Abstracts of Plenary Sessions and Posters Accepted for Presentation at the 2011 Annual Meeting of the Society for Developmental and Behavioral Pediatrics

Plenary Session Abstracts

Abstract 1A

Developmental Outcome of Children Whose Mothers Reported Loss of Fetal Activity During Pregnancy

Andrew Adesman, MD, Pediatrics, Cohen Children's Medical Center of NY, Lake Success, NY, Sarah A. Keim, PhD, Pediatrics, The Research Institute at Nationwide Children's Hosp, Columbus, OH

Purpose: Loss of fetal activity during pregnancy is a potential red flag of obstetric complications and/or fetal compromise. Few analyses have examined the developmental consequences associated with this concern. Using data from the U.S. Collaborative Perinatal Project (CPP), a large, prospective cohort study of pregnancy and child health, our objective was to examine the long-term developmental outcome of children whose mothers reported loss of fetal activity. Methods: A multivariate statistical analysis was performed on 59,407 pregnancies from the CPP; we limited analyses to 29,979 pregnancies. Exclusions included: implausible gestational age estimate (>44 wks), multiple gestations, and women for whom fetal activity data was not collected or missing. Separate analyses were done for mothers who reported loss of fetal activity >1 time in the 2nd trimester (T2; N=432) and >1 time in the 3rd trimester (T3; N=1074) when queried at each prenatal visit. The primary outcome variables were APGAR scores, IQ scores at ages 4 (Stanford-Binet) and 7 (WISC), and psychologist ratings of inattention (IA), impulsivity (IMP) and hyperactivity (HA) during testing. Multivariate linear and logistic regression was performed; models were adjusted for gestational age, smoking, sex, SES, race, parity, and maternal age. Results: For each additional instance of loss of fetal activity in T2, APGAR scores decreased by 0.12 points (beta= -.12; p=.03), but there was no difference in IQ or ADHD symptoms at age 4 or 7. For reported loss of fetal activity in T3, there was no difference in APGAR. IQ score at age 4 was lower (Beta = -1.0; p<.05) but no IQ difference was noted at age 7. No difference in ADHD symptoms during testing were noted at age 4 or 7 years in relation to fetal activity in T3. Conclusion: Loss of fetal activity is frequently of concern to pregnant women and their physicians. Although a modestly lower APGAR score at birth and lower IQ at age 4 was associated with 2nd trimester loss of fetal activity by maternal report, no differences were noted at age 7. Likewise, there was no difference in psychologist ratings of IMP, HA, or IA at ages 4 or 7 years.

Abstract 1B

Neuromotor Outcome of Young Children Whose Mothers Reported Loss of Fetal Activity

Andrew Adesman, MD, Pediatrics, Cohen Children's Medical Center of NY, Lake Success, NY, Sarah A. Keim, PhD, Pediatrics, The Research Institute at Nationwide Children's Hosp, Columbus, OH

Purpose: Loss of fetal activity (LFA) during pregnancy is a potential red flag of obstetric complications and/or fetal compromise. Few analyses have examined the neuromotor consequences of maternal reports of LFA during pregnancy. Using data from the U.S. Collaborative Perinatal Project (CPP), a large, prospective cohort study of pregnancy and child health, our objective was to examine the early neuromotor outcome of children whose mothers reported LFA. Methods: A multivariate statistical analysis was performed on 59,407 pregnancies from the CPP; we limited analyses to 29,979 pregnancies. Exclusions included: implausible gestational age estimate (>44 wks), multiple gestations, and women for whom fetal activity data was not collected or missing. Separate analyses were done for mothers who reported LFA >1 time in the 2nd trimester (MRLFA2, N=432) and >1 time in the 3rd trimester (MRLFA3, N=1074) when queried at each prenatal visit. The primary outcome variables were motor milestones at 4 months and 1 year, hypotonia at age 1 year and 4 years, and fine motor (FM) or gross motor (GM) delay at age 4 years. Multivariate linear and logistic regression was performed; models were adjusted for gestational age, smoking, sex, SES, race, parity, and maternal age. Results:

At 4 months, infants with MRLFA2 were more likely to be unable to sit with support at 4 months with head erect and steady (adjusted Odds Ratio (aOR) 2.0, 95% CI [1.4, 2.8]. At 1 year, infants were more likely to be unable to walk, stand, pull-up, and creep if MRLFA2 (aOR 2.4, [1.1, 5.1] or if MRLFA 3 (aOR 1.8, [1.0, 3.3]. There was no increase in hypotonia at 1 or 4 years among children whose mothers reported loss of fetal activity, and results were imprecise (e.g., any hypotonia at age 1: aOR 2.0, [0.7, 5.6]. FM delay was more common in MRLFA3 (aOR 1.8, [1.0, 3.1] but not MRLFA2 (aOR 0.8, [0.3, 2.6]); GM delay was not associated with FLA in the 2nd or 3rd trimester. Conclusion: Maternal report of loss of fetal activity in the 2nd trimester is associated with motor milestone delay at 4 and 12 months. LFA in the 3rd trimester was not associated with early delays, but mild FM delays at age 4 years.

Abstract 2

Association between Screen Time Use and Developmental Outcomes in Hispanic Children under age 3 years

Helena Duch, PsyD, Marta Font, MS, Mailman School of Public Health, Caroline Taromino, BA, Ipek Ensari, BS, Teacher's College, Alison Harrington, BFA, Mailman School of Public Health, Columbia University, New York, NY, John Shuler, Psychology, Georgetown University, Washington, DC

Purpose: 1) To test the feasibility of measuring screen time use in Hispanic young children and explore its association with children's developmental outcomes and; 2) To identify factors that contribute to screen time use and physical activity in this population. Methods: We conducted a mixed-methods, cross-sectional study by collecting data on the screen use of 155 Hispanic infants and toddlers attending an urban Early Head Start (EHS) program. We administered a detailed questionnaire on screen time use and daily activities to EHS parents, including a 24 hour recall of television use. We obtained results from developmental screenings (Ages and Stages Questionnaire III) administered by EHS personnel. A subgroup of children (n=60) whose parents reported high and low screen time use received a more in depth developmental assessment using the Bayley Scales of Infant and Toddler Development III. Bivariate analyses were used to identify associations between screen time use and developmental outcomes. Analysis of variance tests were used to assess differences in screen time use by categorical variables. Multivariable linear regressions were conducted to explore the relationship between screen time use and developmental outcomes. To address the second aim, we conducted 3 focus groups (n=30 families). Focus groups explored families' use of media in the home, opportunities for physical activity, sedentary habits and the role of cultural factors in decision making around these issues. Focus group data was transcribed and analyzed using open and selective coding. Results: Results indicate that toddlers in the high screen time use group were reported to have lower scores in the language domain as measured by the ASQ III when compared to toddlers in the low screen time use group. No significant differences were observed in other developmental domains. Results from the Bayley III are being analyzed at this time. Focus groups identified important contributors to screen time use and physical activity in children such as seasonality, access to playgrounds, social isolation and cultural factors. Conclusion: Screen time use is associated with negative developmental outcomes at a very early age. Pediatricians need to provide guidance to specific groups about how to promote physical activity and reduce screen time in very young children. Recommendations will be provided as well as further areas for research.

Abstract 3

Grade at Entry to Special Education and Academic Achievement in Children with Reading Disorders

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Purpose: Additional research is needed to understand how the timing of educational interventions for children with Reading Disorders (RD) impacts their academic achievement. The objectives of our study were to determine if grade at entry to special education influences academic achievement in children with RD and if the effect of grade at entry to special education differs by socioeconomic status (SES).

Methods: We conducted a secondary data analysis using data from the Early Childhood Longitudinal Study-Kindergarten Cohort (ECLS-K), a nationally representative cohort of children identified in kindergarten and followed longitudinally through 8th grade (1998-2007). Using data from the 5th grade wave of the study, we identified children with RD (n=260). Our outcome was a child's change in score between 1st and 5th grade on the reading achievement test, which was developed by ECLS-K staff. Using multiple linear regression, we modeled our outcome as a function of a child's grade at entry to special education. We controlled for several covariates, including score on the reading achievement test in 1st grade, average hours/week of special education services, gender, maternal education, household income, and co-morbid mental health disorder. Results: We found that early entry to special education (1st grade or earlier v. 2nd grade or later) is associated with larger gains in reading achievement scores between 1st and 5th grade. Children who enter special education during or before 1st grade gain 3.8 more points on the reading achievement test than those who enter during or after 2nd grade ($p<0.0001$). We also found that the magnitude of gains is greater for children of low SES, where early entry to special education is associated with a gain of 4.8 points on the reading achievement test ($p<0.0001$). In contrast, in children of high SES, early entry to special education is associated with a gain of 3 points ($p=0.005$). Conclusion: For children with RD, the provision of needed educational interventions early in elementary school can have long-term benefits, especially for those children from more vulnerable populations.

Abstract 4

Getting Ready for School: A Preliminary Evaluation of a Parent-focused School Readiness Program

Helena Duch, PsyD, Mailman School of Public Health, Kimberly G. Noble, MD/PhD, GH Sergievsky Center and Dept of Pediatrics, Columbia University, New York, NY

Purpose: The primary objective of this study was to assess the promise of the Getting Ready for School (GRS) program, a parent-focused intervention that was administered to Latino families participating in an urban Head Start program. A secondary objective was to collect qualitative data from parents participating in the intervention to assess their response to the materials and their perceived impact of the intervention. Methods: A small, experimental pilot study was conducted with a group of Latino children participating in Head Start. We hypothesized that parent participation in the GRS curriculum would improve children's literacy and math skills, relative to participation in Head Start-as-usual. Randomization occurred at the classroom level. Data were available on 39 children (20 intervention & 19 control children). Participants predominantly identified as Hispanic, spoke Spanish at home, and had a high school education or less. Families in the GRS intervention group participated in a weekly 2-hour workshop for 15 weeks focusing on promoting children's school readiness skills in reading and math. Children in both groups participated in a brief pre- post-intervention assessment of their early literacy and math skills using the Woodcock-Johnson Test of Academic Achievement (WJIII) / Batería Woodcock-Munoz. A multivariate repeated measures MANOVA was performed, with time as the within-group variable (2 levels: pre and post), and intervention as the between-group variable (2 levels: intervention and control). A focus group was conducted post-intervention with participating families. Focus group data were transcribed and later analyzed using open and selective coding. Results: Overall children's performance improved from pre-test to post-test. As predicted, a significant time x GRS interaction was found ($F(6, 32) = 2.492$; $p<0.05$), confirming that Head Start children whose parents received GRS showed more growth in skills relative to children enrolled in Head Start-as-usual. Six main themes emerged from focus groups. Conclusion: This study demonstrates that a targeted parent-focused program may be effective in supporting the development of school readiness skills of disadvantaged preschool children. The pediatric practice plays an important role in disseminating school readiness messages to parents. We discuss how a curriculum like GRS may be adapted for use in the primary care setting.

Abstract 5

Symptoms of Attention Deficit/ Hyperactivity Disorder (ADHD) Differentially Predict Social Functioning in High School Students

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Purpose: To describe patterns of social acceptance and ostracism associated with the core ADHD symptom domains of attention problems and hyperactivity. Methods: Peer- and self-reported behavioral and social functioning variables were obtained through a 2011 computer-administered survey of 546 students in one public high school. Self-reported attention problems and hyperactivity were measured using the Behavior Assessment System for Children (BASC). Two forms of ostracism (active social exclusion and passive ignored) were measured using the Ostracism Experiences Scale (OES). Peer-reported social networks and perceived acceptance/ exclusion of their classmates were also obtained. The consent rate was 96%. Results: Separate hierarchical regressions revealed that hyperactivity and attention problems differentially predicted each ostracism dimension, after controlling for gender as a potential confounder. Hyperactivity was a significant and positive predictor of passive ignoring ($\beta = 0.21$) and a negative predictor of active exclusion ($\beta = -0.28$). Attention problems were a significant predictor only of passive ignoring ($\beta = 0.18$). All p-values were < 0.001. Paralleling self-reported social outcomes, each core ADHD symptom domain differentially predicted an adolescent's location in the social network, as well as peer-perceived acceptance/ exclusion. Conclusion: This study examined the patterns of social difficulties experienced by adolescents with ADHD symptoms. Increasing levels of both hyperactive and inattentive symptoms predicted passive ignoring by peers. However, increasing levels of hyperactivity were associated with decreased risk of active social exclusion. These findings were consistent with respect to self- and peer-ratings, indicating strong method convergence. These findings, interpreted from a social network perspective, underscore the importance of developing targeted interventions to improve the social experiences of youth with varying ADHD symptom profiles.

