone interviews with parents of over 40,000 children, aged 0-17, with special health care needs. We analyzed parents reports of care coordination for children 2 and older.**Results:** Overall, 20.3% of parents received help coordinating care. Of these families, 19.4% reported wanting more help coordinating care. Logistic regression revealed that odds ratios were close to 1 for receiving and wanting help when only a chronic illness was entered in the model. Having a comorbid developmental disability (i.e., autism, developmental delay, intellectual disability) accounted for the most variance and resulted in the highest odds ratios, > 3.2 for wanting more help coordinating care. Specifically, having a comorbid developmental disability with Allergies resulted in the highest odds and increased the odds of wanting more help by 3.42 [95% CI = (3.22, 3.62)] Having a comorbid psychosocial problem (i.e., anxiety, depression, behavioral problem, ADHD) yielded higher ORs than having a disease alone, with all ORs > 2.3. Having a comorbid psychosocial problem with Cerebral Palsy resulted in the highest odds of wanting more help and increased the odds by 2.38 [95% CI = (2.25, 2.52)]. Post hoc analyses examined which comorbid psychosocial/developmental disabilities carried the most weight in predicting wanting more help. **Conclusion:** Our results indicate that a comorbid psychosocial problem or developmental disability is a significant predictor of receiving and wanting more help coordinating care in children with chronic illnesses. Greater attention should be paid to these comorbidities in coordinating care.

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## Abstract 104

## Early Childhood Behavioral Risks for Childhood & Adolescent Daytime Wetting and Bedwetting

*Monica M. Vasconcelos, PhD, Pediatrics, UCSD & UFMG, Brazil, San Diego, CA, Patricia East, PhD, Estela Blanco, MS/MA, Sheila Gahagan, MD, Pediatrics, UCSD, San Diego, CA*

**Purpose:** There is evidence that psychological factors and urinary incontinence are associated, but the direction of these associations is unclear. We investigated the association between early behavioral symptoms and daytime and nighttime wetting at 10y and in adolescence. **Methods:** Participants were enrolled as infants in an iron-deficiency anemia preventive study in Santiago, Chile. Mothers rated 6-month infant temperament using the Infant Characteristics Questionnaire and 5y child behavior using the Childrens Adaptive Behavior Inventory. At 10y (n=1119) and adolescence (n=816), the presence of daytime wetting or bedwetting was assessed by mother report on the Child Behavior Checklist. Logistic regression models were adjusted for age, sex, SES, home environment and family stress. **Results:** At 10y, 11% wet the bed and 3% had daytime wetting. In adolescence, 3% wet the bed and 1% had daytime wetting. Difficult temperament in infancy was associated with 10y daytime wetting. Five-year internalizing symptoms were associated with bedwetting and daytime wetting at 10y. Externalizing symptoms at 5y were associated with bedwetting and daytime wetting at 10y and adolescent bedwetting. Inattention at 5y was associated with bedwetting at 10y and in adolescence.Risks were expressed as odds ratios with 95% confidence intervals. **Conclusion:** Our findings establish temporal precedence for behavioral characteristics in infancy and early childhood related to later urinary incontinence. Also, could inform early identification of risk for incontinence and future prevention strategies.

**Table: Behavioral risks for later daytime wetting and bedwetting**

| | 10-year | 10-year | Adolescent |
|---|---|---|---|
| Infancy/ 5-year behavior | Day | Bedwetting | Bedwetting |
| Difficult temperament | 1.67(1.05, 2.65) | - | - |
| Internalizing | 1.90(1.21, 3.00) | 1.38(1.07, 1.78) | - |
| Externalizing | 1.94(1.17, 3.22) | 1.40(1.07, 1.85) | 2.01(1.21, 3.34) |
| Inattention | - | 1.30(1.01, 1.68) | 2.06(1.28, 3.32) |

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## Abstract 106

## An Investigation of Disclosure and Social Support for Adolescents and Young Adults with Horizontally-Acquired HIV

*Paige T. Lembeck, PhD, Bethany Means, BS/BA, Psychology, Megan Wilkins, PhD, Nehali Patel, MD, Aditya Gaur, MD, Infectious Diseases, St. Jude Children's Research Hospital, Memphis, TN, Lisa M. Ingerski, PhD, Pediatrics, Emory University School of Medicine, Atlanta, GA*

**Purpose:** Due to the high incidence of HIV in adolescents and young adults (AYAs), this study investigated factors related to disclosure and social support for AYAs with horizontally-acquired HIV preparing to initiate antiretroviral (ARV) medication. **Methods:** Data are part of a larger, randomized controlled trial to promote adherence of AYAs newly initiating medication. Participants included 32 AYAs (86.7% male, 19.34±1.58 years old, 93.8% African American, 93.8% sexual minority) with horizontally-acquired HIV. Participants completed the Multidimensional Scale of Perceived Social Support and questions about disclosure. Viral Load and CD4 count were abstracted from medical record. Independent samples t-tests and partial correlation analyses examined relationships among social support, disclosure of diagnosis to others, HIV Viral Load and CD4 count, and demographic variables. **Results :**Most AYAs preparing to initiate ARV medication (84.4%) reported disclosing their HIV status to someone, mostly friends (25.8%) and parents (45.2%). Levels of social support did not differ between those who did and did not disclose their HIV status to someone. Females endorsed higher levels of social support from significant others (t(28)=-4.62, p<.001) than did males. Disease indicators were not correlated with levels of social support, though a trend indicated that higher CD4 count was correlated with greater social support from significant others (r(31)=.246, p=.092). **Conclusion:** This study extends the research linking disclosure and social support to better health outcomes by investigating these variables in AYAs with horizontally-acquired HIV. Findings support the positive correlation between social support by significant others and CD4 count for AYAs with HIV. AYAs endorsed high levels of social support that may lead to improved health behaviors and outcomes. Most AYAs disclosed their HIV status to friends and parents. Future research should examine gender differences in social support and elucidate predictors of social and health outcomes in AYAs with horizontally-acquired HIV who are vulnerable to peer influence and poor medication adherence.

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### Abstract 107

## Health-Related Quality of Life and Barriers to Medication Adherence in Young Adults with Attention-Deficit/Hyperactivity Disorder

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**Purpose:** The current study extends the research in Attention-Deficit/Hyperactivity Disorder (ADHD) on children and adolescents by examining the relations between barriers to medication adherence and health-related quality of life (HRQOL) in young adults diagnosed with ADHD. **Methods:** Forty-eight undergraduate students (43.8% male) with ADHD completed the Adolescent Medication Barriers Scale (barriers to adherence) and the Pediatric Quality of Life Inventory Young Adult Report (HRQOL). Barriers were examined by frequency and type. The association between barriers, HRQOL, and one-month adherence (as measured by electronic monitoring) were also examined. **Results:** Most (95.8%) participants reported barriers to adherence (M=3.25±1.99). The most common barriers reported were: 1. difficulty making it to the pharmacy for a refill (45.8%), 2.forgetfulness (37.5%), 3. not feeling like taking the medication (37.5%), and 4. not realizing when pills run out (37.5%). Greater number of barriers were associated with reduced HRQOL, F(1,47)=6.72, p=.01, specifically, lower emotional functioning, F(1,47)=5.37, p=.03, psychological health, F(1,47)=9.31, p<.001, and increased difficulties at school, F(1,47)=9.12, p<.001. Barriers were not associated with quality of life related to physical, F(1, 47)=0.47, p=.49, or social functioning, F(1,47)=2.53, p=.12. Greater number of barriers was not associated with adherence, F(1, 47)=1.74, p=.19. **Conclusion:** Results suggest barriers to ADHD medication adherence are common. Common barriers reported are consistent with difficulties in organization and planning observed in individuals with ADHD. Reported barriers were associated with lower quality of life, particularly with regard to emotional, psychological, and academic functioning. Given the variety of barriers experienced and HRQOL domains affected, interventions should uniquely target each students personal needs. Studies further exploring which specific barriers impact the various HRQOL domains are needed.