Abstract 6

Gender Differences in Clinical Presentation of Autism Spectrum Disorders

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Purpose: The aim of this study was to examine differences in clinical presentation of Autism Spectrum Disorders (ASDs) between males and females across a range of developmental functioning using standardized measures of symptom severity. Methods: Data were obtained from the Autism Genetics Resource Exchange, a national dataset of primarily multiplex families with children with ASDs. There were 1702 subjects (1379 males and 323 females) over the age of 5 that met Autism Diagnostic Interview criteria for Autism and Autism Diagnostic Observation Schedule (ADOS) criteria for Autism or Spectrum. Subjects were separated into 4 groups based on developmental ability, similar to the methods proposed by Gotham et al in their 2007 revised ADOS algorithm, based on verbal ability and age: 1) those administered ADOS Module 1 who were nonverbal, 2) those administered ADOS Module 1 who had some words, 3) those administered Module 2 (for those with phrase speech), and 4) those administered Modules 3 or 4 (for those who are fluent). Within each group, scores on the Stanford-Binet Intelligence Scales, Vineland Adaptive Behavioral Scales (VABS), and parent-rated Social Responsiveness Scales (SRS), were compared between the genders. Results: There were no significant age or IQ differences between genders, within each group. Parent-rated SRS scores were higher (more severe symptoms) for females versus males in all groups. Among those administered Modules 3 or 4, differences in SRS "Autistic Mannerisms" scores achieved the highest level of significance ($p<0.0001$) with females being rated as having more "Autistic Mannerisms" than males. VABS scores were similar between males and females who had been administered ADOS 1 or 2, but were higher (better adaptive

functioning) for females who had been administered ADOS Modules 3 or 4 than males (p<0.01). Conclusion: Across levels of functioning, autistic females were perceived as having more social impairments than autistic males. However, lower functioning autistic females have equally impaired adaptive abilities as boys. Higher functioning autistic females have in particular more autistic mannerisms, but better adaptive functioning overall than males. These results suggest that an autism diagnosis may be missed in higher functioning girls, unless autistic mannerisms are prominent.

Abstract 7

Birds of a Feather do not Flock Together: Subtypes of Intellectual Functioning in Children with Mild Intellectual Disabilities

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Purpose: Subtypes of intellectual functioning have been established in children with learning disabilities (Saunders et al., 2006) but little research has examined subtypes of functioning in children with intellectual disabilities (ID). We explored the presence of cognitive subtypes in children with mild IDs and externally validated the subtypes on measures of academic achievement and adaptive functioning. Methods: 167 patients with mild IDs (102 boys, 65 girls), ages 6-16 years (M= 10.6 years, SD= 2.2 years) were assessed at a developmental centre in Southwestern Ontario. Participants reflected the diverse ethnic composition of the area and completed standardized tests of intellectual functioning (Wechsler Intelligence Scale for Children, 3rd Edition [WISC-III]), academic achievement (Wechsler Individual Achievement Test), and adaptive functioning (Vineland Adaptive Behavior Scales). Mean full-scale intelligence (FSIQ) on the WISC-III was 63.32 (SD= 9.0; range= 60.5-73.4). Most children had non-specific etiologies of IDs but 27% had identifiable conditions (e.g. neurological or genetic conditions) Results: Two-stage cluster analysis using the four WISC-III index scores generated four strength-based subtypes: language-strength (highest score on the verbal comprehension index); non-verbal strength (highest score on the perceptual-organization index); symbol-processing strength (highest scores on processing speed and freedom from distractibility indices); and global deficits (relatively low scores across all indices). After controlling for FSIQ, significant differences were found on tests of academic achievement (F= 2.5, p<.01) and adaptive functioning (F= 2.9, p<.05). Conclusion: Pediatricians involved in the care of children with mild IDs need to advocate for appropriately modified interventions that target the unique patterns of cognitive, academic, and adaptive functioning found in this population.

Abstract 8

Ostracism Predicts Increased Risk of Internalizing Conditions in Youth with Special Health Care Needs

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Purpose: This study investigated bullying, ostracism, and illness status as predictors of depression and other internalizing problems in children and youth with special health care needs (CYSHCN). Methods: Participants aged 8-17 (33 males, 31 females) were recruited from developmental pediatrics, pulmonary, hematology, cardiology, and endocrinology subspecialty clinics. IQ >70 was required for participation. Children with diagnosed developmental disabilities and/or chronic medical conditions were assessed for the occurrence of bullying and/or ostracism using Saylor's Bullying and Ostracism Screening Scale (BOSS). The BOSS quantifies bullying by asking about physical, verbal-social, and cyber-bullying experiences. A separate BOSS section asks about and quantifies ostracism experiences. Hierarchical multiple regression analyses examined the relative weight of ostracism experiences, bullying experiences, presence/absence of chronic health conditions, presence/absence of ADHD, gender, and age on child reported depression (Kovac's Child Depression Inventory Short Form, CDI-SF) and parent reported internalizing problems (Achenbach's Child Behavior Checklist, CBCL). Results: Ostracism experience was the sole significant predictor of CDI-SF T-score, accounting for 37% of the variance (F=37.12, B=36.31, SE=2.2, P<.001). Ostracism and chronic illness status combined in the most robust predictive model for CBCL Internalizing score, accounting for 28% of the variance (F=11.85, B=49.63, SE=4.35, P<.001). Conclusion: CYSHCN who report experiencing ostracism by their peers may be at elevated risk of depression and other internalizing emotional-behavioral problems. Impact of ostracism appears to be greater that of bullying or chronic health condition alone. Screening for ostracism and bullying is recommended in the ongoing care of CYSHCN.

Abstract 9

Developmental-Behavioral Pediatric Teaching of Medical Students: A National Survey of Clerkship Directors

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Purpose: The Council on Medical Student Education in Pediatrics (COMSEP) developed a national curriculum for medical student education in the Pediatrics clerkship and entire medical school experience. While there is no mandatory component of developmental-behavioral pediatric (DBP) teaching in the clerkship, many programs provide opportunities for students to participate in clinic-based and sometimes community-based activities. COMSEP curriculum has outlined knowledge based competencies for DBP, and suggested processes to accomplish these goals. To our knowledge, there has been no study of the extent of, or the nature of these activities, nor how clerkship directors are implementing the suggested curriculum. Methods: With IRB approval from University of Kentucky Office of Research Integrity, a survey was administered to the membership of COMSEP. The survey was embedded into a larger annual survey that COMSEP sends to its membership listserv, with additional IRB approval from University of Washington. Statistical analysis was done with SPSS-19. Results: Of the 147 medical schools, survey completion rate was 71% with respondents 58% female, 97% Board-certified in Pediatrics, and 92% follow the national COMSEP curriculum. Only 9% also direct the DBP rotation for Pediatric residents, and 47% have a sub-intern elective in DBP. 59% have some form of preclinical student teaching in DBP, mostly didactic lectures (89%). Exposure to DBP in the clerkship is in clinical settings (91%) and didactics (74%). Most teaching is done by General Pediatricians (87%), with 50% by DBP/Neurodevelopmental physicians. DBP competencies are mostly assessed by case logs and faculty feedback (45% each). Barriers towards implementing the curriculum were time constraints, lack of DBP faculty, and training in DBP topics. Electronic learning tools, increasing DBP training of General Pediatricians and increasing clerkship length were suggested as ways to overcome barriers. Conclusion: While most Pediatric clerkships follow the national COMSEP curriculum, directors report barriers to implementation, mostly related to personnel and content limitations for DBP competencies. DBP physicians should take a greater role in undergraduate medical education (UME) by developing electronic resources and providing community opportunities for students. Information in this study will be used to design DBP curricular elements for UME.

Abstract 10

Dysphagia in Young Infants with Down Syndrome

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Purpose: Dysphagia has been described in children with a variety of neurodevelopmental disabilities, including Down syndrome (DS). Dysphagia can be associated with serious sequellae such as failure to thrive and respiratory complications, including aspiration pneumonia. Incidence of dysphagia in young infants with DS has not previously been reported. Methods: To assess incidence of dysphagia in young infants with DS, we conducted a retrospective chart review of 174 infants, ages 0 to 6 months (corrected for prematurity, if indicated), referred to the Down Syndrome Program at a large academic-affiliated children's hospital from August 2005 to June 2010. Results: 100/174 (57%) of these infants had clinical concerns that warranted referral for Videofluroscopic Swallow Study (VFSS). 96/174 (55%) had some degree of oropharyngeal dysfunction. 69/174 (39%) had dysphagia severe enough to warrant recommendation for alteration of breast milk/formula consistency or for non-oral feeds. Infants with certain comorbidities were at increased risk for significant dysphagia, including those with prematurity (OR=1.7) and functional airway/respiratory abnormalities (OR=7.2). Infants with desaturation with feeds were at dramatically increased risk (OR=15.8). Conclusion: Infants with DS are at high risk for dysphagia. All young infants with DS should be screened clinically for swallowing concerns. If concerns are identified, consideration should be given to further evaluation with VFSS.

Poster Symposia Abstracts

Abstract 11

Pediatricians' Views of Mental Health Screening and Intervention

Brandi S. Henson, PsyD, Emily N. Neger, BA, R. Christopher Sheldrick, PhD, Ellen C. Perrin, MD, Pediatrics, Tufts Medical Center, Floating Hospital, Boston, MA

Purpose: There is growing consensus that the pediatric practice is a viable and efficient context for the identification of and early intervention for children s mental health problems. We worked with 10 pediatric practices to administer a brief behavioral screening tool to parents at 2- and 3- year well child visits. Parents whose children scored high were invited to participate in a parenting class (The Incredible Years). At the completion of the project, pediatric staff were asked to complete a survey regarding the implementation of the screening tool and parenting classes. Methods: Two electronic surveys were distributed in each of the 10 participating practices: one to pediatric leaders and administrators; one to providers. Results: 60% (75) of providers and 86% (19) of pediatric leaders and administrators completed the survey. Providers were generally satisfied with the feasibility of the screening protocol and found it clinically useful, particularly to initiate discussion of behavioral concerns with parents. 19% of providers reported improved attitudes about screening in general. The biggest concern was the potential increase in visit times. All but 1 provider wanted parenting groups to continue in their practice (61% definitely, 38% maybe). 57% of providers had received feedback from patients about the groups, and this feedback was primarily positive (45% Very Satisfied, 30% Satisfied). Most providers thought parenting groups should be available to any interested parent (82%), but only 37% of leaders and administrators indicated that they were very likely to run groups after the research. Potential barriers included finding enough parents, finding staff to organize and run groups, and managing costs. Conclusion: Routine screening can be implemented in pediatric practices and provides information to enhance clinical impressions. Parenting groups are a mental health intervention that can be offered in response to screening results. Both screening and parenting groups are of considerable interest to pediatric providers and administrators, particularly when they see direct benefits and receive feedback from parents, but concerns about feasibility may limit widespread implementation.

Abstract 12

Co-located Developmental and Mental Health Care within Pediatric Primary Care Practice

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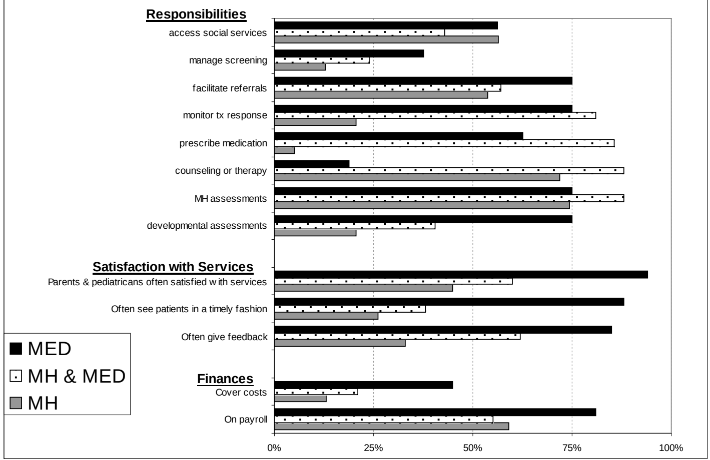
Purpose: Previous studies have suggested that there are benefits to providing developmental/mental health care in the same setting as primary pediatric care. How frequently pediatricians have established such arrangements, the level of integration and collaboration between medical and developmental/mental health clinicians, and their experience with these arrangements, is unknown. Methods: We surveyed members of the MA Chapter of the American Academy of Pediatrics who provide primary care (n=752) via a web survey. Results: Of the 305 physicians (40%) who completed the survey, 33% reported that they had one or more mental health/developmental (MH/D) specialist(s) located within their practice setting. Of these, 39% identified a psychologist or social worker (MH), 15% identified a physician, nurse, or nurse practitioner (MED), and 42% identified both a mental health and a medical clinician (MH&MED) as the co-located MH/D specialist. The majority of these clinicians are on the practice payroll, but their revenues generally do not cover their costs (see Figure). More than half of the co-located MH/D clinicians are reported to receive support staff assistance, attend staff meetings, and share charts with primary care physicians. Responsibilities vary considerably across the three categories (see Figure). Using a 4-point scale (from 1 'never' to 4 'usually'), respondents whose practices include physicians or nurses/nurse practitioners rated consistency of feedback, timeliness of access, and overall satisfaction higher than those with MH clinicians (see Figure). Conclusion: Pediatricians have developed many unique arrangements to facilitate developmental and mental health care in their practices. One third of respondents have developed various systems of co-located care.

Figure. **Comparing co-located MH/D providers**



Abstract 13

Child Behavioral Severity and Parents' Perceptions of the Effectiveness and Likelihood of Seeking Behavioral Health Treatment

Aimee M. West, BA, Robert Dempster, MA, Beth Wildman, PhD, Psychology, Kent State University, Kent, OH, Diane Langkamp, MD, NeuroDevelopmental Center, Akron Children's Hospital, Akron, OH

Purpose: Although externalizing behavior problems are the most common problems in childhood, most remain untreated. Identifying barriers to treatment-seeking can help close the gap between need and use. This study examined how child behavior severity moderates the relationship between parents' perceptions of treatment effectiveness and the likelihood of using 4 interventions. Severity was measured with the Pediatric Symptom Checklist (PSC), and the interventions included hospital-based mental health professional, community-based mental health professional, research-based parent training program, and prescription medication. Methods: Participants were 69 parents of 2 to 8 year-old children at primary care pediatric visits in 5 Midwestern community-based practices. Parents completed questionnaires rating the perceived effectiveness of the treatment, likelihood of attending, and PSC. Results: Separate linear regressions were conducted for each treatment type, with perceived likelihood of using the treatment as the dependent variable, perceived effectiveness and severity entered in the first step, and the interaction of the two entered in the second step. Results for the hospital-based intervention only were significant. Child behavior moderated the relationship between parental perceived effectiveness and likelihood to use hospital-based intervention, $p < .05$. Parents of children with high behavioral severity were likely to use the intervention, regardless of believing if it will work. For parents of children with low behavioral severity, belief in a hospital-based intervention's effectiveness was positively associated with likelihood of use, $R2 = .58$, $p < .001$. All other regressions were not significant. Conclusion: The impact of perceived effectiveness on help-seeking for hospital-based out-patient services varies depending on child's symptom severity. Parents may believe that a

hospital-based treatment is only for severe cases. The lack of such relationships for other treatments may reflect greater acceptability of community-based services. For children with low behavioral severity, perceived effectiveness predicts the parent's reported likelihood to use. Therefore, parents of children without a clinically-significant behavior problem need to believe in a treatment's effectiveness in order to increase their likelihood to use it.

Abstract 14

What's in a Name? Variation in Parents' Perception of Acceptability of Treatment

Aimee M. West, BA, Robert Dempster, MA, Beth Wildman, PhD, Psychology, Kent State University, Kent, OH, Diane Langkamp, MD, NeuroDevelopmental Center, Akron Children's Hospital, Akron, OH

Purpose: Less than 20% of children with behavior problems receive treatment. The goals of the present study were to determine (1) what types of treatments parents believe are helpful, and (2) if the name used to describe behavioral parent training, an evidence-based intervention, changes how likely a parent will be to attend treatment. Methods: Participants were 87 parents with 2 to 8 year-old children in 5 Midwestern suburban and urban community-based primary care pediatric practices. Participants rated perceptions of treatment effectiveness for 10 types of treatment. They were randomly assigned to rate how likely they would be to follow through on a physician referral to services at the primary care office or another office for the following treatments: a program for managing difficult child behavior, behavior therapy, behavioral parent training, parenting classes, or an appointment with a behavioral specialist. Results: A Repeated-Measures ANOVA was conducted on ten ways of gaining advice. Parents prefer one on one options (i.e., individual intervention) over all other options (group, phone, media), $p < .001$. A One-Way Between Subjects ANOVA on the name of services found that parents prefer to attend treatments at the primary care office, regardless of name. Likelihood to use services in other offices varied with the name of service, $p < .05$. Parents reported being more likely to attend a program for managing difficult child behavior than behavioral parent training, $p < .05$. Conclusion: Participants preferred to receive advice in one-on-one settings and in the primary care office. When referring to services outside the office, providers should use caution in how they label and describe the behavioral health services; parents reported being more likely to attend a program for managing difficult child behavior than behavioral parent training. Future research should further explore differences in how treatment labels influence parental help-seeking.

Abstract 15

Integrating Developmental and Maternal Depression Screening in Pediatric Practice

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Purpose: Periodic evidence-based developmental screening is required to identify at-risk children. Despite this knowledge and AAP guideline, most pediatricians do not screen. Strong empirical evidence exists regarding maternal depression and child development. Similarly, few pediatricians screen for maternal depression despite AAP recommendations. Methods: 10 primary care practices (single and groups) volunteered for the study. The Ages and Stages (ASQ-II) and Maternal Depression Inventory (2 questions) were used. Pre & post attitude surveys were delivered. Practices received training on the instruments and ongoing support for 2 months. Medicaid and uninsured patients ranged from 1%-95% (mean 15% SD=33) and from 1-35% (mean 7% SD=8.3) respectively. Practices were followed for 1 year. Results: 876 children, 4-60 mos. (mean 21, SD=17) were screened in Spring 2008. Average screens completed per site was 87.6. Informants were mothers (78%), fathers (6%). 14% (n=124) of screens were positive. Of these 36 (29%) were referred and 88 (71%) were not. Only 4/10 groups screened for Maternal Depression. 90 total screens were completed. Eleven (12%) were positive on the 1st question and 8 (9%) positive on the 2nd. No referrals for maternal mental health were made. Reasons for non-participation included concerns over liability and possible disruption of physician-parent relationships.

At 2 months, the number of physicians rating ASQ as "very effective" increased from 21% to 54%. 33% of physicians utilized the 96110 billing code with an average reimbursement of $11-14. All physicians reported positive parental satisfaction with screening. No practices continued developmental or maternal screening at 1 year follow-up. Conclusion: Despite knowledge of the importance of evidence-based developmental screening, positive feedback from parents, & reimbursement, none of the private, public or academic sector practices continued to screen at 1 year. Referral rates for positive screenings mirrored previous studies. Even with education regarding the link between maternal depression and child development, 60% of the practices chose not to screen for maternal depression and no practices made referrals for positive maternal depression screenings. Given its importance to children's health, more studies will be required to identify the key factors that will persuade and/or support the investment of pediatricians' time to screen.

Abstract 16

How Comprehensive Are Newborn Screening Programs in the U.S.: State-specific Sociodemographic and Fiscal Correlates -- An End-of Decade Analysis

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Purpose: In 2006, the American College of Medical Genetics (ACMG) recommended that state newborn screening programs (NSP) mandate screening for 29 core conditions (CC) and reporting for 25 secondary target conditions (ST). Our objective was to do an end-of-decade analysis of state-specific compliance of newborn screening programs with the ACMG's recommended mandates, & examine if compliance is linked to fiscal & sociodemographic variables (FSV). Methods: State-specific NSP data for year-end 2010 were collated and compared. Each state was assessed regarding how many CC, ST, and additional conditions (AC) were universally screened. A weighted score was calculated for each NSP, & a backward elimination linear regression was performed on this weighted score using FSV to identify possible predictors; those with $p<0.10$ were entered into the final model. Results: Almost all states had 100% compliance for CC disorders of Fatty Acid (FA 49 states, 96%), Organic Acid (OA 48, 94%), and Amino Acid metabolism (AA 48, 94%). Full compliance (100%) for ST disorders was much lower: FA (9 states, 18%), OA (19 states, 37%) and AA (10 states, 20%); a number of states required none of the secondary tests (FA 16, 31%; OA 17, 33%; AA 5, 10%). Hearing screens were required in 36 states (71%); though expensive, compliance was not linked to FSV. Only 3 states required and 3 others offered universal screening for severe combined immunodeficiency (SCID). Weighted scores differed somewhat across geographic locations (higher in the Northeast & Midwest). The best regression model of the weighted score accounted for 15% of the variance. In general, largest states, states that spent more on Medicaid and states with fewer people below the poverty line had highest infant screening scores. Conclusion: Despite recommendations from the ACMG to standardize newborn screening programs, states still vary considerably with respect to screening for CC. Compliance is variable for hearing loss, and worst for SCID, a recently added CC. Many states are also less compliant in screening for ST. Compliance was not primarily linked to FSV.

Abstract 17

ADHD Medication Holidays: Factors Involved in the Parental Decision whether or not to Continue Medical Treatment during the Summer

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Purpose: To determine 1) what clinical child characteristics can be identified that distinguish parents who opt to continue medication for treatment of ADHD during the summer from those who chose to stop medication, and 2) to determine whether parental perceptions of impairment or medication side effects are factors in the decision they make. Methods: Over an 8-week period in fall 2010, parents of 162 children (ages 6-18) being treated for ADHD completed questionnaires during their regular medication follow-up visits focusing on their experience during the preceding summer. Questions addressed included parental perception of the child's degree of impairment due to ADHD in academic, social, and behavioral functioning; parental perception of medication side effects; the child's summer activities; use of CAM therapy; and family structure. Data gathered from the medical record included the child's age, gender, ADHD subtype, severity of his/her symptoms on initial presentation, and medication dosage. The Fisher's exact test was used to examine associations between categorical factors and continuing medication during the summer. The Cochran-Armitage Test for Trend was used to examine associations between parental perceptions and continuing medication. Results: Parental perception of impairment in social and/or behavioral functioning was significantly associated with an increased likelihood of continuing medication for ADHD during the summer ($p<0.035$). No associations were found between the decision to continue or discontinue medication over the summer and the child's age, gender, ADHD subtype, severity of symptoms on initial presentation, the type of summer activities in which the child participated, use of CAM therapy, family structure, parental perception of impairment in academic functioning, or parental perception of medication side effects. Conclusion: It appears that, in parents' decisions whether or not to medicate their children during the summer, impairment in social and/or behavioral functioning weighs more heavily than any other factor studied, including academic impairment and perceived medication side effects. No other clinical factors correlated with whether a child continued medication. This study provides some insight into what factors are considered by parents in their decision whether to medicate their children for treatment of ADHD over the summer break.

Abstract 18

Quality Improvement and Clinician Adherence: A Plan to Increase Adverse Event Monitoring in Children Treated with Antipsychotic Medications

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Purpose: Antipsychotic medication use in children can pose significant adverse effects. Monitoring for adverse events is not universally performed, due in part to the lack of standard guidelines for use in the pediatric population. We developed an internal monitoring guideline and used Quality Improvement (QI) methodology to increase guideline adherence, as previous experience with conditions such as ADHD and developmental screening suggests that guideline development alone is insufficient to change practice behavior. We aimed to achieve 50% improvement in guideline adherence within 1 month of implementation. Methods: Full guideline adherence was measured by a composite assessment that included weight, height, BMI, heart rate, blood pressure, an abbreviated version of the Abnormal Involuntary Movement Scale (A-AIMS) results, fasting blood glucose and lipid panel. Baseline and quarterly follow up data were collected. Five Plan Do Study Act (PDSA) cycles were conducted to improve guideline adherence. Results: Full guideline adherence improved 50% three months after implementation. Adherence increased from zero to a maximum of 59% but declined to 48% at the last audit. Analysis of individual guideline parameters showed that anthropomorphic data and A-AIMS were obtained 90% of the time. Laboratory studies were obtained less than 50% of the time. Clinician education and office flow were identified as key drivers to improve adherence and formed the basis for PDSA cycle topics. Conclusion: Adverse event monitoring improved after guideline development and multiple PDSA cycles designed to improve clinician education and address process issues. Despite these interventions, full adherence remained less than 60% and declined in the last quarter. Barriers to adherence include partial transition to an electronic health record (EHR), continued lack of standardized processes, and staffing limitations. Potential solutions include the use of an EHR best practice alert and further improvements in office flow. The use of QI methodology, including further PDSA cycles, will be used to improve and maintain adherence.

Abstract 19

An Evaluation of Community-Based Partnerships to Improve Developmental Diagnosis

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Purpose: The purpose of the research is to evaluate the implementation of a state-wide model for providing local, timely, comprehensive developmental evaluations for children with a concern about autism in 30 Ohio counties. Methods: Community-Based Diagnostic Partnerships are in place in 30 Ohio counties. Developmental evaluation teams work with medical partners to enhance the breadth and depth of their evaluations, including a daily routines interview and the Autism Diagnostic Observation Schedule (ADOS). The medical partner interprets the results as part of a medical and developmental history, makes a diagnosis, and assures linkages with community services. The medical and developmental evaluation teams participate in training to strengthen their evaluation and diagnostic skills and to build the model for collaboration. The evaluation teams complete a 2-day ADOS training and participate in structured web-based inter-rater reliability training. Teams join monthly conference calls for ongoing support and problem solving. Partners submit de-identified data from their evaluations, including diagnosis, evaluation results, an evaluation of the components' usefulness, and a measure of professional satisfaction with the process. Parents complete a survey identifying the time from initial concern to diagnosis and assessing their satisfaction with the process. Results: 268 evaluations were completed between Winter 2009 and Spring 2011. 54% received an autism spectrum diagnosis. Professional partners found the Bayley or Battelle, daily routines interview, ADOS, developmental history and DSM-IV criteria to be most helpful in clarifying differential diagnosis. Professionals and families reported a high level of satisfaction with the process. The lag time from initial concern to diagnosis was reduced to 19 months compared to baseline state data indicating a lag time of 31 months. Conclusion: Community-Based Diagnostic Partnerships improve access to local, timely, comprehensive evaluations for children with a concern about autism. The process reduces the lag time from initial concern to diagnosis. Professionals and families are highly satisfied with the model.