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# Abstracts of Plenary Sessions and Posters Accepted for Presentation at the 2016 Annual Meeting of the Society for Developmental and Behavioral Pediatrics

### Abstract 109

### Documentation of Sleep Problems in Children with ASD and ADHD by Developmental-Behavioral Pediatricians in DBPNet

*Dana C. Won, MD, Heidi M. Feldman, MD, PhD, Lynne C. Huffman, MD, Developmental-Behavioral Pediatrics, Stanford University, Palo Alto, CA*

**Purpose:** Sleep problems are highly prevalent in children with Autism Spectrum Disorder (ASD) (50-73%) and Attention-Deficit/Hyperactivity Disorder (ADHD) (50-73%) compared to typically developing children (26-32%). Consequently, the AAP has rendered clinical practice guidelines that highlight the importance of addressing sleep problems. The degree to which Developmental-Behavioral Pediatricians (DBP) adhere to these practice guidelines is unknown. Aims: (1) to determine the proportion of children with ASD and/or ADHD with sleep problems documented at clinical visits; (2) to establish patient, family, clinician, and visit factors associated with documentation of sleep problems. **Methods:** Secondary analysis of cross-sectional data collected by 2011-12 DBPNet Practice Variation Survey. Dependent variable: documented sleep problem (sleep disturbance, sleep study, sleep medication). Independent variables: child neurodevelopmental disorder (ASD, ADHD) medical comorbidity (enuresis), child characteristics (age, gender, race), family characteristics (caregiver education, medical insurance), clinician supervisor status (independent, supervisor), and visit type (diagnostic, follow-up). Analysis includes frequency counts and proportions of children with documented sleep problems, and chi-square and t-tests. **Results:**Surveys for 1039 child visits (465 diagnostic, 574 follow-up) were returned. Mean age 7.8 years +/- 3.8; 80% male; 63% white. Diagnostic category: ASD (50%), ADHD (40%), and ASD+ADHD (10%). DBPs documented sleep problems in 16% of children. Documentation of sleep problems was highly correlated with enuresis ($p < 0.01$). There was a trend toward documentation of sleep problems based on clinician supervisory status ($p = 0.06$). Other independent variables were not significantly correlated with documentation of sleep problems. **Conclusion:**Documentation of sleep problems by DBPs does not match the known prevalence of sleep problems in children with ASD and ADHD. These findings suggest that there is an opportunity for quality improvement in the area of sleep problem identification, documentation, and consequently, treatment.

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### Abstract 111

### Understanding the Response of Parents to Newborn Hearing Screening

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**Purpose:** To understand how parents respond to results of newborn hearing screening and whether they modify their behavior towards their child, in order to identify potential improvements to newborn hearing screening programs that ensure healthy parent-infant interactions between initial hearing screening and confirmatory evaluation. **Methods:** A purposive sample of parents of infants who did not pass the initial hearing screening and professionals connected to the newborn hearing screening program in Rochester, New York participated in individual interviews and focus groups. Transcripts were independently coded using inductive thematic analysis relating to parent experience. Themes were mapped onto the framework of the Social-Ecological Model to describe the psychosocial and educational needs of parents when receiving the results of hearing screening and presented with the need for further testing. **Results:** Responses from 11 parents and 12 professionals participating in 18 individual interviews and 2 focus groups yielded 4 major themes and 12 associated subthemes: Specific Emotions, Emotional Processing & Enhanced Behaviors; Communication and Handling of Screening Results; The Process of Waiting; Community Influence and Resources for Support. Many parents reported strong emotional reactions to the initial screening result, which professionals did not adequately address until the audiology follow up appointment. Professionals cited restrictions from state-level guidelines and limitations in professional training as obstacles to delivering optimal care. Suggested improvements included better information exchange when screening results are shared, educational programs for primary care providers on how to counsel parents about hearing screening results, and educational resources for parents about how to interact with their newborn when faced with the possibility of hearing loss in their child. A conceptual model depicting key elements of parental experience and targets for intervention was derived.**Conclusion:** This study suggests a potential influence of newborn hearing screening on parent-infant interactions resulting from how screening results are handled and inadequate parent support from professionals at the time of initial screening and while awaiting confirmatory testing. Acting on opportunities to support parents and educate professionals may ensure healthy parent-child interaction during this important neonatal period.

****Abstracts 16, 20, 24, 27, 28, 29, 30, 33, 38, 41, 44, 47, 48, 49, 50, 51, 52, 59, 61, 62, 63, 64, 65, 67, 68, 69, 70, 71, 72, 74, 76, 85, 89, 97, 98, 99, 103, 105, 108 and 110 were previously published research and are not included in this online publication.***