Poster Session 1 Abstracts

Abstract 26

Identifying Children with ADHD does not result in a Service Burden for Schools

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Purpose: To identify educational services provided for children with ADHD diagnoses acknowledged by the school and compare with services utilized by children discovered to be at risk for ADHD by universal school screening. Methods: Teachers for grades 1-5 completed Vanderbilt teacher ratings for ADHD online for all 5727 children whose parents consented, yielding 1174 children screening positive for ADHD. At year-end, children were rescreened and school intervention services were surveyed for children screening positive for ADHD and for 108 children randomly selected from those initially screening negative. These positive screen and control cohorts were rescreened the next school year in the fall and spring, and school services and acknowledged ADHD diagnoses identified by teachers in the spring. Analyses were performed for services both years including IEPs, Social Skills, Conflict Resolution, Tutoring, Psych testing, and Ed. Testing by ADHD group - diagnosed, at risk, and low risk children. Results: Services showing significant differences from low risk children are shown in the

table. Services were greater for children screening positive without acknowledged diagnoses for ADHD than for those with acknowledged diagnoses for each service type except Tutoring (ADHD diagnosed highest). Conclusion: The burden to schools for children acknowledged as having ADHD is somewhat lower than for children found to be at risk for ADHD from universal screening.

Rates of School Service Differences (all p<0.01) by ADHD Status

	ADHD Diagnosis N = 133	Positive Both Years N= 205	Low Risk N =178
IEP (Yr 1)	(21) 15.8%	(37) 18.0%	(13) 13 7.4%
Social Skills (Yr 2)	(13) 9.8%	(21) 10.2%	(4) 4 2.3%
Conflict Resolution (Yr 2)	(6) 4.5%	(23) 11.2%	(6) 3.4%
Tutoring (Yr 2)	(42) 31.6%	(56) 27.3%	(29) 16.5%

Abstract 27

Group Social Skills Training for Children with Asperger's Syndrome: Intervention Effectiveness and Health-Related Quality of Life Correlates

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Purpose: This study examined: (a) if children's social skills competency correlated with health-related quality of life (HRQOL) and severity of Asperger's Syndrome (AS) behavior patterns and (b) pre- vs. post-intervention effectiveness data. Methods: Sixteen 1st-3rd or 4th-6th graders participated in 6-week social skills training groups. Additional data (12 participants) will be available after the June groups conclude. Children and parents completed the Pediatric Quality of Life Inventory (PedsQL) and parents completed the Asperger's Syndrome Diagnostic Scale (ASDS) and the Observed Child Behavior Questionnaire (OCBQ), a study-specific questionnaire to measure actual use of social skills taught in the groups (i.e., social skills competency). Parents completed the OCBQ again on completion of the groups. Results: Pre-intervention OCBQ did not correlate with PedsQL Total self report [r(12)=.12, p=.69] or parent report [r(13)=.13, p=.66]. The OCBQ did not correlate with the ASDS Quotient [r(11)=-.44, p=.14]. However, a t-test for dependent samples revealed a significant effect of the intervention on social skills [t(7)=-4.53, p=.003]. Specifically, parents reported that children displayed the targeted social skills more frequently (better competency) after completing the social skills training (M=54.61, SD=15.98) compared to before the training (M=43.75, SD=14.00). Conclusion: No significant correlations emerged between social skills competency and HRQOL or between social skills competency and severity of AS. However, a significant improvement was demonstrated on OCBQ parental ratings of social skills competency, indicating that our intervention was effective in improving social skills in children with AS. Additional data this summer may alter our findings. These results add support for group social skills training as an integral component of interventions for children with AS. Implications will be discussed for future research to follow-up on participants to determine retention and generalization of the social skills learned and for tracking of HRQOL in children with AS.

Abstract 30

Medical Students' Perceptions of Working with Children at the Start of the Pediatric Clerkship

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Purpose: The Pediatric clerkship rotation for 3rd year medical students (MS-3) is often the students' first encounter with children in a clinical setting. Anecdotally there seems to a lot of anxiety among students, related to the pediatric physical exam, parent expectations of the students' abilities and history taking from a caregiver. The objective of this study is to explore the attitudes and comfort level of medical students at the start of the clerkship as part of a larger study examining the effect of an innovative curriculum in preclinical medical students on self-report levels of comfort and attitudes towards children. Methods: Following University of Kentucky (UK) Office of Research Integrity approval, the MS-3 class of the UK College of Medicine entering the Pediatric clerkship was surveyed using a questionnaire designed for the study. Responses were coded into medical and non-medical related categories, comfort with children was assessed using Likert-type scale and multiple regression approaches were used. Other open-ended responses were content coded and reliability checked by a second rater (96% concordant). Results: 52 students' responses (57% male) revealed that < 10% had children of their own, almost 25% had NO experience with children and less than 30% had medical related experience. 36% gave responses that mixed themes of positive and negative tone in working with children and were most concerned about the parents, working with ill children and not having knowledge base (particularly developmental milestones). Regression analysis revealed perceived greater comfort level with children in medical setting is seen in students having children of their own (p=.047) and having experience with children prior to clerkship (p=.0004). Gender was not associated with either rating. Conclusion: Many Pediatric clerks enter the rotation with limited experience with children, and this is reflected in their concern about working with children and families. This information will be used to tailor the orientation curriculum of the Pediatric clerkship. Another strategy is to use experiential activities in the preclinical years that could help alleviate the problem of lack of experience with children and parents in a clinical setting, but could also better prepare students for third year clinical clerkships in general.

Abstract 32

A Double Blind, Placebo Controlled Trial of Minocycline in Children with Fragile X Syndrome

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Purpose: The purpose of this study was to determine the efficacy and tolerability of minocycline as a targeted treatment for children with fragile X syndrome (FXS). Minocycline decreases matrix metalloproteinase 9 (MMP9) levels and rescues dendritic spine abnormalities in the fragile X knock out mouse. Prior open label human studies suggest benefits. Methods: Children with FXS ages 3.5-16 years of age were randomized to receive minocycline or placebo. After three months, participants were crossed over to minocycline or placebo as appropriate for the following three months. Investigators and participants were blinded to the randomization. Outcome measures including the Visual Analogue Scale (VAS) for behaviors, the Aberrant Behavior Checklist (ABC), and the Clinical Global Impressions-Improvement (CGI-I) scale were administered at baseline, 3 months and 6 months. Results: This preliminary analysis focuses on the first 3 months of treatment comparing minocycline to placebo for 30 individuals, 14 on minocycline and 16 on placebo. The mean difference between minocycline and placebo in VAS for the first target behavior was 1.4cm (SE 0.61), a significant improvement (p=0.031), and the mean difference in VAS for the second target behavior was 2.7cm (SE 0.58), also significant (p<0.01). The mean CGI-I scores of individuals on minocycline was 2.57 (SD 0.94), compared to 3.40 (SD 0.89) for the placebo group, supporting greater improvement on minocycline, (p=0.023). There were no significant changes in the ABC-irritability scale between minocycline and placebo groups. The most common side effects included loose stools on minocycline. The study is ongoing. Efficacy and safety data for a goal of 50 patients over the full six months will be presented. Conclusion: Preliminary analysis supports the potential efficacy of minocycline treatment for FXS. Treatment for 3 months was well tolerated. Larger, multi-center trials are indicated to further examine these results. This research was funded by the National Fragile X Foundation and NIH Grant NIH 3 UL1RR024146.

Abstract 33

Inspired from "Reach Out and Read": Experience from an Overseas Developmental-Behavioral Pediatrics Unit

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Purpose: Purpose of this study was to detect the rate of age appropriate books at home environment of children aged 6-48 months old who have developmental delays/difficulties/risks and factors affecting this presence at our hospital's developmental and behavioral pediatrics unit. Methods: All children aged 6-48 months were provided a developmentally age appropriate book and the pediatrician modeled how to share the book to the family during the first assessment. It was asked if the children had a book of his own at home and if the family had a chance to use books as it was modeled. At the end of the visit it was suggested that reading/showing a book affects childrens' brain development positively. In the control visits it was asked to the families that if they could afford to buy/find a book and share it with their children. Results: Of the 450 patients, 58% were boys and median age was 17 months (range:6-48). Most mothers (46%) had only primary school education and 61% were younger than 30 years of age. Most of the patients were high risked prematures (50%).Of the patients, 26% have difficulties in language area and 16% of them have global developmental delay. Only 18% of families reported that their children have their own age appropriate books at home. To have age appropriate books at home is statistically significantly related with parents educational status, age of the child and working mothers. In the control visits the families who did not have books at home in the first visit reported some difficulties to find/buy the books to their children although they are living in the capital city. Only 7% of the parents managed to find/buy age appropriate books for their children. Conclusion: The results of the study demonstrated that there is a lack of stimulation at home in the name of the age appropriate books of the children who have developmental delays/difficulties/risks. Also families have struggles reaching to the sources of the books in our country. "Reach Out and Read" suggests supplying new books during the well child visits, the model used in the study may be entegrated to the high risk child visits in developing countries for the first step before implementing the program for well child visits.

Abstract 34

Relationship between Sleep and Autism on the Achenbach Child Behavior Checklist (CBCL) in Young Children

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Purpose: Research examining the prevalence of parasomnias and dyssomnias in children with disabilities, especially children with autism, is scarce at best. Although not part of the diagnostic criteria, some investigations have documented increased sleep difficulties in children with autism compared with children with other developmental disabilities and normal control groups. This study sought to better define the prevalence of sleep difficulties in a sample of children presenting in a diagnostic clinic and more closely examine the relationship between sleep and autism. Methods: Data on 82 subjects seen in an outpatient setting were examined. Parents completed the CBCL for ages 1½ - 5 and were asked to qualitatively respond to whether their child had sleep difficulties as part of a larger clinical protocol. Children were 27-71 months of age (mean = 52 MOS), were predominantly male (M = 72%; F = 28%), varied in ethnicity (White = 69%; Black = 20%; Latino(a) = 6%; Asian = 2%; Other = 3%), and presented with a variety of DSM-IV diagnoses (ASD = 40%; Communication D/O = 21%; ADHD = 20%; Behavioral D/O = 12%; Anxiety D/O = 7%). Results: T-tests between children with and without ASD revealed significant differences on the sleep problems scale of the CBCL ($t = 2.55$; $p = .014$; $d = .65$). A standard multiple regression analysis examined 3 predictors (Sleep Problems, Parental Sleep Complaints, & Aggressive Behavior) in the prediction of a diagnosis of autism. Two predictors (Sleep Problems & Aggressive Behavior) predicted approximately 43% of the variance in a diagnosis of autism [F(2, 79) = 29.32; p < .000; f2 = .74]. Conclusion: Support for considering the impact of sleep problems and aggressive behaviors from the CBCL in assisting in making a diagnosis of autism was consistent with some previous findings. However, the addition of a qualitative report of sleep concerns from parents to a standardized measure did not appear to be helpful in predicting an autism diagnosis. Several limitations of this study include the exclusion of a control group, the need to further establish the relationship between sleep/autism (e.g., mediator/moderator), and the need to further assess other likely predictors of outcomes.

Abstract 36

Impact of Sleep Duration on Adolescent Behavior- Does Chronicity Matter?

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Purpose: To examine the significance of chronic versus recent sleep duration on measures of psychological functioning and risk-taking behaviors in adolescents. Methods: 296 high school students from four schools in one southeastern state completed a sleep habit questionnaire at the end of the 9th grade (time 1) and 10th grade (time 2). Participants reported on measures of psychological symptoms (depression, anxiety, and inattention), life satisfaction, and substance use (alcohol, cigarette smoking, and marijuana). Separate hierarchical regression models were created with each behavioral measure serving as the outcome variable. These same outcome variables were entered at time 1, as well as time 1 sleep and gender. Time 2 sleep was entered into the model at step 2. Results: Sleep behavior was moderately stable from time 1 to time 2 (r = .38, p < .001) as were self-reported behavioral symptoms and risk behavior. Sleep at time 2 was significantly associated (p<.01) with all behavioral outcome measures, with standardized betas ranging from 0.15 (global satisfaction) to -0.21 (marijuana use). Sleep at time 1 did not predict behavioral outcomes at time 2 when controlling for time 1 behaviors. Conclusion: Current sleep deprivation significantly positively predicted inattention, depression, anxiety, and substance use (marijuana and alcohol) and negatively predicted life satisfaction. This remained after controlling for previously reported behavioral factors. Longer-term (i.e., chronic) sleep deficits (as measured in the 9th grade) had no significant predictive power on these outcomes in the 10th grade. With the high prevalence of adolescent sleep deprivation in our modern society, these findings underscore the importance of screening current sleep quantity when evaluating an adolescent's health and behavior risks and counseling on appropriate sleep needs.

Abstract 37

Developing a Code Set Based on the International Classification of Functioning for Children Who Rely on Augmentative and Assistive Communication

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Purpose: To describe the development of the ICF-CY for AAC Profile, a tool to integrate information about the multiple factors affecting communication skill development and use in school aged children with complex communication needs. Methods: The profile uses the World Health Organization's International Classification of Functioning, Disability and Health - Children & Youth Version (WHO, 2007) as its framework. The process involved: a) an initial draft by project staff; b) review/revision suggestions by our team of expert consultants; c) alpha testing/revisions by project staff; d) alpha testing by professional colleagues followed by revisions responsive to their suggestions; e) beta testing;

and f) revisions in response to beta testing results. Results: Alpha testing: 94% of respondents completely or somewhat agreed that "the survey would be useful for describing the communication limitations experienced by a child who has difficulty speaking or who has no speech". 69% completely or somewhat agreed that "the survey gathers all of the information that I would need to develop educational goals related to communication for a child who is a potential AAC user". 83% completely or somewhat agreed that "the questions on this survey cause me to think about a child's communication needs and abilities in new ways". Beta testing: Inter-rater agreement was 94% for School-related activities, 93% for Interpersonal interaction/relationships, 87% for Receptive language/literacy, 87% for Expressive language/literacy; 83% for Functions of communication, and 88% for Rules of social interaction. Conclusion: We propose that the ICF-CY for AAC Profile constitutes a code set which provides content and guidance to professionals who need to develop AAC-related IEP goals. We hope that this tool will move the AAC community to consider a broader view of environmental factors which influence the student's communication skills, and that it will move the ICF community to consider communication function and developmental sequence for all aspects of activities and participation in children and youth.

Abstract 39

What can I do to Ensure that Residents give out Books for Reach Out and Read?

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Purpose: The Reach Out and Read (ROR) program at Winthrop Pediatric Associates promotes early literacy by encouraging pediatricians to distribute age appropriate books and give anticipatory guidance to patients from 6 months to 5 years of age. We were concerned that our pediatric residents were not distributing as many books as they should and some residents commented that it was easier to remember to distribute the books at another site because those books were more visible. Khandekar, et al., 2011 found that book distribution was at high rates prior to intervention and that training efforts improved ROR-related skills in their pediatricians. Methods: The number of books distributed by our pediatric residents each day were counted. Baseline levels were measured over 2 months. Then, five different conditions were implemented sequentially over a period of 8 months with the number of books distributed counted daily. The interventions include moving books to a more easily viewed area, placing posters in patient and precepting rooms, placing stickers on well-child patient charts, verbal reminders by the ROR Coordinator, and announcing the aim of the study to all residents during Grand Rounds Results: Compared with baseline levels, the most successful interventions were placing books in a more easily viewed area and putting a sticker into the well-child charts to remind residents. These interventions produced the greatest level of change. Conclusion: These results imply that interventions that visually remind residents at the time of the visit are most effective in producing behavior change.

Abstract 40

Developmental Assessments for Children in Foster Care in a Rural Ohio Community

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Purpose: Studies suggest as many as 60% of children in foster care have developmental-behavioral concerns. We describe here the results of developmental assessments in a clinic serving children in foster care in a rural community. Methods: We reviewed the charts of twenty two children seen in the Foster Care Developmental Clinic over a one year period. We examined previously known diagnoses and new diagnoses made in the clinic. Children were referred for assessment if they were in the custody of Jobs and Family Services, resided in the county, and had not received prior developmental assessments. Priority was given if a child had a suspected disorder or disability as reported by the school or foster family. Results: Children's ages ranged from 2 months to 14 years 11 months. Reason for removal from family of origin was indicated as: neglect 50%, prenatal drug exposure/maternal substance abuse 36.4%, victim of abuse 22.7%, caregiver illness 9%, and polygamy/incest 9%. Witness of violence occurred in 40.9%. Developmental-behavioral diagnoses made by previous general health care providers included: ADHD 31.8%, post traumatic stress disorder 18.2%, language delay 13.6%, motor delay 9%, violent behavior 4.5%, intellectual disability 4.5%, obsessive compulsive disorder 4.5%, and reactive attachment disorder 4.5%. Notable medical conditions included: history of lead toxicity 9%, growth hormone deficiency 4.5%, and XYY syndrome 4.5%. New developmental-behavioral diagnoses made by assessment in this clinic were: global developmental delay 18.2%, anxiety 13.6%, language delay 13.6%, hypotonia 9%, ADHD 4.5%, autism 4.5%, disordered sleep 4.5%, disruptive behavior 4.5%, encopresis 4.5%, and post traumatic stress disorder 4.5%. New medical diagnosis made included torticollis 4.5%, auricular skin tag 4.5% and one child with 16p13.3 deletion spanning the tuberous sclerosis and polycystic kidney gene regions. Conclusion: Children in foster care are exposed to multiple stressors and are at high risk for developmental disorders. Referral for developmental-behavioral assessment is recommended to identify disorders and assure appropriate treatment.

Abstract 41

Attention Deficit Hyperactivity Disorder symptoms in Autism Spectrum Disorder

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Purpose: We hypothesized children with Autism Spectrum Disorder (ASD) and co-morbid Attention Deficit Hyperactivity Disorder (ADHD) symptoms have a poorer quality of life and greater impairment in adaptive functioning than children with ASD without ADHD symptoms. We also examined the frequency of ADHD symptoms in ASD children and the number of ASD children with ADHD symptoms receiving stimulant medication. Methods: The study population consisted of children ages 2-18 years in the Autism Treatment Network (ATN) Registry. The ATN collects data on children with ASD determined by multidisciplinary evaluation, including ADOS. Data analyzed included parent completed medical history form, scores from the Child Behavior Checklist (CBCL), Vineland Adaptive Behavior Scales, 2nd Ed. (VABS-2), and Pediatric Quality of Life scale (PedsQL). Results: Variability in the parent completion of forms lead to some incomplete data. Of the completed Vineland (N=2,169) and PedsQL (N=2,036), it was found that children with ASD and ADHD had more concerning scores in all areas of both measures ($p<0.0001$) than children with ASD alone. CBCL findings revealed a high rate of ADHD symptoms as noted below. Of the 2,760 children with a CBCL and history form, only 11% were taking a stimulant medication. Conclusion: A significant number of children with ASD have ADHD symptoms (55-58%). Children with ASD and co-morbid ADHD symptoms have lower scores on scales examining quality of life and adaptive functioning than children with ASD alone. The 11% of subjects receiving stimulant medication suggests that many ASD children with ADHD symptoms are not receiving adequate medication management for their impulsivity and distractibility problems.

CBCL: N=2,916	N (%)
T > 65 - Attention Scale	1,610 (55.5%)
T > 65 - ADHD Scale	1,677 (57.8%)
T > 65 - both subscales	1,022 (35.2%)

Abstract 42

The Prevalence of At-risk Development in Children 30-60 months old who Present with Disruptive Behaviors

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Purpose: To determine whether children 30-60 months old who present with disruptive behavior disorders (DBDs) have higher prevalence of developmental delays (DDs) than general population. Methods: A retrospective chart review was conducted at a pediatric behavioral clinic in Indianapolis, IN. Charts of patients seen between 8/2008 and 4/2011 were reviewed. Inclusion criteria were patients age between 30-60 months and a chief complaint of DBDs. Patient characteristics, final diagnoses, and Ages and Stages Questionnaires (ASQs) were collected. Results: Males were twice as likely to be referred to behavioral clinic as females. Out of those patients who had a completed ASQs, fine motor and communication were the two domains at highest risk for DDs (52.5% and 50.5% respectively). The number of patients referred for DBDs were 6x more likely to have DDs than the general population. Conclusion: ASQ is a useful screening tool for DDs, which are more common in children with DBDs. Developmental screening should be a part of the work up for DBDs in primary care.

Abstract 43

Social Emotional Learning in Grades 3 to 6 and the Early Onset of Sexual Behavior

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Purpose: The study aimed to explore whether an evidence-based elementary school social emotional learning (SEL) curricula (PATHS) focused on social problem solving skills, combined with sexual risk prevention lessons, would have an impact on preventing the early onset of sexual intercourse. Methods: A 4-year longitudinal, cluster-randomized, controlled design was employed in which 24 elementary schools in an urban school system in the northeast were assigned to receive the already in place SEL curriculum (control) or the enhanced curriculum (intervention; PATHS + sexual risk prevention lessons) during grades 3-6. Results focused on 705 students intervention n = 344; control n = 361) who remained in the study cohort and same group assignment over the 4-year period and had complete data. Social problem solving skills were assessed in grade 6 through a theoretical social problem solving dilemma involving undesired pressure to engage in sexual behavior. Sexual behavior was assessed in grades 6 and 7 via an audio-computer assisted survey in English and Spanish. Results: Rates of sexual intercourse were 9.1% and 21.1% in 6th and 7th grades, respectively. Those receiving the intervention curriculum were more likely to focus on issues specific to the dilemma and this social cognitive skill, in turn, made it less likely for the adolescent to have engaged in sexual intercourse by 7th grade. Although a direct effect of the intervention on sexual behavior was not found, a significant mediational effect was demonstrated for the effect between the intervention/control group membership to the ability to focus on the problem of the dilemma and, in turn, this ability to focus on the problem and later sexual behavior. Conclusion: The results provide evidence of the positive impact of SEL on students' social problem solving skills and delay in initiating sexual intercourse.

Abstract 47

Improving Children's Self-regulation and Executive Function: Does Martial Arts Training Help?

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Purpose: Martial arts are globally popular, and many parents perceive them as potentially beneficial to children's self-regulation and executive function (e.g., ability to pay attention). The purpose of this presentation is to present the current state of scientific evidence on the topic and to present results from a randomized, school-based martial arts intervention. Methods: First, I summarize the scientific evidence for or against martial arts training for children based on an extensive review of the literature. Second, I present results from my research examining the impact of school-based Tae Kwon Do training on elementary age children. Children (N = 207) from kindergarten through Grade 5 were randomly assigned by homeroom class to either the intervention (Taekwondo) group or a comparison (traditional physical education) group. Outcomes were assessed using multidimensional, multimodal assessments. Results: After a 3-month intervention, results indicated that the Taekwondo group demonstrated greater improvements than the comparison group in areas of cognitive self-regulation, affective self-regulation, prosocial behavior, classroom conduct, and performance on a mental math test. A significant Group by Gender interaction was found for cognitive self-regulation and classroom conduct, with boys showing greater improvements than girls. Conclusion: In a randomized, school-based study of Taekwondo, results were positive and indicated that children did improve their self-regulation, executive function, and classroom behavior. I discuss the implications and needs for future research. Given the wide variability between martial arts programs, instructors, and teaching methods, more research is needed to distinguish positive training environments from those that may not produce results similar to those found in my research.

Abstract 48

Feasibility and Effectiveness of Mid-level Developmental Assessment

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Purpose: When developmental screening identifies children in need of further evaluation, referral for comprehensive assessment is often delayed. We report on the feasibility and effectiveness of a Mid-level Developmental Assessment (MLDA) model designed to address the needs of children with mild/moderate levels of delay and to enable children with more severe delay to access tertiary-level assessment in a timely fashion. Methods: Referrals for MLDA were solicited from child health, early care and education, mental health, and social service providers, and parents. MLDA was conducted by a Masters-level social worker and a developmental specialist. Components included: solicitation of data from the child health provider; parent interview and completion of the Parenting Stress Index; child evaluation using the Developmental Assessment of Young Children or the Provence Profile of the Infant and Toddler Developmental Assessment; the development of an Individualized Family Service Plan (IFSP); and case management. Results: 80 children from an at-risk, urban population received MLDA during a 22 month pilot period. 82% were found to have mild to moderate delays. 18% were referred for tertiary evaluation and were found eligible for categorical programs (e.g., Part C and Part B). Children were typically seen within one week of referral and MLDA completed within two weeks of initial interview. All children were connected to community-based programs and services. MLDA was largely covered by third-party reimbursement. Conclusion: MLDA is a feasible and effective model for the timely assessment of children suspected of developmental delay on the basis of surveillance and screening. Children with mild/moderate delays are efficiently linked to programs and services, while children with more severe delays have facilitated access to more comprehensive assessment and services.

Abstract 51

Adherence and Psychological Evaluation Recommendations for Young Children with ASD

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Purpose: To evaluate accurate recollection and implementation of recommendations following ASD diagnoses. Methods: 75 mothers whose children had been evaluated and diagnosed through a research clinic completed a booklet of questionnaires assessing recollection of recommended services. Recommendations were also coded by blinded research assistants and discrepancies in report were evaluated. Results: A majority of mothers accurately recalled recommendations regarding behavioral, educational, and adjunctive therapy services (e.g., speech therapy, developmental preschool, ABA consultation). Parents frequently failed to recall recommendations about joining parent support groups, contacting other parents, genetic testing, and incorporating specific behavioral support within school programs. Parents also frequently endorsed recommendations for services that had not been made (e.g., referral to DAN doctor). In terms of actual implementation of the recommendations, the highest adherence rates (70% or higher) were associated with recommendations for IEP/IFSPs, school placement, speech/language services, and incorporating behavioral supports in the home. Recommendations with the least adherence (under 30%) included genetic testing, sleep evaluations, and accessing private ABA consultation. For these recommendations the most commonly endorsed reasons for non-adherence were disagreement with the recommendation (e.g., genetic testing) and cost (e.g., ABA in the home). Conclusion: While most parents appear to be able to adequately recall recommendations, many parents struggle to implement such recommendations. The impact this discrepancy has on parent and child functioning warrants future investigation.

Abstract 52

Screening of Developmental Disorders in Primary Care: Results of an Argentinean Experience

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Purpose: A developmental screening test created in Argentina, has been reported to be an effective tool for the detection of developmental disorders.Sensitivity and specifity have been estimated to be 80.4% and 93% respectively. The aim of this study was to evaluate this test in an unselected population of healthy children. Methods: Children aged 6 months to 6 years attending well-child visits at an Outpatient Clinics were screened as part of a change in practice. Children previously diagnosed with a developmental disorder, or those referred because of suspected developmental disorders were excluded. The test was administered to the sample by three pediatricians previously trained. Written information about the test and its results was provided to the caregivers. Results were coded as passed, failed or untestable. Results: A total of 453 children were assessed. Eighteen could not be assessed on the first screen, and sixteen with a positive first screen did not return for the second. After two screens and further assessment, a total of 84 were identified with a developmental disability, behavioural disorder or relevant medical condition. This included 57 children with Developmental Disability (34 with Language disorder, 7 with Global developmental delay, 6 with developmental coordination disorder, 5 with Autism, 4 with ADHD and 1 with Cerebral Palsy); 24 with behavioral disorders and 3 had a new medical condition identified during screening. A further 2 children failed both screens but further evaluation found them to have normal development and they were coded as false positives. Assuming 80% sensitivity, we calculate that 21 additional children had a developmental disability but passed their first screen, leaving 293 of the 314 who passed their first screen as "true negatives". The specificity of this screening test is then calculated as 293/(453-84) or 79%, which remains within the guidelines suggested for a screening test Conclusion: The test appears to maintain its good specificity in a general pediatrics clinic with a prevalence of unrecognized developmental disabilities of 18.5% and only 2 false positive tests in this sample. While we do not know the true sensitivity, the fact that we found the predicted number of children with developmental disabilities in this unselected sample suggests that it is good.

Poster Session 2 Abstracts

Abstract 56

Relating Adherence and Perceptions of Psychosocial Variables among Children with Cystic Fibrosis

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Purpose: Cystic Fibrosis (CF) is a life-shortening disease that targets the respiratory and digestive systems and requires a complex adherence regimen. The relationship between children's health beliefs and adherence were evaluated in order to design more effective adherence interventions. Methods: Participants were 29 child-parent dyads from a Midwestern CF center who completed questionnaires regarding their disease knowledge, management, attitude towards illness, social support, and adherence. Results: The mean age of participants was 13.5 years and 50% were male. A correlation matrix found that disease knowledge was not significantly related to children's reported disease management, attitude towards illness, social support, or adherence. Self-reported adherence was positively correlated with perceived social support (r = .439, p<.05) and less disease management difficulty (r = -.348, p<.05). Linear regression findings show children's disease management mediated the relationship between children's social support and attitude towards illness (p<.01, Sobel <.05), such that children who feel more socially supported have less disease management difficulty, which improves their attitude towards their illness. Conclusion: These findings indicate that children's perceived social support and ability to manage their illness are related to their attitude towards their illness, as well as their self-reported adherence. Previous research has found that children with more negative attitudes toward their illness are more likely to have adjustment problems, such as depression and anxiety. The results of this study suggest these are important area to assess and intervene.

Abstract 57

Comparative Cost Analysis of Telemedicine versus Traditional In-Person Developmental-Behavioral Pediatric Encounters

Neelkamal Soares, MD, Pediatrics, Rob Sprang, MBA, Kentucky TeleCare, Jessica Heath-Ahlgrim, CPC, Pediatrics, University of Kentucky, Lexington, KY

Purpose: While Eastern Kentucky presents significant geographic barriers to specialty pediatric care, accessing developmental-behavioral pediatric (DBP) care through the TIDBIT (Telemedicine In Developmental-Behavioral Pediatric Intervention and Training) program has been shown to be of cost-benefit to families (Soares, Patidar et al, in press). This study provides a cost-benefit analysis for healthcare systems for TIDBIT in Kentucky, particularly to demonstrate no revenue disparity for telemedicine (TM) versus in-person DBP care. Methods: A review of billing charges for DBP at University of Kentucky over a 2-year period was done including all patient encounters for in-person and TM, identified by modifier code GT. System business cost including clinician travel reimbursement and lease for equivalent outreach efforts, and hourly cost for TM and in-person clinic utilization was calculated. Gross collection rates (GCR) for TM and in-person DBP encounters variance was calculated. Results:267 TM versus 1507 in-person encounters, with identical distribution of diagnoses (ADHD 25% and Developmental Delay 18% commonest). There were more consult/new patients seen by TM (45%) versus in-person (29%) and 3 major payors accounted for mean 93% for TM, and 88.5% for in-person collections. Total GCR variance between TM and in-person was -2.3% (46.8% vs. 49.1%) and by payor ranged from +4% to -8%. Comparison by E&M codes variance revealed -11% to +11% for established and -10% to +6% for new/consult. Cost of TM encounter for primary site averages $42/hour and $22/hour for distal community site. Latter is able to charge/recoup $26/patient as "facility fee" from private payors. Cost of in-person encounter at primary site is $38/patient. With distal TM sites averaging 99 miles one-way from primary site, calculated expense for physician outreach (without TM) is $39/patient. Conclusion: Systems costs for operating Telemedicine DBP clinical services are equivalent when compared to in-person; and reimbursement varies, but is almost equivalent between TM and in-person in Kentucky. The incalculable benefits include partnerships with community hospitals and retention of patient care in the community, while being of positive cost-benefit to families seeking DBP services for their children. This study can help other DBP clinicians determine feasibility of launching TM services in their area.

Abstract 59

Cognitive and Behavioral Outcomes of Late Preterm Infants: The Bigger the Better?

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Purpose: We explored the associations among preterm status (Very preterm infant (VPI: <30 weeks), Moderate preterm (MPI: 30-336/7 weeks), Late preterm (LPI: 34-366/7 weeks), parenting, and later cognitive and behavioral outcomes, hypothesizing that low-risk preterm infants who experienced more positive parenting would demonstrate better cognitive and behavioral outcomes at 36 months. Methods: Sample included 123 preterm infants (gestation < 37 wk) and their mothers from a larger study of high-risk infants, and included measures of neonatal and socio-economic risks at NICU discharge; maternal vocabulary at 9-months, IQ and behavior at 36-months, and maternal depressive symptoms and parenting at all timepoints. Associations among parenting, cognition, behavior, and preterm status were explored using hierarchical regression analyses. Results: MANOVAs indicated that LPIs have more optimal neonatal health during the NICU stay. There were no differences in IQ between VPIs, MPIs and LPIs. However, preterm infants who experienced less negative parenting had higher IQs at 36 months with the greatest effects seen in VPIs (Beta= -3.245, p = .017). LPIs demonstrated more externalizing (p= 0.019) and oppositional behaviors (p=0.016) compared with VPIs. Overall, less negative parenting was associated with fewer externalizing behaviors (Beta= -.25, p = .043). Conclusion: LPIs demonstrate developmental vulnerabilities despite being at lower medical risk than infants who were born more preterm. LPIs manifest similar IQ, but increased behavior problems compared to VPIs. Preterm infants appear to be differentially susceptible to the effects of parenting, with VPIs demonstrating the greatest cognitive gains in the context of more positive parenting.

Abstract 60

Self-reported Bullying and Ostracism in Youth with Chronic Medical Conditions and /or Attention Deficit Hyperactivity Disorder

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Purpose: This study investigates relative rates of self-reported bullying and ostracism experiences in youth with chronic medical conditions and/or ADHD. Methods: Participants aged 8-17 (33 males and 31 females) were recruited from subspecialty clinics in a tertiary care medical center. There were 31 elementary school students, 18 middle school students, and 15 high school students. Of the 64 participants, 19 had a diagnosis of ADHD only (ADHD), 31 had a diagnosis of chronic medical condition (CMC), and 14 had a combination of both (ADHD+CMC). Patients were assessed for the occurrence of bullying and/or ostracism using Saylor's Bullying and Ostracism Screening Scale (BOSS). The BOSS quantifies bullying by asking about physical, verbal-social, and cyber-bullying experiences. A separate BOSS section asks about and quantifies ostracism experiences. Results: Analyses of Variance with Duncan Post Hoc tests were used to compare the three diagnostic groups (ADHD, CMC, ADHD+CMC) on self-reported rates of ostracism experiences, peer victimization experiences (Victim), and bullying of others (Bully). The groups were significantly different in ostracism rates, F (2,61) =8.45, p < .001. The ADHD and ADHD+CMC groups reported significantly higher ostracism than the patients with CMC only. The diagnostic groups also reported significantly different rates of being victimized by their peers, F (2,61) =5.41, p < .007. Again, students who had diagnosed ADHD, with or without CMC, reported higher victimization rates than students with CMC alone. There were no significant differences among the diagnostic groups in rates of self-reported bullying of others. Conclusion: Based on self-reported measures, ADHD, independent of other diagnoses, appears to put a child at increased risk of experiencing ostracism or being victimized by their peers. Practitioners caring for youth with ADHD need to be cognizant of this increased risk and regularly monitor their patients for bullying and ostracism concerns.

Abstract 61

Identification of Siblings at Risk of Autism in Multiplex Families: A Gender-Specific Genetic Based Approach

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Purpose: Autism spectrum disorders (ASDs) are highly heritable complex neurodevelopmental disorders with a 4:1 male:female ratio and a 10% sibling recurrence-risk. We explored the predictive ability of a gender-specific genetic score based on the presence of associated single-nucleotide polymorphisms (SNPs) to evaluate the risk of autism in siblings of children with autism. Methods: SNPs associated with an increased risk of autism were identified by performing gender-based genome-wide association studies on 544 multiplex families. Identified SNPs were prioritized using relevant biological data. We then assessed the ability of gender-specific genetic scores (GS), the sum of individual risk-associated alleles, to discriminate siblings with or without autism. Results: A total of 88 autism associated SNPs were identified. 52 SNPs were associated with autism in both males and females, 17 SNPs were associated with autism in males only and 19 SNPs in females only. GSs were constructed by combining these SNPs with 8 previously identified autism-associated SNPs using 1,034 children with ASDs and 300 unaffected siblings. For males, the area under the receiver operator characteristic curve (AUC) was 0.82 (95%CI:0.77-0.86); a GS of 76 was associated with an 89% specificity, a 50% sensitivity and a 47% positive predictive value (PPV). In females, the AUC was 0.84 (95%CI:0.79-0.88); a GS of 75 was associated with a 93% specificity, a 48% sensitivity and a 23% PPV. Conclusion: Our findings demonstrate that a gender-specific genetic score based on the presence of multiple risk-associated markers allows for the identification of siblings of children with autism who have a significantly higher risk to develop autism.

Abstract 62

Pediatricians' Knowledge, Skills, and Attitudes about Special Education Referrals and Monitoring IEP's

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Purpose: Pediatricians must be knowledgeable of services for children ages 3-21 years with developmental, behavioral, and educational challenges requiring an Individualized Education Program (IEP) and the special education referral process. The extent to which the medical community plays a role in the development of the IEP is unknown, as are pediatricians' current knowledge and practices with regard to special education. Methods: A survey instrument was developed and mailed to a national sample of 1000 randomly selected general pediatricians and pediatric residents. Results: The response rate was 42%. Of the 7 knowledge items, respondents answered an average of 4.1 correctly (95% confidence interval [CI]: 3.9, 4.2) reflecting gaps in pediatricians' knowledge about special education referral and management. The majority felt pediatricians should be responsible for identifying children who may benefit from special education services (84% [CI]: 81%, 88%) and assist patients in obtaining services (85% [CI]: 81%, 88%). However, though the majority of pediatricians inquired whether a child was having difficulty at school (98%, [CI]: 97%, 100%), few asked parents if they need assistance obtaining services (61%, [CI]: 56%, 66%), conducted screening tests (60% [CI]: 55%, 65%), or provided materials about special education services (13% [CI]: 10%, 17%). Financial reimbursement (97%, [CI]: 95%, 99%), access to guidelines (90%, [CI]: 87% 93%), and adequate training (88% [CI]: 85%, 92%) were amongst the most significant barriers impacting a pediatrician's ability to provide care to children with educational difficulties. Conclusion: This study represents a first step in understanding pediatricians' knowledge, beliefs, and practice patterns in providing care to children with special education needs. In order to provide a comprehensive medical home pediatricians must be informed about the special education process. However, this study demonstrates that addressing gaps in pediatricians' knowledge and practice patterns regarding special education will require a variety of adult learning strategies.

Abstract 63

Management of Rett Syndrome: A Systematic Review

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Purpose: Rett Syndrome (RTT) is an X-linked neurodevelopmental disorder almost exclusively occurring in girls. It is characterized by a period of typical development, followed by stagnation in development and regression. Medical problems including seizures, breathing abnormalities, sleep disturbance, poor growth/nutrition, scoliosis, possible prolonged QT syndrome and other complications are commonly seen in this syndrome. Particular developmental and behavioral patterns are also observed. This review aims to provide physicians with a guideline for the management of patients with RTT. Methods: A literature review was completed using an Ovid MedLine search with the search term Rett Syndrome.

This was focused and expanded, with the limits of English language, age range of 0-18 years, and humans. A combined filter of diagnosis/ treatment/ etiology/ management was then run. Abstracts were reviewed in a three pass process and articles focusing on management/treatment issues were grouped by medical system and systematically appraised. Results: Seventy-five studies met the criteria for review. A limited amount of good quality evidence was found for specific treatment options of RTT. However, evidence based care recommendations on surveillance and management of girls with RTT were created based on best evidence, including clinical expertise when published evidence was lacking. Conclusion: There are common medical, developmental, and behavioral conditions that are seen in girls with RTT. These care recommendations will help to direct the decision making process for clinicians managing children with RTT. Ongoing and future research is needed to improve the evidence base for the management of RTT.

Abstract 64

The Social Awareness Knowledge (SAK) test: An Interactive Test to Detect Autism Spectrum Disorders (ASD) in Toddlers

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Purpose: Interactive tools may trigger atypical behaviors, leading to enhanced early identification and improved outcome of ASD. We present preliminary data on the performance of the SAK in affected toddlers. Methods: The 9 testlets of the SAK detect social communication skills delayed in toddlers with ASD: joint attention; response to name; reaction to emotions and human agency. Each testlet is coded from 0-4 (typical to atypical) from which a total score is generated. Administration and scoring take 10 minutes. A 4-session, 90-minute training module was developed and pilot tested with a multidisciplinary team in our specialty clinic. The training module consisted of observation, scoring of videos of SAK assessments, and group discussion of scoring results. The initial 7 testlets (version A) were expanded to 9 testlets (version B) for improved precision. In parallel, the SAK was piloted in a toddler autism evaluation project that follows progress every 6 months. The SAK and the Autism Diagnostic Observation Schedule (ADOS)-Module 1 were administered at 2 visits by the same examiner; these were videotaped to be scored by an independent reviewer. We calculated correlation coefficients using Spearmans rho statistic of total scores from both versions of the SAK with the ADOS. (See table) Results: Forty-three toddlers were tested: 37 boys and 6 girls, aged 16 to 32 months (mean: 25.2 months). Both versions of the SAK were significantly correlated with the ADOS. Conclusion: We present promising preliminary data on the validation of a 10-minute interactive test to detect ASD in toddlers, following a short and easy training.

SAK and ADOS Strongly Correlated

	SAK A	SAK B
Visit 1	N=25	N= 18
	r=0.55; p=0.005	r= 0.70; p=0.001
Visit 2	N=3	N= 13
		r=0.87; p=<0.001

Abstract 65

The Effects of a Home Visiting Program on Well Child Appointment Keeping

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Purpose: The MOM Program is an innovative randomized controlled trial home visiting program in which services are delivered by a team that includes both nurse practitioners and community workers, with the aim of empowering mothers to seek community resources on behalf of their children. This report describes the rates of completed home and primary care physician (PCP) visits throughout the study, and examines their relationship. The fundamental question examined is whether home visits increase the likelihood that children receive well child visits. Methods: Of the 302 mothers initially recruited into the study, 152 were randomized to receive the intervention, which consisted of 9 home visits over the 33 months of the program. On average, mothers in the program completed 7 of the 9 visits, and 89% of the sample were retained throughout the study. Results: The rates of successful home visits and PCP visits varied, with rates of completed home visits ranging from 82.2% to 90.8% and rates of completed PCP visits ranging from 26.3% to 90.1%. Although the percentages of successful home visits remained stable and high over the course of the intervention, the likelihood of mothers keeping health care visits for their children decreased over time. Two PCP visits were particularly challenging, those at 15 and 30 months. In each case, although the visits were recommended by the American Academy of Pediatrics, children did not receive immunizations or special procedures at these visits. Generalized estimating equations for determining the probability of completing a PCP visit when a successful home visit was completed were derived. The odds of having a successful PCP visit when there was a prior successful home visit was found to be 10.77 times greater than having a successful PCP visit without a successful home visit ($p < .001$). Conclusion: These results offer support for the utility of home visiting programs in promoting PCP visits for at-risk children.

Abstract 66

Assessing Factors in the Neurodevelopmental Outcomes in Infants with Twin-Twin Transfusion Syndrome (TTTS)

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Purpose: TTTS develops in monochorionic twins from unbalanced sharing of blood through vascular communications in the common placenta. The shunting of blood from one twin (donor) to the other twin (recipient) results in donor fetus hypovolemia and recipient fetus volume overload. TTTS leads to high rates of perinatal mortality and neurodevelopmental morbidity. Selective laser photocoagulation of communicating vessels via operative fetoscopy has produced significant improvement in perinatal outcomes. Despite this success, studies of the risk factors to long-term neurodevelopment outcomes of the infants with TTTS post-fetoscopic laser ablation are few, with no studies conducted in the United States. An observational retrospective cohort study of infants who underwent fetoscopic laser surgery for TTTS was performed to evaluate the effects of risk factors on the neurodevelopmental outcomes of these infants at 24 months of age. Methods: Data from the first year of recruitment are presented. The Battelle Developmental Inventory (BDI) total standardized score was used to assess neurodevelopment. Higher Quintero stage, later gestational age of surgery, lower gestational age at birth, and/or lower birth weight were hypothesized to result in poorer BDI outcomes at 24 months of age. Multilevel regression models in Mplus were used to account for shared variance among twins. Results: In Year 1 of the study, 46 children from 24 families were assessed at 24 months +/- 6 weeks. 52% of subjects were male; 48% were donors; 43% were Latino, and 14% were Asian; and 29% of mothers had high school degree or below. Mean BDI scores were average (mean=101.1 (+/-12.7)) with none below a developmental quotient of 70. Significant risk factors for poorer BDI score included lower birth weight, lower current weight and head circumference, and higher corrected age. Intraclass correlations showed that 81% of BDI score variance in the unadjusted model, and 56% of variance in the adjusted model, occurred at the family rather than child level. Conclusion: While this cohort of TTTS infants showed developmental quotients in the average range, family factors emerged as important determinants of those outcomes.

Abstract 67

What is the Role of Peer Support in the Relation Between Gender and Anxiety in Clinically Anxious Youth?

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Purpose: Anxiety disorders are the most prevalent mental health disorders among youth. Although understanding of etiology and maintenance of anxiety disorders has been recently advanced, little is known about the roles that a childs gender and social support may have in how children experience anxiety. This study will examine the role that perceived peer social support may have on children's anxiety level and the level of impairment associated with such anxiety across genders. Methods: Participants were 61 youth diagnosed with a primary or secondary anxiety disorder through the Anxiety Disorders Interview Schedule for Children (ADIS; Albano & Silverman, 1996). Anxiety was measured with the Revised Childrens Manifest Anxiety Scale (RCMAS) and impairment was measured by the severity rating assigned to the primary or secondary anxiety disorder from the ADIS. Social support was measured through child responses to the questions in the Interpersonal Relationships section of the ADIS. Results: A hierarchical regression analysis predicting anxiety scores (RCMAS) revealed a significant gender X perceived social support interaction, $R2 = .11$, $F (1, 51)$ $^{2} = -3.556$, $p < .05$. Girls reported high anxiety across levels of perceived social support, whereas boys who reported low social support reported significantly more anxiety than boys who reported high social support. Analyses dealing with impairment will be complete for SDBP. Conclusion: Few studies have examined the effect that peer support has on each gender in the development or maintenance of an anxiety disorder. Our results provide some evidence that for children diagnosed with anxiety disorders, the severity of anxiety experienced may be associated and maintained by the children's perceived peer support. Further, this finding is qualified by the childs gender, with boys who report low peer support suffering the most anxiety. Peer support was measured by the children's report of engagement in group peer activities and their number of friends. Thus, it is possible that girls' anxiety levels were not affected because larger, less intimate, social relationships are more relevant for boys.

Abstract 69

Quality of Life and Its Predictors in Adolescents after General Traumatic Injury

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Purpose: This project studied Quality of Life (QOL) in adolescents after general traumatic injury and evaluated factors potentially associated with poorer QOL outcomes. Methods: One hundred eight 12- to 18-year-olds admitted to a level 1 trauma center after injury participated in this prospective cohort study with a population-based sampling frame. Data were collected within 30 days of and 2, 5, and 12 months after injury. A comparison sample included 116 12- to 18-year-olds without disability, mental health diagnosis or chronic illness. Adolescent posttraumatic stress disorder (PTSD), depressive symptoms, and pre- and postinjury stressful life events (SLE) were considered as possible predictors. The Youth Quality of Life Instrument, Research Version was the outcome measure. QOL was investigated in 2 ways: repeated measures at 2, 5, and 12 months after injury and 12-month only. Final analyses included mixed-model and linear regression. Results: Injured adolescents reported normative QOL at injury and 2 months after and significantly better QOL than the comparison sample at 5 and 12 months after injury. However, those meeting symptomatic criteria for PTSD reported significantly poorer repeated measures of QOL ($beta=-7.76$, $p<0.001$), and those with a higher number of postinjury stressful life events had poorer QOL 1 year after injury ($beta=-1.24$, $p=0.001$). Continuous 2- to 12-month time-varying depressive symptoms were also significantly associated with lower QOL ($beta=-0.85$, $p<0.001$). PTSD and depressive symptoms were not included in one regression due to significant multicollinearity. Conclusion: Adolescents without PTSD did not report reduced QOL after injury, and QOL did not change significantly over time. Findings suggest potential points of intervention for those with poorer QOL, including PTSD, depressive symptoms and postinjury stressful life events. Future directions include attention to preinjury mental health and the possibility of posttraumatic growth and investigations with younger children.

Abstract 70

Development and Initial Validation of a New Instrument for Developmental Surveillance

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Purpose: The purpose of this study was to create and validate a series of brief questionnaires to assess young children's developmental progress, called "Milestones." The Milestones was designed to be feasible in pediatric settings, and to be short enough to be administered as part of a comprehensive surveillance tool called the Survey of Well-Being of Young Children (SWYC). The SWYC concurrently assesses three domains: child behavior, child development, and family risk factors. This study reports findings regarding the child development component of the larger SWYC. Methods: Initial questions were developed based on a systematic review of existing developmental assessments for young children and pilot-tested on a panel of parents and child development experts. To validate the new measure, we enrolled 906 parents from primary care settings and specialty clinics to complete the questionnaires about their children. In addition to these questions about developmental milestones, parents were asked about existing diagnoses of developmental delay and autism, and they filled out validated screening tools such as the Ages and Stages Questionnaire (ASQ-3) and the Modified Checklist for Autism in Toddlers (M-CHAT). Results: Individual questions were chosen based on item-response analyses, and 10-item checklists were created to correspond to each pediatric well-child visit. To assess validity, we compared the Milestones to the ASQ-3 and the M-CHAT with regard to their ability to detect parent reports of developmental delay and autism. In each case, sensitivity and specificity of the Milestones was greater than 0.70, even after controlling for covariates such as age, gender and race/ethnicity. Overall accuracy (as measured by the Area Under the receiver-operating Curve, or AUC) compared favorably to the ASQ-3 and the M-CHAT. Conclusion: The Milestones shows promise for detecting developmental delays and early signs of autism. A second round of validation in an independent sample is in process.

Abstract 71

Effectiveness of Responsive Teaching with Young Children with PDD: Impact of Parental Psychological Status and Responsiveness

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Purpose: This study compared the effectiveness of a parent-implemented intervention called Responsive Teaching (RT) with children with PDD to investigate how one year of intervention was associated with children's cognitive, communication, and social emotional functioning. Methods: The sample included 19 parent-child dyads (one to six years old). Parents and their children received either 3 or 6 months of weekly intervention services. Data collected included the 1) Maternal Behavior Rating Scale (MBRS); 2) Bayley Scales of Mental Development; 3) Vineland Adaptive Behavior Scale; 4) Child Behavior Checklist (CBCL); 5) Temperament and Atypical Behavior Scale (TABS); 6) Center for Epidemiological Studies Depression Scale (CES-D); and 7) Parental Stress Index (PSI). Repeated measures multivariate analyses of variance were conducted to assess the effects of intervention and intervention by age group interactions. Hierarchical multiple regression was conducted to explore the effects of responsiveness and maternal depression on intervention outcomes. Results: Multivariate analyses indicated significant intervention effects for maternal responsiveness as well as for children's Bayley and Vineland Developmental Quotients. Hierarchical multiple regressions analyses indicated that on two of the four developmental measures, mothers' CES-D scores were negatively associated with children's intervention outcomes. For all four developmental measures, mothers' responsiveness at

T2 was positively associated with children's intervention outcomes. Conclusion: Results replicate previous findings (Mahoney & Perales, 2005) which have shown that Responsive Teaching is associated with significant intervention effects on children's cognitive and language development. Although mothers of younger children were substantially more depressed and stressed than mothers of older children, they made comparable changes in their level of responsiveness with their children during intervention. Findings from this study suggest that Responsive Teaching may be an effective intervention for use with very young children with autism. However, results also illustrate how the extremely high levels of depression and parenting stress, commonly reported for parents of very young children with ASD, may moderate the effects of this intervention.

Abstract 75

Diet, Activity, and Bone Density in 10 to 18 year olds with Autistic Spectrum Disorders

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Purpose: Diet and activity preferences of youth with autistic spectrum disorders (ASD) may confer risk for osteopenia. 43% of 4-8 year olds with ASD have inadequate calcium intake. This study aims to measure bone mineral density, nutritional intake, and activity in 10-18 year olds with ASDs. Methods:10-18 year old patients with ASDs were recruited from an outpatient multidisciplinary clinic. Participants were examined, and anthropometric data recorded. Bone mineral density was assessed using a lumbar dual energy x-ray absorptiometry (DXA) scans. Serum markers for 20 vitamins and minerals were measured. Dietary intake, exercise, electronic media use, and sunlight exposure were recorded by the subjects' families for 36 hours. Results: Participants included 9 individuals with Autism, 6 with Asperger's Disorder, and 11 with Pervasive Developmental Disorder-NOS. 7 subjects (27%) had low bone density, as defined by bone mineral density z-score < -1. Z-scores were -2 or lower for 4 of the 7. 54% of subjects had low serum 25-OH vitamin D, 65% low zinc levels, 85% low hematocrit, and 15% low serum vitamin C. Mean electronic media use was 251 min/day (range 0-850 min/day). Mean physical activity was 69 min/day (range 0-180 min/day). Analysis of diet diaries revealed that nearly one third of participants were not meeting recommended daily allowances for nutritional intake in most areas. Bone density correlated significantly with body mass (p<.05), calcium intake (p<.05), and caloric intake (p<.01); but not with physical activity or serum vitamin D levels. Conclusion: 10-18 year olds with autism are at risk for asymptomatic osteopenia. Those with low BMI and insufficient calcium intake are at greater risk. Other potentially unhealthy behaviors in this population include a high screen time to physical activity ratio, low vitamin D levels, anemia, and multiple dietary nutrient deficiencies.

Abstract 77

Periodic Limb Movements of Sleep, Serum Ferritin Levels, and Sleep Fragmentation on Polysomnogram in Autism Spectrum Disorders

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Purpose: Children with autism spectrum disorders (ASD) experience a range of sleep disturbances. Exact mechanisms are not well characterized. This study investigates the association of serum-ferritin and sleep-fragmentation on polysomnograms (PSG). Methods: We conducted a retrospective chart-review of children with ASD seen in a tertiary-care center between 1990-2010. Inclusion criteria were availability of PSG-data and ferritin-levels. The following variables on PSG characterized sleep fragmentation: arousal-index, presence of alpha-intrusions, reduced sleep-efficiency, and apnea-hypopnea-index. Results: Of 9791 children with ASD identified, 511 had a ferritin level, 377 had PSG-data, and 53 had both ferritin and PSG-data. Median age was 8y(range:5-13). Median ferritin level in the entire ASD population: 35ng/mL(23-73); the study population: 27ng/mL(18-49); ASD subjects with sleep fragmentation on PSG: 24ng/mL(17-47); and controls: 86ng/mL (35-264). The prevalence of periodic limb movements of sleep (PLMS) was 47%, compared to 8% in a previous study with controls. A marker of sleep-fragmentation was observed in 40% of subjects with ASD. Median ferritin levels were significantly lower in patients with poor sleep-efficiency(7ng/mL: 3-19) compared to those with normal sleep-efficiency(29.1ng/mL:18-51,p=0.011). Trends for females to have alpha intrusions (p=0.060) and lower sleep efficiency (p=0.07) were observed. Conclusion: The prevalence of PLMS in children with ASD was nearly six-times higher than that observed in controls. Our preliminary observations, which have not been described before, need to be validated in further multicenter prospective studies.

Abstract 81

Correlates of School Placement among Children with Ambulatory Cerebral Palsy

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Purpose: We explored how reading, mathematics, writing, language comprehension, behavior, and functional skills related to school placement in children with ambulatory cerebral palsy (CP). Methods: Participants were recruited from the Cerebral Palsy Outcomes Project (CPOP) network. Parents rated children's reading, math, and writing skills as well as language comprehension and behavioral manageability using a 5-level ordinal scale. Children's school placement and need for curriculum modifications were also obtained. Clinicians rated gross motor function on the GMFCS and hand function on the MACS. Ordinal logistic regression models were constructed to assess how reading, mathematics, writing, language comprehension, behavior, GMFCS, and MACS contributed to school placement. Results: We recruited 112 children with CP (68 boys, 44 girls) with GMFCS levels I-III. Mean age was 10.9 ± 3.6 years. For reading, math, and writing, the majority of parental responses were distributed as above average or average compared to peers, with a minority being very far behind or unable to do specific skills (20%, reading; 22%, math; and 22%, writing). Parental report of school placement (Table 1) was significantly and positively associated with children's math skills. Neither children's reading, writing, or language comprehension skills nor their functional skills were associated with school placement. Conclusion: Parental report of school placement in children with ambulatory CP was significantly related to math skills, and these children required more special education supports.

Table 1: Correlates of School Placement

Factor	Odds Ratio	95% Confidence Interval
Reading	1.60	0.83-3.09
Math	3.92	2.03-7.57
Writing	1.13	0.65-1.97
Language	0.61	0.20-1.81
Behavior	1.20	0.77-1.87
GMFCS	1.08	0.56-2.09
MACS	1.20	0.59-2.47

Abstract 82

A Research Synthesis and Review of Developmental Screening Measures for Young Children

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Purpose: What evidence is available to support the use of developmental screening tools for identifying young children who have a delay/disability? How do we know if the developmental screening tools work? How do users know which tools have empirical support? To better understand the effectiveness and accuracy of screening tools, as well as provide screening tool users helpful information on the evidence needed to make sound decisions, a review of the literature was conducted to locate empirical studies. Methods: Nineteen developmental screening measures were chosen on the basis of their commercial availability. Studies were included in the research synthesis if the investigation, (a) researched one or more of the selected 19 developmental screening measures, (b) involved young children birth to kindergarten with disabilities or at-risk for developing a disability due to environmental or biological risk conditions, (c) examined the usefulness, accuracy, and/or effectiveness of the tool at screening young children with disabilities and/or at risk, and (d) was published in a peer reviewed and scholarly publication. Results: A total of 221 studies met criteria. The screening instruments that had the most published research were the: (1) ASQ, (2) Denver/DDST, and (3) McCarthy/MST. A total of 127,268 young children, in the United States and abroad, were included in research studies. Most reliability studies investigated sensitivity (n = 49) and specificity (n = 48) of screening measures. The least number of studies investigated inter-item reliability (n = 8). There were 22 inter-rater reliability studies, and 15 test-retest reliability. The most studies included a concurrent validity (n = 92) design. There were 48 predictive and 30 construct validity studies. The least number of studies looked at criterion validity (n = 7). A total of 42 utility studies are included in this research synthesis. Conclusion: The research base on developmental screening assessments has been growing since the 1970s. Practitioners in health, social, and education fields are increasingly being called to use evidence-based practices and assessment tools. This synthesis shows that there is a promising body of research dedicated to studying the usefulness, accuracy and effectiveness of screening tools.

Abstract 83

Gastrointestinal Symptoms in Children with Autism Spectrum Disorders: a Comparison between Hispanics & non-Hispanics

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Purpose: To compare parent-reported gastrointestinal (GI) symptoms in children with an autism spectrum disorder between Hispanics (H) & non-Hispanics (NH). Methods: The Childhood Autism Risks from Genetics & the Environment (CHARGE) study is a population-based case-control study of children with autism/ASD, developmental delay (DD) & typical development (TD) between the ages of 24 & 60 months. Current GI history was assessed using a self-administered parent questionnaire: 10 items assess frequency of GI symptoms using 5 point Likert scale (Never, rarely, sometimes, often, always) & 4 items assess the presence of food allergies, food restrictions, food dislikes & GI diagnosis. Sample size consisted of 952 children (AU/ASD n=496, TD n=320, DD n=136). Distribution between NH & H for AU/ASD: NH=350 & H=167; TD: NH=227 & H=93; DD: NH=85 H=54. GI symptoms were dichotomized into high frequency (often or always) or low frequency (never-sometimes) for comparisons using chi-square or Fishers exact test. Results: Cases had higher reports for most GI symptoms compared to TD but not DD controls, where constipation (AU/ASD 15.6%, TD 3.6%, DD 15.9%, $p<0.0001$), diarrhea (AU/ASD 12.8%, TD 1.6%, DD 6.2%, $p<0.0001$) & gaseousness or bloating (AU/ASD 11.1%, TD 2.0%, DD 2.4%, $p<0.0001$) were the most prevalent symptoms. Similarly, cases had more reports of food allergies (AU/ASD 19.8%, TD 7.4%, DD 9.1%, $p<0.0001$), restrictions (AU/ASD 37.2%, TD 10.5%, DD 21.1%, $p<0.0001$), & dislikes (AU/ASD 63.9%, TD 34.1%, DD 34.9%, $p<0.0001$) compared to control groups. Comparisons between H & NH revealed no significant differences for GI symptoms in cases & controls.

However, NH had higher reports of food restrictions in cases (NH 43.2% vs. H 26.1%, p=0.0002) & DD controls (NH 28.9% vs. H 7.6% , p=0.002). For cases, reports of food dislikes (NH 67.9% vs. H 52%, p=0.02) & GI diagnosis (NH 9.3% vs. H 3.7%, p=0.02) also differed. Conclusion: Overall, children with AU/ASD have higher reports of GI symptoms compared to TD, & are similar to DD children for constipation & related symptoms. Ethnic comparisons revealed higher reports of food restrictions, dislikes & GI diagnosis in NH compared to H children with AU/ASD.

Abstract 84

Do Families Want their Pediatricians to Diagnose Autism?

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Purpose: To evaluate attitudes held by parents of children with autism spectrum disorders, regarding the diagnosis of their child and the clinicians involved. Methods: 59 families who had previously participated in a clinical research program for their child with an ASD diagnosis completed an online questionnaire. The survey consisted of 12 questions evaluating the timeframe of their initial developmental concerns, the type and number of professionals they consulted, the age of first diagnosis, and their preference for another hypothetical child being assessed by a psychologist or a pediatrician for an ASD given several different situations (i.e., common wait times, accuracy involved in utilizing common tools). Results: 86.4% (51/59) of respondents indicated that they first became concerned about their child's development before their child was 24 months old, and 75.9% (44/59) of parents reported these concerns to their child's pediatric provider during that time, although only 54.2% (32/59) of the sample was diagnosed by the age of 3. The majority of respondents (56/59, 94.9%) discussed concerns with more than one professional prior to receiving a diagnosis. Overall, 67.8% (40/59) of respondents believed primary care physicians should be able to issue autism diagnoses. In fact, when presented with the choice 47.5% (28/59) of families indicated they would prefer a pediatrician to issue a diagnosis to a psychologist. Further, when faced with a potential 6 -12 month wait for a psychological evaluation, this number increased to 58.6% (34/59). Conclusion: A majority of families indicated a desire for their pediatric providers to have the capacity to diagnose ASD within practice. With increased awareness of ASD and existing practice parameters mandating explicit screening, there are significant potential benefits to incorporating within-practice diagnostic measures into models of pediatric care.

Abstract 85

Distress and Well-being in Parents of Young Children Recently Diagnosed with ASD: Associations with Beliefs about Autism

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Purpose: Despite powerful evidence from other areas of pediatric illness and disability research suggesting that parental beliefs and thoughts regarding illness significantly impact familial, parent, and child behavior, very little work has examined the role that parental beliefs about ASD have in terms of caregiver distress. Parents of young children with ASD face unique caretaking challenges, but also often struggle to answer important and uncertain questions about their child's, their own, and their family's future. The purpose of the current study was to examine the associations of characteristics of child functioning, in terms of global developmental patterns (e.g., cognitive functioning, adaptive functioning, ASD symptoms) and challenging behaviors, and parental beliefs about ASD as related to parental distress (i.e., anxiety and depression) and well-being. Methods: 75 mothers of young children recently diagnosed with ASD completed a survey designed to assess parents' depression and well-being, child behavior, as well as beliefs about autism following ASD diagnosis. Results: IQ, ASD symptom severity (i.e., ADOS calibrated severity scores), and adaptive behavior profiles were not significantly related to distress or well-being. Increased problem behaviors (CBCL scores) were significantly correlated with increased levels of maternal anxiety and depression and decreased well-being.

Controlling for problem behaviors, overall beliefs about ASD and its perceived negative impact on parental and child happiness significantly contributed to maternal anxiety and depression. Conclusion: Beliefs about ASD are significantly tied to parenting distress and well-being beyond the contributions of challenging behavior. As such, increased awareness and attention to such thoughts and beliefs within models of clinical care could potentially help caregivers not only in terms of their own functioning, but potentially their childs functioning as well.

Abstracts 20, 21, 22, 23, 24, 25, 28, 29, 31, 35, 38, 44, 45, 46, 49, 50, 53, 54, 55, 58, 68, 72, 73, 74, 76, 78, 79, 80, 86 and 87 were previously published research and are not included in this online publication.